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SCRAP METAL PILES REMOVAL ACTION 15 WORK PLAN FERNALD SITE OFFICE FERNALD, OHIO - APRIL 1992

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WORK PLAN

SCRAP METAL PILES

REMOVAL ACTION NUMBER 15
WORK PLAN

FERNALD SITE OFFICE
FERNALD, OHIO

APRIL 1992

U.S. DEPARTMENT OF ENERGY

CONSENT AGREEMENT REMOVAL ACTION #15

SCRAP METAL PILES

WORK PLAN

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

APRIL 1992

Prepared by:

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO
Cincinnati, Ohio

Prepared for:

U.S. DEPARTMENT OF ENERGY
Fernald Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705

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1.0 INTRODUCTION

On September 20, 1991, the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) jointly signed an Amended Consent Agreement establishing milestones for the implementation of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions at the Fernald Environmental Management Project (FEMP). One such milestone provided that the DOE submit a work plan to U.S. EPA by January 31, 1992 addressing Removal Action No. 15, Scrap Metal Piles. After EPA's review, comments were received from U.S. EPA on March 3, 1992 which corresponds with a milestone for re-submittal by April 2, 1992. This work plan provides a revised schedule allowing EPA's approval of a detailed Subcontractor's Removal Action Project Plan (RAPP) which will be submitted by the selected vendor prior to the initiation of field activities. U.S. DOE requests that U.S. EPA approve this "programmatic" Removal Action Work Plan with the commitment from U.S. DOE that the RAPPs for each of the phases will be provided to EPA for their review and approval after award of the respective contracts.

The objective of this removal action is to remove the potential threat to human health and the environment from the radioactively contaminated scrap metal pile and the scrap copper piles, until final remediation of these areas can be accomplished. To date, a Removal Site Evaluation (RSE) has been initiated and will be completed prior to initiation of field activities. The findings of the RSE will be considered in the detailed Subcontractor's RAPP. Open storage of the radioactively contaminated scrap metal and scrap copper has the potential for contaminant releases to the environment. This removal action will eliminate exposures, due to the scrap metal and scrap copper piles, to human or environmental receptors by eliminating the source term.

The FEMP Scrap Metal Management Program has been intertwined with the Oak Ridge Operations (ORO) Metals Management Program since the time period when the FEMP was a component of the Oak Ridge Complex under the Defense Programs. The scrap metal pile and scrap copper piles addressed in this removal action represent less than one percent of the total metal included in the Oak Ridge Metals Management (ORMM) Program. Negotiations are underway with DOE-ORO to remove subject scrap copper piles from the ORMM Program, the scrap metal pile has already been removed from the scope of the ORMM Program.

The FEMP scrap metal inventory is classified into two major categories based on material thickness and potential recovery. In May of 1987, the scrap metals on the Decontamination Building (B69) Pad were segregated into recoverable and refuse as part of the Radioactively Contaminated Metal Segregation Project (further information regarding material segregation follows in Section 1.2). The recoverable scrap metal and scrap copper make up the scope of this removal action, whereas the refuse metal is being handled under Removal Action No. 9 - Removal of Waste Inventories, Part I - Current Low-Level Waste Management. The recoverable scrap metal is made up of ferrous and non-ferrous metal on the B69 Pad (in the northeast section of the Production Area), and scrap copper (on the

north end of the Plant 1 Pad), see highlighted areas on Figure 1. All scrap metal and scrap copper within the scope of this removal action is considered low-level radioactive material.

The scrap metal piles addressed in this work plan are within the scope of Operable Unit 3 (OU3). OU3 includes the Production area and other identified suspect areas outside the Production area. This removal action is consistent with the final remedial action considered for OU3. The Remedial Investigation/Feasibility Study (RI/FS) for OU3 is currently underway.

The field activities of this removal action will be completed by obtaining commercial support services from a qualified subcontractor with all activities being performed to protect human health and the environment. The scope of the support services will include the processing and off-site disposal or beneficial re-use of approximately 3,300 tons of low-level radioactively contaminated ferrous and non-ferrous scrap metal, and the interim containerization, and processing and beneficial re-use of approximately 1400 tons of low-level radioactively contaminated scrap copper, which together comprise all of the recoverable scrap metal stockpiled at the FEMP.

This work plan utilizes a two phase approach to execute the removal action. Phase I will address the scrap ferrous and non-ferrous metal pile and Phase II will address the scrap copper pile. Specific treatment/disposition will be determined based on the type, size and contamination level of the metal. The specific method of treatment/disposition will be provided to EPA for approval by way of a detailed Subcontractor's RAPP (see Section 3.3 for Phase I and II schedules).

All project activities will be completed in accordance with the requirements defined in applicable Westinghouse Environmental Management Company of Ohio (WEMCO) procedures, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), CERCLA, pertinent DOE Orders, and the FEMP Quality Assurance Plan.

1.1 FERNALD SITE BACKGROUND

The FEMP is owned by the DOE and was operated from 1952 until 1989 for the processing of high purity uranium metal. In 1989 facility production operations were placed on stand-by to focus on environmental remediation. The facility was formally shutdown in 1991 after appropriate congressional notifications. Today, remaining workforces at the facility are focused solely on the implementation of environmental restoration related initiatives.

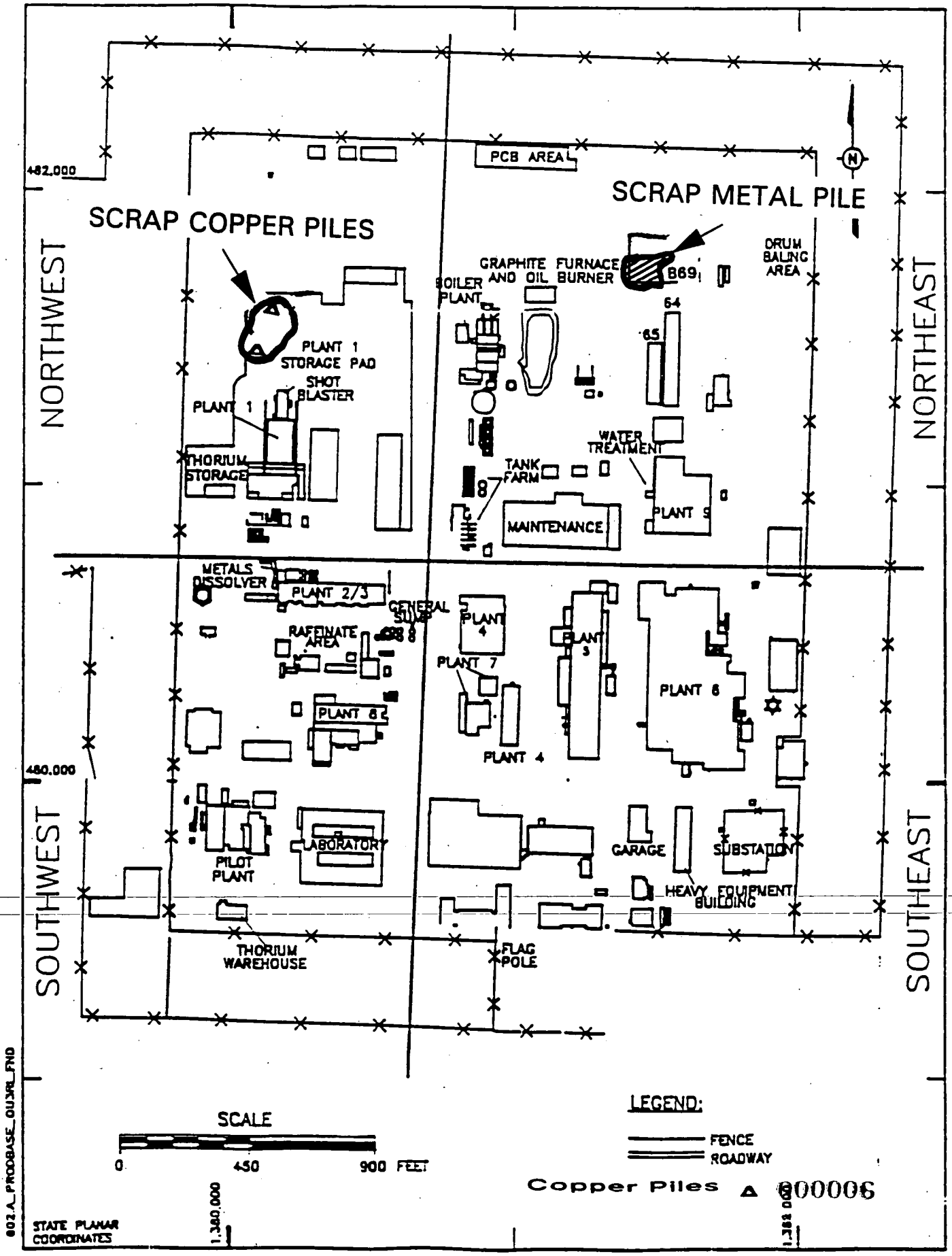


FIGURE 1 - SCRAP METAL PILE AND SCRAP COPPER PILES

The facility is a 1,050 acre parcel located in southwestern Ohio. In November, 1989, the FEMP was placed on the CERCLA National Priorities List (NPL) as a result of concerns related to past and potential releases of hazardous substances to the environment. Consistent with Section 120 of CERCLA, the DOE and U.S. EPA jointly signed a Consent Agreement in March, 1990 establishing a schedule for the implementation of a sitewide RI/FS and a series of removal actions at the FEMP. This agreement was amended in September, 1991. This removal action work plan has been developed consistent with the terms of the Amended Consent Agreement.

1.2 BACKGROUND OF THE SCRAP METAL PILES

The low-level radioactively contaminated scrap metal pile is currently located on the B69 Pad and the scrap copper pile is currently located on the Plant 1 Pad. All of the scrap metal was generated at the FEMP as a result of demolition projects, removal of abandoned equipment, and the upgrade of facilities and vehicles. The copper was generated from the Cascade Improvements/Cascade Upgrades Project at the DOE Gaseous Diffusion plant at Paducah, Kentucky and was initially sent to the FEMP for shredding and casting. The casting operations were abandoned due to unavailable options for the disposition of the resulting copper ingots with the given uranium concentrations.

As previously mentioned, the scrap metal on the B69 Pad was segregated into recoverable and refuse scrap metal under the Radioactively Contaminated Metal Segregation Project. The recoverable scrap metal was further segregated into ferrous and non-ferrous and within each of these categories, they were again segregated into high-count and low-count. The following are the guidelines established under the Radioactively Contaminated Metal Segregation Project and will be used as definitions for reference throughout this work plan. An alpha scintillator detector was used to measure contamination levels on the scrap metal. The active window area of the probe is 59 cm^2 and all alpha scintillator detectors at the FEMP are calibrated using thorium-232 sources which mimics the energy level of uranium. Disintegrations per minute (dpm) are used because the predominant isotopes are uranium and thorium.

<u>RECOVERABLE METAL</u>
Recoverable metal is any metal that is greater than or equal to 1/4-inch thick and requires only minimal processing prior to being made available for beneficial re-use or unrestricted release (I-beams, plate steel, and structural components).
<u>FERROUS METAL</u>
Ferrous metal consists of scrap carbon steel.

NON-FERROUS METAL
Non-ferrous metal within the inventory is generally stainless steel and aluminum.

HIGH-COUNT SCRAP METAL
Recoverable scrap metal with gross fixed alpha contamination greater than 200,000 disintegrations per minute (dpm)/window area.

LOW-COUNT SCRAP METAL
Recoverable scrap metal with gross fixed alpha contamination less than 200,000 (dpm)/window area.

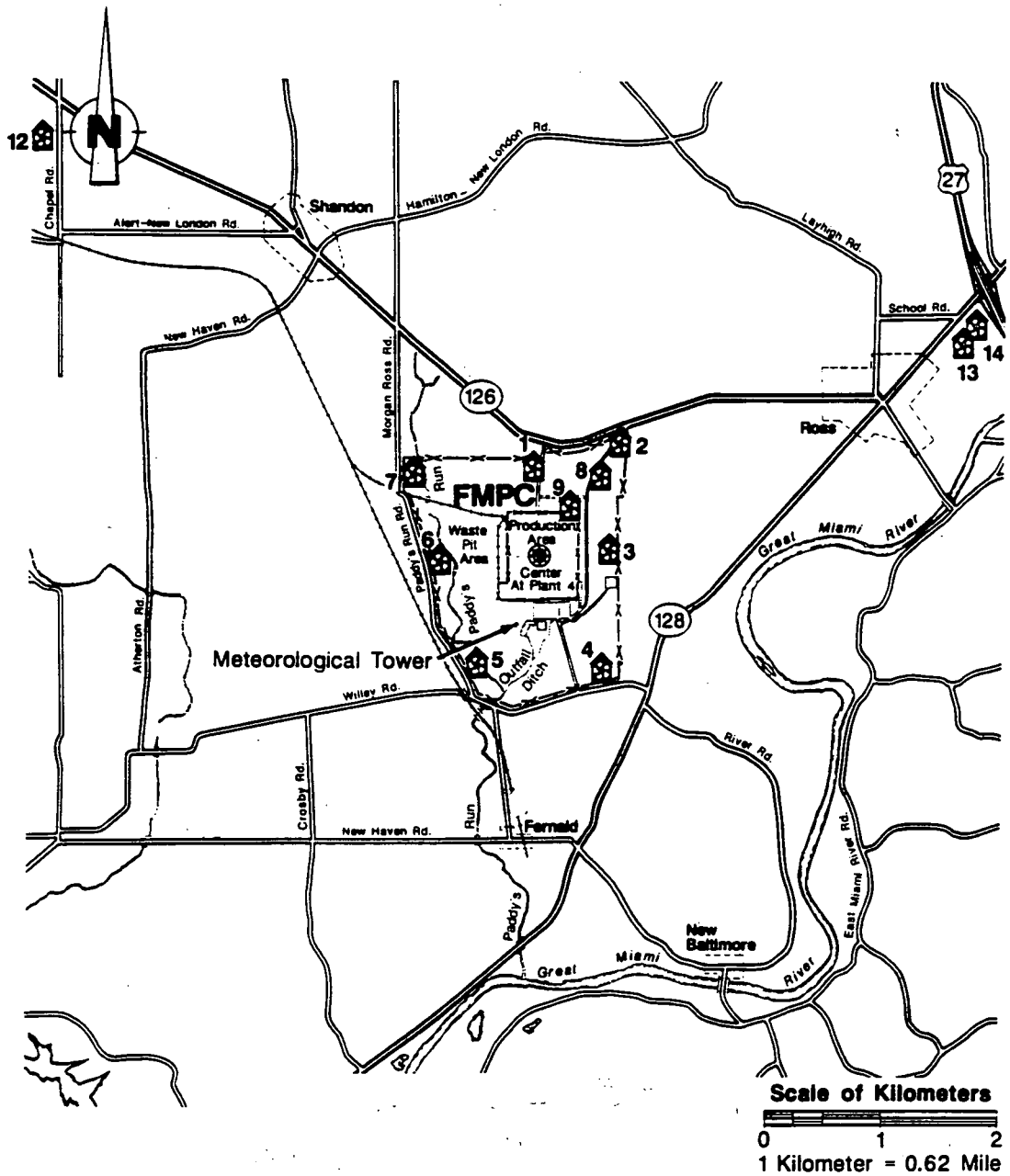
REFUSE METAL
Refuse metal is any metal that is less than 1/4-inch thick, is wrapped with non-metallic material (except copper), or material generally requiring extensive efforts to render it available for recovery (a field decision will be employed for this determination). Generally, refuse metal is comprised of thin gauge material, wire, conduit, and piping. Disposal of refuse metal is being addressed via Removal Action No. 9 - Removal of Waste Inventories, Part 1 - Low-Level Waste Management. It is anticipated, based on current shipping schedules, that the scrap metal refuse will be removed from the B69 Pad by June of 1992.

The inventory of scrap metal and scrap copper within the scope of this work plan consists of:

- 238 tons of high-count recoverable ferrous metal
- 2843 tons of low-count recoverable ferrous metal
- 54 tons of high-count recoverable non-ferrous metal
- 139 tons of low-count recoverable non-ferrous metal
- 1370 tons of copper

Even though the refuse was segregated from these scrap metal piles in 1987, with approximately 2400 tons of refuse segregated, the possibility of discovering more refuse metal during the removal action exists. The estimated percentage of non-recoverable metals and other materials anticipated to be encountered during this removal action is less than 10% by volume. Refuse metal segregated during the processing of the scrap metal within the scope of this removal action will be managed in accordance with guidelines established for Removal Action No. 9 - Removal of Waste Inventories, Part I - Current Low-Level Waste Management.

Newly generated scrap metal will be handled under Removal Action No. 17 - Improved Storage of Soil and Debris. Therefore, no additional scrap metal will be added to the recoverable scrap metal piles within the scope of this removal action.



LEGEND

Air Monitoring Location

Plant Perimeter

Production Area Perimeter

Figure 2. Air Monitoring Locations

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000009

1.3 SUMMARY OF EXISTING DATA

Open storage of the contaminated scrap metal and scrap copper could result in contaminant releases to the environment. Elevated airborne uranium concentrations have been detected near the scrap metal pile. Removable contamination levels on the recoverable, low-count scrap metal are generally less than 1,000 dpm/100cm^2 beta/gamma, with some total (removable and fixed) contamination exceeding 100,000 (dpm)/window area.

Routine air monitoring is performed at defined air monitoring locations around the FEMP to determine radiological emissions at the property boundary (see Figure 2). The nine perimeter air monitoring locations can be logically grouped into two sections, the northeast cluster -- Numbers 1,2,3,8, and 9 and the south and west sectors -- Numbers 4,5,6, and 7.

Table 1 shows air monitoring data from August of 1989 through July of 1990. For Air Monitoring Location No. 9 (which is closest to the B69 Pad) the airborne uranium readings are about four times higher than the next highest station. The scrap metal pile on the B69 Pad could be a contributor to elevated concentrations of airborne uranium at this air monitoring location.

TABLE 1
X10^{-6} Pci/m^3 Total U

Air Monitoring Locations-Fig.2	8/89 - 7/90
NORTHEAST	
1	180
2	210
3	350
8	380
9	1,420
SOUTH AND WEST	
4	110
5	120
6	190
7	100

1.4 NEED FOR REMOVAL ACTION

The Scrap Metal Piles (including the scrap metal and scrap copper piles) were established as a removal action during negotiations for the Amended Consent Agreement signed in September of 1991. In addition, if the eight factors listed in 40 CFR 300.415(b)(2) are examined, the following apply to the Scrap Metal Piles Removal Action.

40 CFR 300.415 (b)(2)(i)

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

This removal action was deemed appropriate due to potential airborne contaminants being carried from the scrap metal pile and scrap copper piles off-site.

40 CFR 300.415 (b)(2)(ii)

Actual or potential contamination of drinking water supplies or sensitive ecosystems.

This removal action was deemed appropriate based on radiological concentrations found on the surfaces of the scrap metal and scrap copper with the potential for these contaminants to migrate to soil and groundwater.

40 CFR 300.415 (b)(2)(v)

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

This removal action was deemed appropriate based on radiological concentrations found on the surfaces of the scrap metal and scrap copper and the possibility of significant weather events causing the contaminants to migrate out of the areas.

Based on these three factors and the existing data examined in Section 1.3, it is evident that there is a need to mitigate the potential threat posed by the current conditions found at the scrap metal piles. In addition, a RSE has been initiated and a final draft will be available by April 30, 1992. The RSE notes elevated uranium concentrations in surface soil, subsurface soil, and perched water. This RSE will be provided to EPA along with the detailed Subcontractor's RAPP (see schedules in Section 3.3).

1.5 OBJECTIVES OF THE REMOVAL ACTION

The objectives of the removal action are to reduce the potential for contaminant migration to previously uncontaminated areas, and minimize the potential for exposures to human or environmental receptors by eliminating this contributor, the scrap metal pile and scrap copper piles, and to maximize off-site beneficial re-use of the scrap metal and the scrap copper.

Consistent with the NCP, the removal action shall contribute to the efficient performance of projected final remedial actions. The removal action shall be performed to minimize the potential releases of hazardous substances incidental to removal field operations and in a cost efficient and safe manner consistent with site Standard Operating Procedures and worker health and safety requirements.

2.0 REMOVAL ACTION

The purpose of this work plan is to describe the proposed activities to implement the removal action for the Scrap Metal Piles (Removal Action #15) at the FEMP. The disposition of the recoverable scrap metal (ferrous and non-ferrous) and scrap copper constitute this removal action. This removal action will be accomplished in two phases. Phase I will involve the ferrous and non-ferrous scrap metal pile located on the B69 Pad. Phase II will involve the scrap copper piles located on the north end of the Plant 1 Pad and is broken down into Phase IIA, containerization of the scrap copper by FEMP work forces, and Phase IIB, to be performed by the Subcontractor.

The scrap metal and scrap copper under consideration within the scope of this removal action, are considered to possess the properties that make it attractive for resource recovery. Disposition of both the scrap metal and the scrap copper will emphasize recycling or beneficial re-use of the materials. Recycling or beneficial re-use will include both unrestricted release of the materials as allowed by DOE Order 5400.5 (see Appendix A), or controlled re-use in place of virgin resources that may eventually become radioactively contaminated and thus classified as low-level radioactive waste. If additional refuse metal is discovered throughout the progression of the removal action, it will be managed by the Subcontractor in accordance with guidelines established under Removal Action No. 9 - Removal of Waste Inventories, Part I - Current Low-Level Waste Management.

To accomplish the objectives of this removal action, the DOE is issuing two separate requests for solicitation of commercial services via a Request For Proposal (RFP) - one for the ferrous and non-ferrous scrap metal pile (Phase I), and another for the scrap copper pile (Phase IIB). The RFP for Phase I has been issued and proposals were received from interested bidders on December 20, 1991 (see Appendix B for the RFP for Phase I activities). The proposals are presently being reviewed by a Source Evaluation Board (see schedule in Section 3.3). The RFP for Phase IIB (the scrap copper piles) is anticipated to go out to bidders in December, 1992 (see schedule in Section 3.3)

The scope of work for the services for Phase I potentially involves the receipt, transportation, necessary interim storage, processing, packaging, and disposition or beneficial re-use of the low-level radioactive scrap metal pile described above. The Subcontractor shall have the capability and experience to perform services relating to the Removal Action Work Plan which may include but are not limited to on-site (or off-site) processing such as: reduction, precipitation, carbon filtration,

oxidation, oil/water separation, ion exchange, compacting, transportation, smelting, and disposition at DOE-approved facilities. The Subcontractor will also perform all activities with an emphasis on protection of human health and the environment.

The scope of work for the services for Phase IIB potentially involves the transportation, necessary interim storage, processing, packaging, and disposistion or beneficial re-use of the low-level radioactive scrap copper piles described above. The Subcontractor shall have the capability and experience to perform services relating to the removal action work plan which may include but are not limited to on-site (or off-site) processing such as: reduction, compacting, transportation, smelting, and disposistion at DOE-approved facilities.

Based on a review of the time required to design, procure and install a tension support structure, or similar protective covering over these scrap metal piles, the implementation of the RFP for Phase I will better facilitate their disposition. The potential threat from the scrap copper pile, on the north end of the Plant 1 Pad, will be mitigated by the containerization of the material by FEMP work forces as an interim step to issuing the RFP for Phase IIB activities (see schedule in Section 3.3).

2.1 PHASE I

As mentioned above, the solicitation for the Phase I work is in progress. The scope of work for the solicitation provides final disposition with an emphasis on beneficial re-use of the recoverable scrap metal inventory. After award of the Phase I contract, the detailed Subcontractor's RAPP will be provided to EPA for approval in accordance with the Phase I schedule in Section 3.3. Per the requirements of the RFP, the Subcontractor must be fully operational within 45 days after the contract is awarded. The DOE cannot presume all aspects of the proposal but it is conceptualized to consist of further segregation, decontamination, treatment/processing, unrestricted material release, restricted re-use, and/or low level waste disposal.

It is anticipated that the scrap ferrous and non-ferrous metal on the decontamination facility pad (B69) will be further sorted by the successful bidder by material type and contamination levels. Materials found to be salvageable will be decontaminated utilizing existing FEMP Standard Operating Procedures as a guideline for the Subcontractor. Any waste materials generated incidental to performing the operations of bulk packaging and decontamination will be treated/containerized by the Subcontractor. Any scrap metal processed for beneficial re-use will be packaged and transported by the Subcontractor.

The following tasks are called out in the RFP for Phase I:

Refuse materials segregated during the processing of the scrap metal within the scope of this removal action will be managed by the Subcontractor in accordance with guidelines established for Removal Action No. 9. The Subcontractor shall be responsible for shipping of the refuse materials.

All activities performed under this removal action will be coordinated with surrounding FEMP activities to minimize the potential for any interference and to protect human health and the environment. Prior to initiating activities on the FEMP site, the Subcontractor shall generate, for EPA approval, a detailed Subcontractor's RAPP, including a detailed description of the planned implementation activities, a time schedule for those actions, a sampling and analysis plan, personnel, equipment requirements and site restoration.

All processing sites, equipment, and interim storage facilities must be wholly owned and operated by the Subcontractor. No waste will be transported from the FEMP for storage or processing at a lower-tier subcontractor's facility.

If the processing of the recoverable scrap metal is to be performed on the FEMP site, the scrap processing site will be in the general vicinity of the metal piles, thus minimizing major material movement.

If the processing of the recoverable scrap metal is to be performed off the FEMP site, the Subcontractor will package, identify, label, and document the scrap metal for transport according to all applicable regulations. The Subcontractor will maintain a complete inventory of all metals processed and removed from the FEMP.

Upon completion of the work, the Subcontractor will be responsible for restoring the site, where its equipment was installed, to its original condition. All restoration work shall be completed in full accordance with current FEMP standard site engineering specifications, including general conditions, seeding, concrete, and asphalt work, if required.

2.2 PHASE II

Phase II will consist of two activities, the Phase IIA activity will be the containerization of the scrap copper pile by FEMP work forces, and the Phase IIB activity will consist of the processing and beneficial re-use of the scrap copper.

As part of Phase IIA it is anticipated that the scrap copper will be placed into sea-land containers and will be stored on-site pending disposition under the RFP for Phase IIB.

The detailed Subcontractor's RAPP for Phase IIB is conceptualized to consist of segregating the containerized copper and then melting the segregated copper into ingots. The anticipated uranium concentration of the copper ingots is anticipated to be approximately 70 pCi/g at the upper limit, with generally less than 20 pCi/g.

The following tasks are anticipated to be called out in the RFP for Phase IIB:

Any waste materials generated incidental to performing the activities under Phase IIB of this removal action will be treated/ containerized.

Refuse materials segregated during the processing of the scrap copper within the scope of this removal action will be managed by the Subcontractor in accordance with guidelines established for Removal Action No. 9. The Subcontractor shall be responsible for shipping of the refuse materials.

All activities performed under this removal action will be coordinated with surrounding FEMP activities to minimize the potential for any interference and to protect human health and the environment. Prior to initiating activities on the FEMP site, the Subcontractor shall generate, for EPA approval, a detailed Subcontractor's RAPP, including a detailed description of the planned implementation activities, a time schedule for those actions, a sampling and analysis plan, personnel, equipment requirements and site restoration.

All processing sites, equipment, and interim storage facilities must be wholly owned and operated by the Subcontractor. No waste will be transported from the FEMP for storage or processing at a lower-tier subcontractor's facility.

If the processing of the recoverable scrap copper is to be performed on the FEMP site, the scrap processing site will be in the general vicinity of the copper pile, thus minimizing major material movement.

If the processing of the recoverable scrap copper is to be performed off the FEMP site, the Subcontractor will package, identify, label, and document the waste for transport according to all applicable regulations. The Subcontractor will maintain a complete inventory of all metals processed and removed from the FEMP.

Upon completion of the work, the Subcontractor will be responsible for restoring the site, where its equipment was installed, to its original condition. All restoration work shall be completed in full accordance with current FEMP standard site engineering specifications, including general conditions, seeding, concrete, and asphalt work, if required.

3.0 PROGRAM MANAGEMENT

The following activities will be undertaken to provide planning and management for the removal action.

3.1 RESPONSIBILITIES

The DOE is the lead agency for this removal action and will coordinate the execution of this removal action. As stated in the Amended Consent Agreement under CERCLA 120 and 106(a), if the DOE determines under Section 104 that any activities or work being implemented under this Amended Consent Agreement may create an imminent threat to human health or the environment from the release or threat of release of hazardous substance, pollutant, contaminant, or hazardous constituent, it may stop any work or activities for such period of time as needed to respond and take whatever action is necessary to abate the danger. Reporting to the U.S. EPA will be in accordance with Section XXIII of the Amended Consent Agreement.

U.S. EPA shall review, comment on and approve the work plan and the detailed Subcontractor's RAPP for Phase I and IIB, follow progress through meetings/site visits and the Amended Consent Agreement progress reports.

WEMCO, the Maintenance and Operations Contractor at the FEMP, will coordinate, manage, implement, monitor activities and prepare all reports associated with the removal action in a manner consistent with the DOE and regulatory requirements and guidance.

This removal action shall be managed by the WEMCO/DOE OU3 team to ensure compatibility with the final remedial action(s) selected for OU3.

Ohio EPA, while not a signature party to the Amended Consent Agreement, maintains a significant role in the successful implementation of removal actions at the FEMP. Ohio EPA shall review and comment on the work plan and follow progress through meetings/site visits and the Amended Consent Agreement progress reports.

3.2 TRAINING

All personnel directly involved in the planning and implementation of this removal action will be trained in accordance with 29 CFR 1910.120, the standard operating procedures for the work involved, and with the requirements of the approved work plan. In addition, all personnel will successfully complete the required safety training sessions set forth by WEMCO including, but not limited to, radiation worker training, nuclear criticality training, respirator training and fit testing, and FEMP procedures developed and approved to implement this removal action.

3.3 SCHEDULE

Due to the fact that this removal action involves on-going procurement via RFPs, with proposals currently in review, schedules are proprietary at this time and cannot be finalized until the contracts for each phase are awarded. It is anticipated that the contract for Phase I will be awarded in June of 1992.

Table 2 - Key Milestones for Phase I

	Due Date
Forecasted Award of Contract	6/92
Submit Subcontractor's Removal Action Project Plan (1)	9/92
Complete Phase I	3/94
Submit Final Report	9/94

(1) Assuming Award of Contract by June 30, 1992

Table 3 - Key Milestones for Phase II

	Due Date
Initiate Containerization, Phase IIA	9/92
Forecasted Notification of RFP, Phase IIB	12/92
Forecasted Submittal of Sub-contractor's Removal Action Project Plan	9/93
Forecasted Submittal of Final Report	3/95

Phase I will be considered complete when the recoverable scrap metal piles, designated for Phase I of this removal action, are containerized, processed, decontaminated, and shipped off-site, as required. Phase IIA will be considered complete when scrap copper designated for this removal action is containerized. Phase IIB will be considered complete when the containerized copper is processed, decontaminated, and shipped off-site, as required.

4.0 SAMPLING AND ANALYSIS PLAN

Sampling efforts performed in conjunction with the packaging and disposal of scrap metal on the B69 Pad will be performed to characterize waste residues collected from the pad and/or generated during processing and decontamination for disposal consistent with both on-site procedures and regulatory compliance. A project specific Sampling and Analysis Plan will be provided by the Subcontractor prior to initiating field activities, as part of the detailed Subcontractor's RAPP. It is anticipated that the Sampling and Analysis Plan will include TCLP analysis, full HSL analysis, and full radiological analysis.

5.0 QUALITY ASSURANCE PLAN

This removal action will be conducted in accordance with the overall quality assurance program at the FEMP as described in the site Quality Assurance Plan. The Quality Assurance Plan is based on the criteria specified in ASME NQA-1, Federal EPA Guidelines QAMS-005/80 and DOE Orders 5700.1 and 5400.1. Detailed requirements are implemented by the WEMCO Site Policies and Procedures Manual, FMPC-2054, by WEMCO Departmental Procedures, and Topical Manuals. Sampling and analysis activities will be conducted consistent with the RI/FS QAPP. The U.S. EPA is in the process of reviewing a draft Sitewide Quality Assurance Project Plan (QAPjP) covering all sitewide sampling and analysis activities. Upon approval,

remaining sampling and analysis activities will be conducted consistent with the Sitewide QAPP. A project specific Quality Assurance Plan will be provided by the Subcontractor, as part of the detailed Subcontractor's RAPP, prior to initiating field activities.

6.0 HEALTH AND SAFETY PLAN

This removal action will be conducted in accordance with the provisions of the FEMP site-wide health and safety program (WMCO June 1990). Consistent with this program and 29 CFR 1910.120, a task specific health and safety plan will be prepared addressing the proposed work activities. The task specific health and safety plan will incorporate any changes resulting from the final approval of the work plan. A copy of the Health and Safety Plan will be finalized prior to field mobilization and will be made available to EPA upon request at that time. The Health and Safety Plan identifies, evaluates, and controls all safety and health hazards associated with this removal action. In addition, it provides for emergency response for hazardous operations. A draft Health and Safety Plan is available upon request. A project specific Health and Safety Plan will be provided by the Subcontractor, as part of the detailed Subcontractor's RAPP, prior to initiating field activities.

APPENDIX A

U.S. Department of Energy

Washington, D.C.

6046 **ORDER**

DOE 5400.5

2-8-90

SUBJECT: RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT

1. PURPOSE. To establish standards and requirements for operations of the Department of Energy (DOE) and DOE contractors with respect to protection of members of the public and the environment against undue risk from radiation.

2. SUPERSESSION. DOE 5480.1A, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROGRAM FOR DOE OPERATIONS, of 8-13-81, Chapter XI that addressed public and environmental radiation protection standards and control practices.

3. SCOPE. The provisions of this Order apply to all Departmental Elements and contractors performing work for the Department as provided by law and/or contract and as implemented by the appropriate contracting officer.

4. IMPLEMENTING PROCEDURES AND REQUIREMENTS. This Order becomes effective 3 months from the date of issuance. Within 1 month from the date of issuance of the Order, Heads of Operations Offices shall provide to the appropriate Program Office with copy to EH-1 for review and comment: (1) a certification for those areas covered by the Order for which Site/Operations Offices are in compliance; and/or (2) a request for exemption for areas of non-compliance that includes a Plan for achieving compliance. Within 2 months of issuance, the appropriate Program Office will submit to EH-1 the certification and/or the request for exemption(s). The compliance plan shall include schedules for achieving compliance with the requirements of this Order within 3 months after issuance of this Order.

5. POLICY. It is the policy of DOE to implement legally applicable radiation protection standards and to consider and adopt, as appropriate, recommendations by authoritative organizations, e.g., the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP). It is also the policy of DOE to adopt and implement standards generally consistent with those of the Nuclear Regulatory Commission (NRC) for DOE facilities and activities not subject to licensing authority.

6. OBJECTIVES.

   a. Protecting the Public. It is DOE's objective to operate its facilities and conduct its activities so that radiation exposures to members of the public are maintained within the limits established in this Order and to control radioactive contamination through the management of real and personal property. It is also a DOE objective that potential exposures to members of the public be as far below the limits as is reasonably achievable (ALARA) and that DOE facilities have the capabilities, consistent with the types of operations conducted, to monitor routine and non-routine releases and to assess doses to members of the public.

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Office of Environment, Safety and Health

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b. Protecting the Environment. In addition to providing protection to members of the public, it is DOE's objective to protect the environment from radioactive contamination to the extent practical.

7. LEGISLATIVE AUTHORITY. The Atomic Energy Act of 1954, as amended, authorizes the Department to protect the health and safety of the public against radiation in conducting the Department's programs.

8. REFERENCES.

a. DOE 1324.2A, RECORDS DISPOSITION, of 9-13-88, which prescribes policies, procedures, standards, and guidelines for the orderly disposition of records of the DOE and its operating contractors.

b. DOE 5000.3, UNUSUAL OCCURRENCE REPORTING SYSTEM, of 11-7-84, which establishes DOE policy and provides instructions for reporting, analyzing, and disseminating information on programmatically significant events.

c. DOE 5400.1, GENERAL ENVIRONMENTAL PROTECTION PROGRAM REQUIREMENTS, of 11-9-88, which establishes general environmental protection requirements.

d. DOE 5400.2A ENVIRONMENT COMPLIANCE ISSUE COORDINATION, of 8-18-87, which establishes requirements for coordination of significant environmental compliance issues.

e. DOE 5400.4, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT PROGRAM, of 10-6-89, which establishes requirements for hazardous waste cleanup and notification.

f. DOE Orders in the 5400 series dealing with radiological effluent monitoring and environmental surveillance, which describes requirements and provides guidance for monitoring effluents and conducting environmental surveillance.

g. DOE 5440.1C, IMPLEMENTATION OF THE NATIONAL ENVIRONMENTAL POLICY ACT, of 4-9-85, which establishes DOE policy for implementation of the National Environmental Policy Act of 1969.

h. DOE 5480.1B, ENVIRONMENT, SAFETY, AND HEALTH PROGRAM FOR DEPARTMENT OF ENERGY OPERATIONS, of 9-23-86, which outlines environmental, safety, and health protection policies and responsibilities.

i. DOE 5480.4, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION STANDARDS, of 5-1-84, which identifies mandatory and reference environmental, safety, and health standards.

j. DOE 5480.5, SAFETY OF NUCLEAR FACILITIES, of 9-23-86, which establishes nuclear facility safety program requirements.

k. DOE 5480.6, SAFETY OF DEPARTMENT OF ENERGY-OWNED NUCLEAR REACTORS, of 9-23-86, which establishes nuclear reactor safety program requirements.

l. DOE 5480.11, RADIATION PROTECTION FOR OCCUPATIONAL WORKERS, of 12-21-88, which establishes radiation protection standards and program requirements for workers.

m. DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEM, of 9-23-86, which establishes uniform requirements for the preparation and review of safety analysis documents.

n. DOE 5482.1B, ENVIRONMENT, SAFETY, AND HEALTH APPRAISAL PROGRAM, of 9-23-86, which establishes the DOE environment, safety, and health appraisal program.

o. DOE 5483.1A, OCCUPATIONAL SAFETY AND HEALTH PROGRAM FOR DOE EMPLOYEES AT GOVERNMENT-OWNED, CONTRACTOR-OPERATED FACILITIES, of 6-22-83, which establishes requirements for the protection of the health and safety of employees at DOE contractor-operated facilities.

p. DOE 5484.1, ENVIRONMENTAL PROTECTION, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS, of 2-24-81, which establishes procedures for the reporting of information having environmental protection, safety, or health protection significance.

q. DOE Orders in the 5500 series that outline responsibilities for emergency preparedness and response.

r. DOE 5820.2A, RADIOACTIVE WASTE MANAGEMENT, of 9-26-88, which establishes policies and guidelines for the management of radioactive waste and contaminated facilities.

s. DOE 6430.1, GENERAL DESIGN CRITERIA, of 12-12-83, which provides general design criteria for use in the acquisition of the Department's facilities and establishes responsibilities and authorities for the development and maintenance of those criteria.

t. DOE publication DOE/EH-0070, "External Dose-Rate Conversion Factors for Calculation of Dose to the Public," of 7-88, which provides conversion factors for use in calculating dose from radionuclides external to the body.

u. DOE publication DOE/EH-0071, "Internal Dose Conversion Factors for Calculation of Dose to the Public," of 7-88, which provides conversion factors for use in calculating dose from radionuclides in the body.

v. DOE publication DOE/EV/1830-T5, "A Guide to Reducing Radiation Exposure to as Low as Reasonably Achievable," of 4-80, which provides contractor personnel with general guidance regarding programs and techniques to reduce radiation exposure to levels as low as is reasonably achievable.

w. DOE publication, "Formerly Utilized Sites Remedial Action Program; Summary Protocol: Identification - Characterization - Designation - Remedial Action - Certification," of 1-86, which provides procedures for conducting remedial actions at formerly utilized sites.

x. DOE/CH-8901, "A Manual for Implementing Residual Radioactive Material Guidelines; A Supplement to U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites," of 6-89, which provides guidance on the implementation of DOE residual radioactive material limits.

y. EPA Publication EPA-520/1-88-020, Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," of 1988, which provides preferred dose conversion factors for use by Federal agencies.

z. Title 10 CFR Part 60, "Disposal of High-Level Wastes in Geologic Repositories," which prescribes rules governing the licensing of DOE to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area.

aa. Title 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (ISFSI)," which establishes requirements, procedures, and criteria for licensing ISFSI.

bb. Title 40 CFR Part 61, Subpart H, "National Emission Standard for Radionuclide Emissions from Department of Energy (DOE) Facilities," which regulates radionuclide air emissions from DOE facilities.

cc. Title 40 CFR Part 141, "National Interim Primary Drinking Water Regulations (Safe Drinking Water Act)," which prescribes radionuclide concentration limits for public drinking water.

dd. Title 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," which contains the radiation dose limits for members of the public in the general environment and curie release limits for radioactive materials released into the general environment from operations within the nuclear fuel cycle operations that are associated with the production of electrical power.

ee. Title 40 CFR Part 191, "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Wastes," which establishes requirements for the management and disposal of spent nuclear fuel, high-level, and transuranic wastes.

ff. Title 40 CFR Part 192, "Standards for Remedial Actions at Inactive Uranium Processing Sites," of 1-5-83, which concerns the control of residual radioactive material at designated processing or disposal sites.

gg. Title 42 U.S.C. 300, et seq., Safe Drinking Water Act, as amended, which authorizes EPA to promulgate regulations under two specific programs: the first protects the Nation's public drinking water supplies; the second protects subsurface waters by regulating underground injection of materials.

hh. Title 42 U.S.C. 2011, et seq., Atomic Energy Act of 1954, as amended, which authorizes the conduct of atomic energy activities and establishes authority for protecting the health and safety of the public.

ii. Title 42 U.S.C. 4341, et seq., National Environmental Policy Act of 1969, as amended, which establishes broad national environmental policy.

jj. Title 42 U.S.C. 7401, et seq., Clean Air Act, as amended, which provides requirements to protect and enhance the quality of the Nation's air resources, to promote the public health and welfare.

kk. Title 47 FR 47073, "Food and Drug Administration (FDA) Accidental Radioactive Contamination of Human Food and Animal Feeds; Recommendations for State and Local Agencies," which provides guidance for protecting consumers of produce following a nuclear accident.

ll. Title 48 CFR Part 923.70, "Environmental Conservation and Occupational Safety," which contains the basic provisions of the DOE Environment, Conservation and Occupational Safety Program.

mm. Title 48 CFR Part 970.23, "DOE Management and Operations Contracts, Environmental Conservation, and Occupational Safety," which contains supplemental information to Title 48 CFR Part 923.70 in providing the basic provisions of the DOE Environment, Conservation and Occupational Safety Program.

nn. International Commission on Radiological Protection (ICRP) Publication 23, "Reference Man: Anatomical, Physiological and Metabolic Characteristics," Pergamon Press, Oxford.

oo. ICRP Publication 26, "Recommendations of the International Commission on Radiological Protection."

pp. ICRP Publication 30, "Limits for Intakes of Radionuclides by Workers."

qq. ICRP Publication 45, "Quantitative Bases for Developing a Unified Index of Harm."

rr. ICRP Publication 48, "The Metabolism of Plutonium and Related Elements."

ss. National Council on Radiation Protection and Measurements (NCRP) Report No. 91, "Recommendations on Limits for Exposure to Ionizing Radiation."

tt. Nuclear Regulatory Commission, Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," of 6-74, which establishes limits for surface contamination on materials and equipment.

uu. Nuclear Regulatory Commission publication, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material," of 7-82.

vv. Oak Ridge National Laboratory (ORNL), Publication CCC - 475, 11-86, "CAAC - Code System for Implementation of Atmospheric Dispersion Assessment Required by the Clean Air Act." RSIC Computer Code Collection.

9. RESPONSIBILITIES AND AUTHORITIES.

a. The Secretary. Many provisions in this Order permit and/or necessitate the exercise of discretion and/or judgment in carrying out the requirements of the Order. In those instances, the determination of whether, in the exercise of such discretion and/or judgment, the requirements of this Order were complied with rests initially with the relevant Department authority and, ultimately, with the Secretary. The Secretary retains the sole and final authority to determine what acts are necessary to comply with this Order. Further, the Secretary retains the authority to suspend any and all requirements under this Order whenever the Secretary deems it necessary. This authority may be delegated by the Secretary as appropriate.

b. In addition to those responsibilities and authorities contained in DOE 5480.1B and DOE 5400.1, the following responsibilities and authorities are assigned:

(1) Assistant Secretary for Environment, Safety and Health (EH-1)

(a) Develop DOE public and environmental radiation protection policy and requirements; and

(b) Approve, if warranted, specific exceptions to this Order, pursuant to provisions in DOE 5400.1 and DOE 5820.2A.

(2) Program Assistant Secretaries and Directors of Energy Research (ER) and Civilian Radioactive Waste Management (RW)

(a) Implement DOE public and environmental radiation protection policy and requirements in their respective programs; and

(b) Implement, if warranted, interim control strategies proposed by field organizations pursuant to this Order and DOE 5820.2A.

(3) Managers of Operations Offices

(a) Implement provisions of this Order for their respective activities;

(b) Maintain appropriate capabilities at each operating site for monitoring and assessing routine and unplanned releases of radioactive materials, with respect to the characteristics of radioactive material released and the release modes, consistent with the types of operations conducted;

(c) Process specific requests for exceptions to this Order, pursuant to paragraph II.1a(4); and

(d) Temporarily suspend the requirements of this Order when doing so is in their judgement necessary to minimize damage to life or property or to protect public health or safety. Whenever this provision is invoked, such suspension and the reason therefore are to be reported to EH-1 at the earliest practicable time.

(4) Director, Naval Nuclear Propulsion Program: Executive Order 12344, statutorily prescribed by PL 98-525 (42 USC 7158 note) establishes the responsibilities and authority of the Director, Naval Nuclear Propulsion Program (who is also the Deputy Assistant Secretary for Naval Reactors within the Department) over all facilities and activities which comprise the Program, a joint Navy-DOE organization. The policy principle promoted by these executive and legislative actions is cited in the Executive Order as "...preserving the basic structure, policies, and practices developed for this Program in the past...". Accordingly, The Naval Nuclear Propulsion Program is exempt from the provisions of this Order. The Director shall maintain an environmental protection program to ensure compliance with applicable environmental statues and regulations. The Director and EH-1 shall cooperatively develop information exchange and other mutually beneficial programs as appropriate, consistent with PL 98-525.

10. DEFINITIONS.

a. As Low As Reasonably Achievable (ALARA) is a phrase (acronym) used to describe an approach to radiation protection to control or manage exposures (both individual and collective to the work force and the general public) and releases of radioactive material to the environment as low as social, technical, economic, practical, and public policy considerations permit. As used in this Order, ALARA is not a dose limit, but rather it is a process that has as its objective the attainment of dose levels as far below the applicable limits of the Order as practicable.

b. Best Available Technology (BAT) means the preferred technology for treating a particular process liquid waste, selected from among others after taking into account factors related to technology, economics, public policy, and other parameters. As used in this Order, BAT is not a specific level of treatment, but the conclusion of a selection process that includes several treatment alternatives.

c. Derived Concentration Guide (DCG) is the concentration of a radionuclide in air or water that, under conditions of continuous exposure for one year by one exposure mode (i.e., ingestion of water, submersion in air, or inhalation), would result in an effective dose equivalent of 100 mrem 0.1 rem (1 mSv). DCGs do not consider decay products when the parent radionuclide is the cause of the exposure (DCG values are presented in Chapter III) (1 rem = 0.01 sievert).

d. Dose Terms.

(1) Absorbed Dose is the energy imparted to matter by ionizing radiation per unit mass of irradiated material at the place of interest in that material. The absorbed dose is expressed in units of rad (or gray). (1 rad = 0.01 gray.)

(2) Collective Dose Equivalent and Collective Effective Dose Equivalent are the sums of the dose equivalents or effective dose equivalents of all individuals in an exposed population within an 80-km radius, for the purposes of this Order, and they are

expressed in units of person-rem (or person-sievert). When the collective dose equivalent of interest is for a specific organ, the units would be organ-rem (or organ-sievert). For purposes of this Order, the 80-km distance shall be measured from a point located centrally with respect to major facilities or DOE program activities.

(3) Committed Dose Equivalent is the predicted total dose equivalent to a tissue or organ over a 50-year period after a known intake of a radionuclide into the body. It does not include contributions from external dose. Committed dose equivalent is expressed in units of rem (or sievert).

(4) Committed Effective Dose Equivalent is the sum of the committed dose equivalents to various tissues in the body, each multiplied by the appropriate weighting factor. Committed effective dose equivalent is expressed in units of rem (or sievert).

(5) Deep Dose Equivalent, as used in this Order, means the dose equivalent in tissue at a depth of 1 cm deriving from external (penetrating) radiation.

(6) Dose Equivalent is the product of absorbed dose in rad (or gray) in tissue and a quality factor. Dose equivalent is expressed in units of rem (or sievert).

(7) Effective Dose Equivalent is the summation of the products of the dose equivalent received by specified tissues of the body and a tissue-specific weighting factor. This sum is a risk-equivalent value and can be used to estimate the health-effects risk of the exposed individual. The tissue-specific weighting factor represents the fraction of the total health risk resulting from uniform whole-body irradiation that would be contributed by that particular tissue. The effective dose equivalent includes the committed effective dose equivalent from internal deposition of radionuclides and the effective dose equivalent due to penetrating radiation from sources external to the body. Effective dose equivalent is expressed in units of rem (or sievert).

(8) Public Dose means the dose received by member(s) of the public from exposure to radiation and to radioactive material released by a DOE facility or operation, whether the exposure is within a DOE site boundary or off- site. It does not include dose received from occupational exposures, doses received from naturally occurring "background" radiation, doses received as a patient from medical practices, or doses received from consumer products.

(9) Weighting Factor is tissue-specific and represents the fraction of the total health risk resulting from uniform, whole-body irradiation that could be contributed to that particular tissue. The weighting factors recommended by the ICRP (Publication 26) and used here are

Organ or Tissue	Weighting Factor
Gonads	0.25
Breasts	0.15
Red Bone Marrow	0.12
Lungs	0.12
Thyroid	0.03
Bone Surfaces	0.03
Remainder[1]	0.30

[1] "Remainder means the five other organs with the highest dose (e.g., liver, kidney, spleen, thymus, adrenal, pancreas, stomach, small intestine, or upper and lower large intestine, but excluding skin, lens of the eye, and extremities). The weighting factor for each of these organs is 0.06.

(10) Quality Factor is the principal modifying factor used to ulate the dose equivalent from the absorbed dose. For the purposes of this Order, the following quality factors, which are taken from DOE 5480.11, are to be used.

Radiation Type	Quality Factor
X-rays, gamma rays, positrons, and electrons (including tritium)	1
Neutrons, <10 keV	3
Neutrons, >10 keV	10
Protons and single charged particles of unknown energy with rest mass > one atomic mass unit	
Alpha particles	20
Multiple-charged particles (and particles of unknown charge) of unknown energy	

For neutrons of known energies, the more detailed quality factors given in DOE 5480.11 may be used.

e. Members of the Public means persons who are not occupationally associated with the DOE facility or operations, i.e., persons whose assigned occupational duties do not require them to enter the DOE site. (Also see Dose Terms: Public Dose.)

f. Monitoring Terms.

(1) Effluent Monitoring is the collection and analysis of samples or measurements of liquid and gaseous effluents for purposes of characterizing and quantifying contaminants, assessing radiation exposures of members of the public, and demonstrating compliance with applicable standards.

(2) Environmental Surveillance is the collection and analysis of samples of air, water, soil, foodstuffs, biota, and other media from DOE sites and their environs and the measurement of external radiation for purposes of demonstrating compliance with applicable standards, assessing radiation exposures of members of the public, and assessing effects, if any, on the local environment.

g. Protective Action Guides (PAG) are projected numerical dose values established by EPA, DOE, or States for individuals in the population. These values may trigger protective actions that would reduce or avoid the projected dose.

h. Radioactivity means the property or characteristic of radioactive material to spontaneously "disintegrate" with the emission of energy in the form of radiation. The unit of radioactivity is the curie (or becquerel).

i. Reference Man means a hypothetical aggregation of human (male and female) physical and physiological characteristics arrived at by international consensus (ICRP Publication 23). These characteristics may be used by researchers and public health workers to standardize results of experiments and to relate biological insult from ionizing radiation to a common base. The "reference man" is assumed to inhale 8400 cubic meters of air in a year and to ingest 730 liters of water in a year.

j. Release of Property, as used in this Order, means the exercising of DOE's authority to release property from its control after confirming that residual radioactive material (over which DOE has authority) on the property has been determined to meet the guidelines for residual radioactive material in Chapter IV or any other applicable radiological requirements. There may be instances in which DOE or other authority will impose restrictions on the management and/or use of the property if the residual radioactive material guidelines of Chapter IV are not met or if other applicable Federal, State, or local requirements cause the imposition of such restrictions.

k. Remedial Action means those actions consistent with permanent remedy taken instead of, or in addition to, removal action in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment.

l. Residual Radioactive Material means any radioactive material which is in or on soil, air, equipment, or structures as a consequence of past operations or activities.

m. Settleable Solids means those solids suspended in waste water that are determined to be settleable using Method 209 E, Settleable Solids pp 98 and 99, 16th edition, Standard Methods for Examination of Water and Waste Water.

n. Sewerage Terms.

(1) Sewage means the waste matter that passes through sewers.

(2) Sewer means the artificial conduit, usually underground, for carrying off waste water and refuse.

(3) Sewerage means the system of sewers.

o. Soil Column is an in situ volume of soil down through which liquid wastes percolate from ponds, cribs, seepage basins, or trenches.

p. Stochastic Effects are biological effects, the probability, rather than the severity, of which is a function of the magnitude of the radiation dose without threshold; i.e., stochastic effects are random in nature. Nonstochastic Effects are biological effects, the severity of which, in affected individuals, varies with the magnitude of the dose above a threshold value.

BY ORDER OF THE SECRETARY OF ENERGY:

DONNA R. FITZPATRICK
Assistant Secretary
Management and Administration

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CHAPTER I

GENERAL

1. BACKGROUND. This Order has been developed to integrate, consolidate, and update the portions of DOE 5480.1A that addressed public and environmental radiation protection standards and control practices. Specifically, this Order replaces requirements of DOE 5480.1A, Chapter XI; adopts current guidance and standards issued by national and international authoritative bodies on radiation protection; incorporates current regulatory requirements applicable to DOE operations; and consolidates and upgrades DOE guidance for contaminated property. The following paragraphs provide a summary of the topics considered in this Order.

2. DOSE STANDARDS AND TERMINOLOGY.

   a. International Commission on Radiological Protection (ICRP). This Order adopts and implements radiation protection dose standards consistent with the recommendations of the ICRP. In 1977, the ICRP recommended a system of dose limitations that has been adopted and implemented by essentially all countries with nuclear programs. The ICRP system of dose limitations provides a scientific basis for health protection and selection of dose limits. The system also reflects current information on health risks, dosimetry, and radiation practices, and promotes a more uniform and consistent application of radiation protection among diverse activities than had previously been possible. The ICRP system is based on sophisticated analytical models and requires computer capabilities for making evaluations or using the dose conversion tables produced from such evaluations.

   b. Other Sources of Regulations and Guidance. DOE is required to comply with legally applicable rules and regulations of other Federal, State, and local agencies, some of which have not adopted the ICRP system. The result is a mixture of dose standards, terminology, and units. Therefore, some dose limits in this Order are expressed in terms of effective dose equivalent, consistent with current ICRP recommendations, while others are expressed in terms of dose equivalent to the whole body or to specific organs, consistent with pre-1977 recommendations of ICRP. The presentation of this Order includes both the more traditional dose terms and units and the new dose terms and concepts introduced by the ICRP for their system of dose limitations. Definitions presented in this Order are consistent with the definitions presented in related Orders, such as DOE 5480.11.

3. DOSE LIMIT SELECTION. The DOE primary standard of 100 mrem (1 mSv) effective dose equivalent to members of the public in a year is lower than the previous primary limit of 500 mrem (5 mSv). The lower value was selected in recognition of the ICRP recommendation to limit the long-term average effective dose equivalent to 100 mrem (1 mSv) per year, or less. Experience suggests that the lower dose is readily achievable for normal operations of DOE facilities. A higher dose limit, not to exceed the 500-mrem effective dose equivalent recommended by ICRP as an occasional annual limit, may be authorized for a limited period if it is justified by unusual operating conditions.

4. AS LOW AS REASONABLY ACHIEVABLE (ALARA). The DOE primary public dose limit is based on consideration of the potential risk of radiation-induced fatal cancers and serious genetic defects (i.e., the ICRP risk-based system). The ICRP recommends that doses to individuals be within the appropriate dose limit for the individuals and that all exposures be ALARA. Accordingly, this Order adopts the ALARA process in planning and carrying out all DOE activities.

5. LIQUID WASTES AND EFFLUENTS.

   a. Protection of Resources. In addition to limiting dose to members of the public (onsite or offsite) to the primary radiation protection standards established in this Order and to the applicable limits of EPA and State regulations, additional controls on the release of liquid wastes are adopted to reduce the potential for radiological contamination of natural resources such as land, ground and surface water, and ecosystems.

   b. Treatment of Liquid Radioactive Waste Streams. Standards for liquid effluent discharges are driven by the DOE ALARA policy and objective to minimize contamination in the environment to the extent practicable. The Order adopts the "best available technology" (BAT) as the appropriate level of treatment for liquid wastes containing radioactive material and provides that the BAT be phased in at the earliest practicable time. Technical and economic considerations are included in determining the BAT. Based on cost and benefit considerations, radioactive waste streams that contain radionuclide concentrations of not more than the derived concentration guide (DCG) reference values at the point of discharge to a surface waterway normally will not require treatment to further reduce the concentration. BAT treatment is provided to protect ground water and to prevent radionuclide buildup in soil.

6. ENVIRONMENTAL PROTECTION. The phasing out of the use of soil columns and the additional requirements associated with the burial of low-level radioactive wastes (discussed in Chapter II) address concerns with potential long-term contamination of the environment on and near DOE activities and

sites. These requirements are intended to prevent the buildup of contamination in soils and ground water and to protect the environment from the spread of contamination from burial trenches and pits.

7. DISCHARGES TO SANITARY SEWERAGE. The control of releases of liquid wastes to community sanitary sewer systems is designed to be generally consistent with requirements imposed by NRC on its licensees. As discussed in Chapter II, the "best available technology" (BAT) selection process is to be applied to the treatment of liquid wastes released to sanitary sewerage when concentrations of radionuclides would otherwise exceed five times the DCG reference values given in Chapter III. Operators should ensure that the total annual discharge of radioactive material to the sanitary sewer system will not cause exposures to members of the general public that will result in doses exceeding a small fraction of the basic annual dose limit.

8. EFFLUENT MONITORING AND ENVIRONMENTAL SURVEILLANCE.

   a. Demonstration of Compliance. Demonstrations of compliance with requirements of this Order generally will be based upon calculations that make use of information obtained from monitoring and surveillance programs. The abilities to detect, quantify, and adequately respond to unplanned releases of radioactive material to the environment also rely on in-place effluent monitoring, monitoring of environmental transport and diffusion conditions, and assessment capabilities. This will enable DOE to develop useful data and to collect and analyze pertinent information on unplanned releases in a timely manner. It is the intent of DOE that the monitoring and surveillance programs for the DOE activities, facilities, and locations be of high quality. Although some differences result from specific site or specific activity conditions, uniformity in the methods and performance criteria used in obtaining the information is desirable.

   b. Monitoring and Surveillance Requirements. To ensure that the effluent monitoring and environmental surveillance programs are of good quality at all DOE facilities and sites, certain requirements and recommendations are provided in DOE Orders in the 5400 series which deal with radiological effluent monitoring and environmental surveillance.

9. RESIDUAL RADIOACTIVE MATERIAL. DOE practices and requirements for residual radioactive material are presented in Chapter IV, including limits of potential dose, authorized contamination limits for the release of property, and ALARA considerations.

10. DOSE EVALUATIONS

   a. Standard Methods. Data developed by the Department to demonstrate that DOE operations comply with applicable standards and requirements should be correct and representative. Accordingly, this Order requires that calculations of dose to the public from exposures resulting from both

routine and unplanned activities be performed using standard EPA or DOE dose conversion factors or analytical models prescribed in regulations applicable to DOE operations.

b. Supplemental Documents. The dose conversion factors and derived concentrations needed to make dose evaluations to meet DOE requirements are provided in Chapter III and three supplemental documents: EPA-520/1-88-020, Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration Factors for Inhalation, Submersion, and Ingestion;" DOE/EH-0071, "Internal Dose Conversion Factors for Calculation of Dose to the Public," and DOE/EH-0070, "External Dose-Rate Conversion Factors for Calculation of Dose to the Public." The dose conversion factors in these documents provide the primary basis for determining compliance with this Order. The table of DCGs (Chapter III) has been expanded considerably to present all classes of uptake and retention.

c. EPA Models. The use of AIRDOS/RADRISK, CAP-88, or AIRDOS-PC models is prescribed by EPA in 40 CFR Part 61, Subpart H, to evaluate potential doses from airborne releases. Thus, two evaluations of doses from airborne pathways could be required: one to satisfy 40 CFR Part 61 requirements and one for DOE purposes using contemporary dosimetry. [Caution: Unless modified, AIRDOS/RADRISK (also known as CAP-88 or AIRDOS-PC) is not suitable for calculating doses from accidents.]

11. REPORTING. The Order addresses the notification of headquarters personnel when DOE activities might have caused, or might cause, a noncompliance with requirements of this Order. These requirements are in addition to the general requirements for reporting, specified in DOE 5484.1. "Federally permitted" designation of releases, for purposes of EPA reporting requirements, are addressed in section II.7.

CHAPTER II

REQUIREMENTS FOR RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT

1. PUBLIC DOSE LIMITS. Dose limits for members of the public are presented in this chapter. The primary public dose limits include consideration of all exposure modes from all DOE activities (including remedial actions). The primary dose limit is expressed as an effective dose equivalent, a term developed by the ICRP for their risk-based system, which requires the weighted summation of doses to various organs of the body. Additional public dose limits are established by EPA regulations for exposures to several selected sources or exposure modes (pathways or conditions). Public dose limits promulgated by EPA for selected exposure modes are sometimes expressed as dose equivalents, which do not include risk-based weighting or summation of doses to various organs, and sometimes expressed as effective dose equivalent. DOE must also comply with legally applicable requirements (e.g., 40 CFR Parts 61, 191, and 192 and 10 CFR Parts 60 and 72), including administrative and procedural requirements. Except for those provided in paragraph II.1a(4), administrative and procedural requirements of legally applicable regulations are not addressed in this Order. Such legally applicable regulations must be consulted for provisions not addressed in this Order.

   a. DOE Public Dose Limit--All Exposure Modes, All DOE Sources of Radiation. Except as provided by II.1a(4), the exposure of members of the public to radiation sources as a consequence of all routine DOE activities shall not cause, in a year, an effective dose equivalent greater than 100 mrem (1 mSv). Dose evaluations should reflect realistic exposure conditions (see II.6b).

      (1) Dose Components. The limit of 100 mrem (1 mSv) effective dose equivalent in a year specified in paragraph II.1a is the sum of the effective dose equivalent (or deep dose equivalent, if dosimeter data are used) from exposures to radiation sources external to the body during the year plus the committed effective dose equivalent from radionuclides taken into the body during the year.

      (2) Exposure Modes. Other than for sources specifically excepted, doses to members of the public from all exposure modes that could contribute significantly to the total dose shall be considered for evaluation. Requirements and methods for performing the evaluations are discussed in paragraph II.6.

(3) Application. The public dose limits in paragraph II.1a apply to doses from exposures to radiation sources from routine activities, including remedial actions and naturally occurring radionuclides released by DOE processes and operations. The dose limits also apply to the doses to individuals who are exposed to radiation or contamination by radionuclides at properties subsequent to remedial action and release of the property. Limits for radon and its decay products in air are provided in terms of Working Levels and concentrations in air and are addressed independently (Chapter IV and Figure III-1). In addition, DOE operators are required to report DOE-related effective dose equivalent contributions of 10 mrem (0.10 mSv) or more in a year (see paragraph II.7).

(a) Doses from Sources Other than DOE Man-Made or Enhanced Natural Radionuclides. Except for medical sources, consumer products, residual fallout from past nuclear accidents and weapons tests, and naturally occurring radiation sources, DOE operators shall make a reasonable effort to be aware of the existence of other than DOE man-made sources of radiation which, combined with the DOE sources, might present a potential for exceeding contributions of 10 mrem (0.1 mSv) effective dose equivalent in a year. Reasonable efforts shall be made to limit dose to members of the public, from multiple sources of radiation, to 100-mrem (1 mSv) effective dose equivalent, or less, in a year. EH-1 and the appropriate headquarters Project Offices shall be notified if the 100-mrem in a year dose limit cannot be achieved.

(b) Doses Not Included in Evaluations. The public dose limits do not apply to doses from medical exposures, consumer products, and generally do not apply to doses from naturally occurring radiation sources or from exposures due to accident conditions, where controls of exposures cannot be maintained. The policy and requirements relating to protective actions following the uncontrolled release of radionuclides are set forth in the DOE 5500 series of directives. Requirements for planning to prevent or mitigate accidents and their effects are presented in DOE 5480.5, SAFETY OF NUCLEAR FACILITIES, and DOE 5480.6, SAFETY OF DEPARTMENT OF ENERGY-OWNED NUCLEAR REACTORS.

(c) Doses from Underground Nuclear Weapons Tests. The unanticipated release of radioactive material due to venting or seepage from underground nuclear weapons is considered to be an accident. However, the release of radioactive material that results from planned sampling or reentry following an underground nuclear weapons test is not an accidental condition, and shall be controlled in accordance with this standard.

(4) Exceptions. Unusual circumstances could affect a DOE activity in such a manner that the potential public dose could exceed an effective dose equivalent of 100 mrem (1 mSv) in a year.

(a) Temporary Increases of Dose Limit. If avoidance of the higher exposures is impracticable, the Operations Office may request, from EH-1, specific authorization for a temporary public dose limit higher than 100 mrem (1 mSv), but not to exceed 500 mrem (5 mSv), for the year. The temporary higher dose limit derives from ICRP recommendations (ICRP Publication 45) for a principal stochastic dose limit of 100 mrem (1 mSv) effective dose equivalent in a year for exposures to the public, and a subsidiary dose limit of 500 mrem (5 mSv) effective dose equivalent in a year, for some years, if the dose averaged over a lifetime does not exceed the principal limit of 100 mrem (1 mSv) effective dose equivalent per year. The specific sources excepted in paragraph II.1a(3)(b) are also excepted for II.1a(4)(a).

(b) Justification for Increase of Public Dose Limit. A request to EH-1 for a dose limit higher than 100 mrem (1 mSv) shall be accompanied by documentation that discusses the need for the increase, the alternatives considered, and the application of the ALARA process. EH-1 may approve such a request, or a lesser increase in the public dose limit, as appropriate.

b. Airborne Emissions Only, All DOE Sources of Radionuclides. To the extent required by the Clean Air Act, the exposure of members of the public to radioactive materials released to the atmosphere as a consequence of routine DOE activities shall not cause members of the public to receive, in a year, an effective dose equivalent greater than 10 mrem (0.1 mSv). Exposures to, and releases of, radon-220, radon-222, and their respective decay products are subject to DOE limits (See Figure III-3 and paragraphs IV.4b and IV.6).

(1) Title 40 CFR Part 61. The public dose limits as outlined in paragraph II.1b are established by EPA regulation 40 CFR Part 61, Subpart H, under the authority of the Clean Air Act. These limits apply offsite where the members of the public reside or abide. Subparts Q and T provide radon flux limits for DOE radium storage and disposal facilities (Chapter IV) and DOE inactive uranium mill tailings sites regulated under 40 CFR Part 192.

(2) AIRDOS/RADRISK Codes. To demonstrate compliance analytically with air emissions for the Clean Air Act Standards, doses to the individuals shall be evaluated using the version of AIRDOS/RADRISK known as CAP-88 or, when available and approved, AIRDOS-PC. Other computer codes or models, such as "Comply Code," which are specifically approved in accordance with 40 CFR Part 61, may also be used.

(3) Environmental Measurements. Compliance may also be demonstrated through environmental or effluent measurements using EPA-approved techniques. In this case, the doses estimated are to individuals in areas offsite, where they are assumed to reside at the point of maximum annual air concentration.

c. All Exposure Modes, Sources from Management and Storage of Spent Nuclear Fuel, High-Level, and Transuranic Wastes at Disposal Facilities. To the extent required by 40 CFR Part 191, the exposure of members of the public to direct radiation or radioactive material released from DOE management and storage activities at a disposal facility for spent nuclear material or for high-level or transuranic radioactive wastes that are not regulated by the NRC shall not cause members of the public to receive, in a year, a dose equivalent greater than 25 mrem (0.25 mSv) to the whole body or a committed dose equivalent greater than 75 mrem (0.75 mSv) to any organ.

(1) 40 CFR Part 191. The dose limits as outlined in paragraph II.1c, are established by Section 191.03(b) of EPA regulation 40 CFR Part 191, Subpart A, "Environmental Standards for Management and Storage." The implementation of the requirements of Subpart B, "Environmental Standards for Disposal," is beyond the scope of this Order. DOE waste management and storage activities at facilities other than disposal facilities are subject to the dose limits outlined in paragraph II.1c. The Waste Isolation Pilot Plant, for purposes of this Order, is considered to be a disposal facility subject to this Order and 40 CFR Part 191. Other requirements and guidelines for the management and storage of spent nuclear fuel and high-level and transuranic waste at DOE facilities that are not licensed by the NRC are given in DOE 5820.2A.

(2) Regulatory Requirements. DOE facilities and operations, in some instances, are subject to the regulatory requirements of the NRC and the EPA, e.g., 10 CFR Parts 60 and 72 and 40 CFR Parts 61, 191, and 192. It is Departmental policy that DOE facilities and operations will comply fully with the requirements of those and other applicable regulatory requirements. In addition, these same DOE facilities and operations shall comply with all applicable requirements in this Order unless they are duplicative or conflict with any of the other Federal regulatory requirements. The resolution of issues concerning duplicative or conflicting requirements will be conducted pursuant to the issue coordination provisions of DOE 5400.2A.

(3) Evaluation of Exposure Modes. Dose conversion factors that provide dose estimates for exposure to concentrations of specific radionuclides in air and water and selected exposure modes are

provided in the documents Federal Guidance Report No. 11 (EPA-520/1-88-020), DOE/EH-0070 and DOE/EH-0071. Use of these factors is discussed in paragraph II.6b.

d. Drinking Water Pathway Only, All DOE Sources of Radionuclides. It is the policy of DOE to provide a level of protection for persons consuming water from a public drinking water supply operated by the DOE, either directly or through a DOE contractor, that is equivalent to that provided to the public by the public community drinking water standards of 40 CFR Part 141. These systems shall not cause persons consuming the water to receive an effective dose equivalent greater than 4 mrem (0.04 mSv) in a year. Combined radium-226 and radium-228 shall not exceed 5×10^{-9} μCi/ml and gross alpha activity (including radium-226 but excluding radon and uranium) shall not exceed 1.5×10^{-8} μCi/ml.

(1) DOE Drinking Water Systems. The dose limit is consistent with the drinking water criteria in 40 CFR Part 141, "National Interim Primary Drinking Water Regulations (Safe Drinking Water Act)."

(2) Dose Components. The dose limit is the effective dose equivalent to individuals whose exclusive source of drinking water contains a radionuclide, or a mixture of radionuclides, at a monthly average level of four percent of the appropriate DCG value. For simplicity, it is assumed that site workers are also exposed to four percent of DCG values or the radium and gross alpha levels in II.1d for drinking water while away from the DOE site.

(3) Impact on Other Systems. The liquid effluents from DOE activities shall not cause private or public drinking water systems downstream of the facility discharge to exceed the drinking water radiological limits in 40 CFR Part 141.

2. THE ALARA PROCESS. Field Elements shall develop a program and shall require contractors to implement the ALARA Process for all DOE activities and facilities that cause public doses.

a. Considerations. ALARA requires judgment with respect to what is reasonably achievable. Factors that relate to societal, technological, economic, and other public policy considerations shall be evaluated to the extent practicable in making such judgments. Factors to be considered, at a minimum, shall include:

(1) The maximum dose to members of the public;

(2) The collective dose to the population;

(3) Alternative processes, such as alternative treatments of discharge streams, operating methods, or controls;

(4) Doses for each process alternative;

(5) Costs for each of the technological alternatives;

(6) Examination of the changes in cost among alternatives;

(7) Changes in societal impact associated with process alternatives, e.g., differential doses from various pathways.

b. Evaluations. A quantitative cost-benefit analysis (e.g., optimization) could be performed, given the results of the considerations noted in paragraph II.2a, above. However, the parameters needed to evaluate the cost-benefit analyses are difficult to quantify, and evaluations themselves can be expensive. Furthermore, the evaluations include many additional assumptions, judgment, and limitations that are often difficult to reflect as uncertainties in the analyses. Therefore, except for meeting requirements of the National Environmental Policy Act, qualitative analyses are acceptable, in most instances, for ALARA judgments. The bases for such judgments, especially where potential doses are well below the dose limit. The bases for such judgments should be documented. More detailed analyses should be considered if the decisions might result in doses that approach the limit.

3. MANAGEMENT AND CONTROL OF RADIOACTIVE MATERIALS IN LIQUID DISCHARGES AND PHASEOUT OF SOIL COLUMNS. In addition to the requirement to limit dose to members of the public (onsite or offsite) in accordance with the standards established in paragraphs II.1a and II.1d, further controls are imposed on liquid releases to protect resources such as land, surface water, ground water, and the related ecosystems from undue contamination. DCGs are not release limits, but rather are screening values for considering BAT for these discharges and for making dose estimates. The following requirements apply at the point of discharge from the conduit to the environment.

a. Discharges of Liquid Waste to Surface Waters.

(1) Discharge at Greater Than DCG Level. For liquid wastes containing radionuclides from DOE activities which are discharged to surface water, the best available technology (BAT) is the prescribed level of treatment if the surface waters otherwise would contain, at the point of discharge and prior to dilution, radioactive material at annual average concentrations greater than the DCG values in liquids given in Chapter III. The BAT selection process shall be

implemented in accordance with II.3a(1)(a) and (b), below. Although there is no known practicable method for removing tritium from liquid waste streams, facilities and operations are to be designed and operated so that tritium sources and releases are considered in the ALARA process.

(a) BAT Selection. Selection of the best available technology for a specific application will be made from among candidate alternative treatment technologies which are identified by an evaluation process that includes factors related to technology, economics, and public policy considerations. Factors that are to be considered in selecting BAT, at a minimum, shall include:

1 the age of equipment and facilities involved;

2 the process employed;

3 the engineering aspects of the application of various types of control techniques;

4 process changes;

5 the cost of achieving such effluent reduction;

6 non-water quality environmental impact (including energy requirements);

7 safety considerations; and

8 public policy considerations.

BAT analyses are difficult to express quantitatively because the factors do not have a common denominator. However, consideration of the factors will permit qualitative evaluations which will support judgments.

(b) Plan and Schedule for Implementation. A plan and schedule to install waste treatment systems in existing facilities, if justified by a BAT analysis, shall be developed within 6 months of the issuance date of this Order, to permit compliance with paragraph II.3a(1) at the earliest practicable time. The plan shall include an ALARA section on tritium, where applicable. General design criteria are presented in DOE 6430.1

(c) Approval. The plan shall be submitted for approval to the responsible Operations Office manager and updated annually, consistent with the provisions of DOE 5820.2A for preparing and updating Waste Management Plans.

(2) Discharge at Less Than DCG Level. Implementation of the BAT process for liquid radioactive wastes is not required where radionuclides are already at a low level, i.e., the annual average concentration is less than DCG level. In that case, the cost consideration component of BAT analysis precludes the need for additional treatment, since any additional treatment would be unjustifiable on a cost-benefit basis. Therefore, additional treatment will not be required for waste streams that contain radionuclide concentrations of not more than the DCG values in Chapter III at the point of discharge to a surface waterway. However, the ALARA provisions are applicable.

(3) Multiple Radionuclides. For purposes of II.3a(1), above, the DCG for liquid waste streams containing more than one type of radionuclide shall be the sum of the fractional DCG values.

(4) Sedimentation. To prevent the buildup of radionuclide concentrations in sediments, liquid process waste streams containing radioactive material in the form of settleable solids may be released to natural waterways if the concentration of radioactive material in the solids present in the waste stream does not exceed 5 pCi (0.2 Bq) per gram above background level, of settleable solids for alpha-emitting radionuclides or 50 pCi (2 Bq) per gram above background level, of settleable solids for beta-gamma-emitting radionuclides.

(5) Interim Dose Limit for Native Aquatic Animal Organisms. To protect native animal aquatic organisms, the absorbed dose to these organisms shall not exceed 1 rad per day from exposure to the radioactive material in liquid wastes discharged to natural waterways. DOE Orders in the 5400 series provide guidance on monitoring and calculating dose for aquatic organisms.

(6) New Facilities. New facilities shall be designed and constructed to meet the discharge requirements shown in paragraph II.3a.

b. Discharges of Liquid Waste to Aquifers and Phaseout of Soil Columns.

(1) Phasing Out the Use of Soil Columns. The use of soil columns (i.e., trenches, cribs, ponds, and drain fields) to retain, by sorption or ion exchange, suspended or dissolved radionuclides from liquid waste streams shall be discontinued at the earliest practicable time in favor of an acceptable alternative disposal means. DOE activities that currently discharge liquids containing radioactive materials not first treated by BAT to soil columns, shall develop, within 6 months of the issuance date of this Order, a plan and schedule for implementing alternate acceptable disposal at the earliest practicable time. The BAT selection process shall be applied to those liquid waste streams that will continue to be discharged to soil columns for indefinite periods and which contain process-derived radionuclides. The plan shall be submitted for approval

to the respective Operations Office manager and updated annually, consistent with the provisions of DOE 5820.2A for preparing and updating Waste Management Plans.

(2) Prohibition of New or Increased Discharge Quantities and New Soil Columns. Except as permitted by the provisions in paragraph II.3e(1), new or increased discharges of radionuclides in liquid waste to active soil columns and virgin soil columns shall be prohibited after the effective date of this Order.

c. Management of Soil Columns, Natural Drainage Systems, and Ground Water at Inactive Sites Previously Contaminated with Radioactive Material.

(1) Inactive Receptors. Contaminated soil columns, drainage systems, and ground water to which contaminated liquid discharges have been discontinued shall be managed or decontaminated pursuant to the procedures and requirements of DOE 5480.14.

(2) Discharge of Other Liquids. Liquid discharges, even though uncontaminated, are prohibited in inactive release areas to prevent the further spread of radionuclides previously deposited.

d. Discharges of Liquid Waste to Sanitary Sewerage. The BAT selection process shall be implemented if liquid wastes discharged from DOE activities into sanitary sewerage contain radionuclides at concentrations, averaged monthly, would otherwise be greater than five times the DCG values for liquids given in Chapter III at the point of discharge. That is, the BAT selection process shall be implemented if the total of the fractions of the average concentrations for each radionuclide to its respective DCG value would otherwise exceed 5.

(1) Discharges to public sewers should be coordinated with the operators of the waste water treatment works.

(2) Concentrations shall be controlled so that long-term buildup of radionuclides in solids will not present a handling and disposal problem at sewage disposal plants.

(3) Liquid wastes containing concentrations or quantities of radioactive materials that, when averaged monthly, are greater than those specified in paragraph II.3d may be discharged into a chemical or sanitary sewerage system (e.g., systems with drain fields excepted) if the system is owned by the Federal Government. However, ALARA process considerations are required. Such a sewerage system will provide liquid waste treatment prior to discharge to surface waters in accordance with the requirements of paragraph II.3a(1).

(4) Operators should ensure that the total annual discharge of radioactive material to the sanitary sewer system will not cause

exposures to members of the general public that will result in doses exceeding a small fraction of the basic annual dose limit.

e. Exceptions for Liquid Waste Control Requirements.

(1) Interim Control Strategies. Operations Offices responsible for DOE activities that cannot comply, when this Order is issued, with requirements shown in paragraph II.3, shall develop an interim control strategy with adequate documentation identifying the alternatives considered and evaluations thereof. Such interim control strategies shall be adopted and implemented under the provisions of DOE 5820.2A, Chapter III, paragraph 3a(2), within 6 months of the issuance of this Order, and shall be reevaluated every two years thereafter.

(2) Tritium Control. There is no practicable technology available for removing tritium from dilute liquid waste streams. Therefore, process alternatives that reduce the amount of tritium entering the liquid waste streams shall be identified and evaluated in accordance with the DOE ALARA policy. Tritium decay in transit in confined ground water may be an acceptable alternative to direct release to the atmosphere or to surface waters. A description and summary of the alternatives considered in the control of tritium releases shall be incorporated into the site Waste Management Plan required by DOE 5820.2A.

4. MANAGEMENT OF LOW-LEVEL RADIOACTIVE SOLID WASTE. The requirements for the management of low-level wastes are presented in DOE 5400.1 and DOE 5820.2A. Design, operational, and monitoring requirements for disposal of solid low-level waste containing no constituents regulated by The Resource Conservation and Recovery Act (RCRA) are addressed in DOE 5820.2A.

5. RELEASE OF PROPERTY HAVING RESIDUAL RADIOACTIVE MATERIAL.

a. Release of Real Property. Release of real property (land and structures) shall be in accordance with the guidelines and requirements for residual radioactive material presented in Chapter IV. These guidelines and requirements apply to both DOE-owned facilities and to private properties that are being prepared by DOE for release. Real properties owned by DOE that are being sold to the public are subject to the requirements of Section 120(h) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended, concerning hazardous substances, and to any other applicable Federal, State, and local requirements. The requirements of 40 CFR Part 192 are applicable to properties remediated by DOE under Title I of the Uranium Mill Tailings Radiation Control Act (UMTRA).

b. Release of Personal Property. Personal property, which potentially could be contaminated, may be released for unrestricted use if the results of a

survey with appropriate instruments indicate that the property is within the contamination limits presented in Figure IV-1.

c. Release of Materials and Equipment.

(1) Surface Contamination Levels. Prior to being released, property shall be surveyed to determine whether both removable and total surface contamination (including contamination present on and under any coating) is greater than the levels given in Figure IV-1 and that the contamination has been subjected to the ALARA process.

(2) Potential for Contamination. Property shall be considered to be potentially contaminated if it has been used or stored in radiation areas that could contain unconfined radioactive material or that are exposed to beams of particles capable of causing activation (neutrons, protons, etc.).

(3) Surveys. Surfaces of potentially contaminated property shall be surveyed using instruments and techniques appropriate for detecting the limits stated in Figure IV-1.

(4) Inaccessible Areas. Where potentially contaminated surfaces are not accessible for measurement (as in some pipes, drains, and ductwork), such property may be released after case-by-case evaluation and documentation based on both the history of its use and available measurements demonstrate that the unsurveyable surfaces are likely to be within the limits given in Figure IV-1.

(5) Records. The records of released property shall include:

(a) A description or identification of the property;

(b) The date of the last radiation survey;

(c) The identity of the organization and the individual who performed the monitoring operation;

(d) The type and identification number of monitoring instruments;

(e) The results of the monitoring operation; and

(f) The identity of the recipient of the released material.

(6) Volume Contamination. No guidance is currently available for release of material that has been contaminated in depth, such as activated material or smelted contaminated metals (e.g., radioactivity per unit volume or per unit mass). Such materials may be released if criteria and survey techniques are approved by EH-1.

6. DEMONSTRATION OF COMPLIANCE WITH THE DOSE LIMITS. Compliance with the dose limits of this Order shall be demonstrated by documentation of an appropriate combination of measurements and calculations to evaluate potential doses and the results of the evaluations.

a. Monitoring and Surveillance. General requirements for routine effluent monitoring are part of the environmental monitoring plan prescribed in DOE 5400.1. Specific requirements for radiological effluent monitoring and environmental surveillance and their schedule of implementation are prescribed in DOE Orders in the 5400 series, which deal with radiological effluent monitoring and environmental surveillance. The monitoring requirements are applicable to all DOE and DOE contractor operations that are subject to the standards and requirements of this Order.

b. Dose Evaluations. Doses to members of the public in the vicinity of DOE activities shall be evaluated and documented to demonstrate compliance with the dose limits of this Order and to assess exposures of the public from unplanned events. Collective doses to the public within 80 km of the site shall also be evaluated and documented at least annually.

(1) Modeling. Analytical models used for dose evaluations shall be appropriate for characteristics of emissions (e.g., gas, liquid, or particle; depositing or non-depositing; buoyant or non-buoyant); mode of release (e.g., stack or vent; crib or pond; surface water or sewer; continuous or intermittent); environmental transport medium (e.g., air or water); and exposure pathway (e.g., inhalation; ingestion of food, water, or milk; direct radiation). Information on dispersion (transport and diffusion) in the environment, demography, land use (including the location and number of dairy and slaughter animals), food supplies, and exposure pathways used in the dose calculations shall be appropriate to evaluate actual and potential doses in the environs of DOE facilities. Such information shall be updated as necessary to document significant changes that could affect dose evaluations. Dose evaluation models that are codified, approved, or accepted by regulatory or other authorities shall be used where appropriate, such as the AIRDOS/RADRISK codes for demonstrating compliance with 40 CFR Part 61, Subpart H.

(2) Dose Conversion Factors. Except as provided in paragraph II.6b(2)(d), tables of approved dose conversion factors in paragraphs II.6b(2)(a), (b), and (c), below, shall be used to evaluate doses unless otherwise legally required, e.g., use of AIRDOS/RADRISK codes pursuant to 40 CFR Part 61, Subpart H.

(a) Committed Dose Conversion Factors. Radionuclides taken into the body, generally by exposure modes whereby the radionuclide is ingested or inhaled, will continue to irradiate the body as long as they exist and are retained by the body. The dose delivered to a body over the lifetime of the individual from a single

committed dose conversion factors shall be used, as appropriate, and are presented in EPA-520/1-88-020, Federal Guidance Report No. 11, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion," and in DOE/EH-0071, "Internal Dose Conversion Factors for Calculation of Dose to the Public." These conversion factors are based upon the ICRP reference man model, and the committed dose is the dose integrated over an interval of 50 years.

(b) External Dose Conversion Factors. The doses from exposure to external radiation from radionuclide concentrations in air and in water that result from submersion or from exposure to contaminated plane surfaces shall be estimated, as appropriate, using the external dose conversion factors presented in EPA-520/1-88-020, Federal Guidance Report No. 11, "Limiting Values of Radionuclides Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion" and in DOE/EH-0070, "External Dose-Rate Conversion Factors for Calculation of Dose to the Public."

(c) Derived Concentration Guides (DCG). DCG values are presented as reference values in Chapter III for each of three exposure modes: inhalation of air containing the radionuclide; submersion in a semi-infinite cloud of air containing the radionuclide; and ingestion of water containing the radionuclide. The DCG tables may be used to evaluate only the three exposure modes upon which they are based.

(d) Other Methods and Alternatives. Methods and alternatives other than those discussed above and as prescribed in applicable regulations shall be submitted to EH-1 for approval. EH-1 may approve the alternative method, if appropriate.

(3) Parametric Considerations.

(a) Dose limits for members of the general public, from routine operation of a DOE activity, shall be expressed as a dose received by the individuals during the year (if, for example, the exposure is external to the body) or the committed dose received by the individual over a period of 50 years from radionuclides taken into the body during the year. The limits should not be interpreted as dose rates per se, especially not in the sense of instantaneous dose rates.

(b) Doses calculated should be as realistic as practicable. Consequently, the individuals subject to the greatest exposure shall be identified, to the extent practicable, so that the highest dose might be determined.

(c) Dose limits apply to actual or committed doses to real individuals. Consequently, all factors germane to dose determination should be applied. Alternatively, if available data are not sufficient to evaluate these factors or if they are too costly to determine, the assumed parametric values shall be sufficiently conservative so that it is unlikely that individuals would actually receive a dose that would exceed the dose calculated using the values assumed.

(d) Parametric values used in performing dose calculations shall be recorded.

(e) Collective public dose in the environs of a site with multiple emission points may be estimated using the assumption that all emissions occur from a single point centrally located on the site. Guidance on combining emission points is provided in EPA-450/477-001, "Guidelines for Air Quality Maintenance Planning and Analysis," Vol. 10, Revised: Procedures for Evaluating Air Quality Impact of New Stationary Sources.

(f) The assumption of a single point of emission, as discussed in II.6b(3)(e), may be used to calculate public dose for the maximally exposed individuals if the emission points are close to one another relative to the distance to the site boundary. Otherwise, the public dose to the maximally exposed individuals should be determined taking into consideration the actual locations of emissions on the site with respect to the offsite locations.

7. REPORTING REQUIREMENTS. In addition to the reporting requirements of DOE 5400.1 and DOE 5484.1, the responsible DOE Operations Office shall notify, in a timely manner, the relevant Program Office(s) and the Deputy Assistant Secretary for Environment (EH-20) of actual or potential exposures of members of the public that could result in either an effective dose equivalent from DOE sources exceeding 10 mrem (0.1 mSv) in a year; or exceeding any limit or not meeting any other requirement specified in this Order or any other legally applicable limits, or a combined dose equal to or greater than 100 mrem (1 mSv) effective dose equivalent in a year due to DOE and other man-made sources of radiation (medical, consumer products, and natural sources excepted). For purposes of determining compliance with the reporting requirements of 40 CFR Parts 302 and 355, releases of source, by-product, and special nuclear material that occur from DOE activities are considered to be "Federally permitted" releases if they do not exceed the limits specified in this Order and the operations and releases are in compliance with DOE policies, and guidelines, and requirements specified in DOE Orders, including DOE 5820.2A.

8. RECORDS.

a. Content. Records developed shall include information and data necessary to identify and characterize releases of radioactive material to the environment, their fate in the environment, and their probable impact on radiation doses to the public. Basic information used assess compliance with the requirements of this Order pursuant to paragraph II.6, and the results of such assessments, shall be incorporated as part of the record.

b. Retention. Information and data developed pursuant to this Order shall be retained consistent with the requirements of DOE 1324.2 and other legally applicable requirements.

9. UNITS. All reports, notifications, and records developed pursuant to DOE Order requirements shall present data in the units used in the applicable regulation or DOE Order.

CHAPTER III

DERIVED CONCENTRATION GUIDES FOR AIR AND WATER

1. PURPOSE. The Derived Concentration Guide (DCG) values listed in this chapter are provided as reference values for conducting radiological environmental protection programs at operational DOE facilities and sites. Derived Air Concentrations (DAC) guides for controlling occupational intake of radionuclides through inhalation are listed in DOE 5480.11.

2. BASIS. The DCG values are presented for each of three exposure modes: 1) ingestion of water; 2) inhalation of air; and 3) immersion in a gaseous cloud. The DCG values for internal exposure shown in Figure III-1 are based on a committed effective dose equivalent of 100 mrem for the radionuclide taken into the body by ingestion or inhalation during one year. To use the DCGs for comparison with the DOE drinking water systems criterion of 4 mrem/yr (0.04 mSv/yr), use 4 percent of the DCG values for ingestion. Compliance with the 40 CFR Part 61, Subpart H, criterion of 10 mrem/yr (0.10 mSv/yr) effective dose equivalent is demonstrated using the AIRDOS/RADRISK models prescribed by the EPA. Alternative gastrointestinal-tract (GI-tract) absorption factors (f_1) and lung retention classes (noted as D, W, or Y in the Task Group Lung Model used to produce the inhalation dose factors reported in ICRP Publication 30) are listed for specific compounds, by element, in Figure III-2 for cross-referencing with the internal DCGs in Figure III-1. The data in Figure III-2 are listed in alphabetical order, by element name. Removal half-times assigned to the compounds with lung retention classes D, W, and Y are 0.5, 50, and 500 days, respectively. The air immersion DCG values shown in Figure III-3 are based on an effective dose equivalent of 100 mrem from exposure during one year. Figure III-1 contains six columns of information: Radionuclide/Chemical Form/Isomer Half-Life; f_1 Value (GI-tract absorption); Ingested Water DCG (μCi/mL); Inhaled Air DCG for Lung Retention Class D (μCi/mL); and Inhaled Air DCG for Lung Retention Class W (μCi/mL); and Inhaled Air DCG for Lung Retention Class Y (μCi/mL). Figure III-2 contains five columns of information: Element/Symbol; Atomic Number; compound; f_1 value; and Lung Retention Class. Figure III-3 contains three columns of information: Radionuclide; Half-life in units of seconds (s), minutes (min), hours (h), days (d), or years (yr); and Air Immersion DCG (μCi;mL).

   a. Exposure Conditions for Ingestion of Water and Inhalation. Under conditions of continuous exposure, members of the public are assumed to ingest 730 liters of drinking water or to inhale 8,400 cubic meters of air (for exposure of 24 hours per day, 365 days per year), as given for the "reference man" in ICRP Publication 23. Only single modes of exposure were considered in the calculation of the DCGs - that is, they apply to either inhalation or ingestion, not to

a combination of both. The dose factors used to calculate the DCG values for internal exposure were taken from the report "Internal Dose Conversion Factors for Calculation of Dose to the Public" (DOE/EH-0071). For ingestion, DCG values are tabulated for all values of f_1 for each radionuclide given in ICRP Publication 30, as modified for several transuranic elements by ICRP Publication 48. For inhalation, DCG values are given for all combinations of f_1 and lung retention class (D, W, or Y) given by the ICRP, as tabulated in Figure III-2. For radionuclides with multiple f_1 listings, where specific data for an airborne or liquid release are lacking, the f_1 value that results in the most restrictive DCG for ingested water or inhaled air should be used.

b. Exposure Conditions for Air Immersion. The air immersion DCGs were calculated for a continuous, nonshielded exposure via immersion in a semi-infinite atmospheric cloud. The dose conversion factors used to calculate the DCG values for air immersion were taken from the report "External Dose-Rate Conversion Factors for Calculation of Dose to the Public" (DOE/EH-0070). The DCG value for air immersion listed in Figure III-3 for a given radionuclide is determined either by a limit on annual effective dose equivalent, which provides a limit on stochastic radiation effects, or by a limit on annual dose equivalent to any organ, which provides a limit on nonstochastic radiation effects. For most of the radionuclides listed in Figure III-3, the DCG value is determined by the limit on annual effective dose equivalent. Thus, the few cases where the DCG value is determined by the limit on annual dose equivalent to skin are indicated in the figure by an appropriate footnote. Again, the DCGs listed in Figure III-3 account only for immersion in a semi-infinite cloud and do not account for inhalation or ingestion exposures. Three classes of radionuclides are included in the air immersion DCGs given in Figure III-3, as described below.

(1) Class 1. The first class of radionuclides includes selected noble gases and short-lived activation products that occur in gaseous form. For these radionuclides, inhalation doses are negligible compared to the external dose from immersion in an atmospheric cloud.

(2) Class 2. The second class of radionuclides includes those for which a DCG value for inhalation has been calculated (using the ICRP inhalation dose equivalent factors), but for which the DCG value for external exposure to a contaminated atmospheric cloud is more restrictive (i.e., results in a lower DCG value). These radionuclides generally have half-lives of a few hours or

less, or are eliminated from the body following inhalation sufficiently rapidly to limit the inhalation dose.

(3) Class 3. The third class of radionuclides includes selected isotopes with relatively short half-lives that were not considered in ICRP Publication 30. These radionuclides typically have half-lives that are less than 10 minutes, they do not occur as a decay product of a longer-lived radionuclide, or they lack sufficient decay data to permit internal dose calculations. These radionuclides are also typified by a radioactive emission of highly intense, high-energy photons and rapid removal from the body following inhalation.

c. Application to Mixtures of Radionuclides. The DCG values are given for individual radionuclides. For known mixtures of radionuclides, the sum of the ratios of the observed concentration of each radionuclide to its corresponding DCG must not exceed 1.0.

3. LIMITATIONS. The values given in Figures III-1 and III-3 account for only three exposure pathways (ingested water or inhaled air or air immersion) and do not include other potentially significant pathways. When more complex environmental pathways are involved, a more complete pathway analysis is required for calculating public radiation doses resulting from the operation of DOE facilities.

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
H-3 (Water)	-	2.E-03	-[1]	1.E-07[2]	-
H-3 (Elemental)	-	-	-	2.E-02[2]	-
Be-7	5.E-03	1.E-03	-	5.E-08	4.E-08
Be-10	5.E-03	3.E-05	-	4.E-10	3.E-11
C-11 (Org)	-	1.E-02	-	1.E-06	-
C-11 (CO)	-	-	3.E-06	-	-
C-11 (CO_2)	-	-	1.E-06	-	-
C-14 (Org)	-	7.E-05	-	6.E-09	-
C-14 (CO)	-	-	4.E-06	-	-
C-14 (CO_2)	-	-	5.E-07	-	-
F-18[3]	1.E+00	1.E-03	2.E-07	2.E-07	2.E-07
Na-22	1.E+00	1.E-05	1.E-09	-	-
Na-24[3]	1.E+00	1.E-04	1.E-08	-	-
Mg-28	5.E-01	2.E-05	4.E-09	3.E-09	-
Al-26	1.E-02	1.E-05	1.E-10	2.E-10	-
Si-31	1.E-02	3.E-04	6.E-08	7.E-08	6.E-08
Si-32	1.E-02	8.E-05	6.E-10	3.E-10	1.E-11
P-32	8.E-01	2.E-05	2.E-09	9.E-10	-
P-33	8.E-01	2.E-04	2.E-08	6.E-09	-
S-35	8.E-01	3.E-04	4.E-08	5.E-09	-
	1.E-01	2.E-04	-	-	-
S-35 (Gas)	-	-	3.E-08	-	-
Cl-36[3]	1.E+00	5.E-05	6.E-09	6.E-10	-
Cl-38	1.E+00	7.E-04	1.E-07	1.E-07	-
Cl-39	1.E+00	1.E-03	1.E-07	1.E-07	-
K-40	1.E+00	7.E-06	9.E-10	-	-
K-42	1.E+00	1.E-04	1.E-08	-	-
K-43[3]	1.E+00	2.E-04	2.E-08	-	-
K-44	1.E+00	9.E-04	2.E-07	-	-

Figure III-1
Derived Concentration Guides (DCGs) for Members of the Public from Ingested Water and Inhalation Resulting in 100 mrem/yr

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
K-45	1.E+00	1.E-03	3.E-07	-	-
Ca-41	3.E-01	1.E-04	-	9.E-09	-
Ca-45	3.E-01	5.E-05	-	2.E-09	-
Ca-47	3.E-01	2.E-05	-	2.E-09	-
Sc-43	1.E-04	2.E-04	-	-	5.E-08
Sc-44m	1.E-04	1.E-05	-	-	2.E-09
Sc-44 3/	1.E-04	1.E-04	-	-	3.E-08
Sc-46	1.E-04	2.E-05	-	-	6.E-10
Sc-47	1.E-04	7.E-05	-	-	7.E-09
Sc-48	1.E-04	2.E-05	-	-	3.E-09
Sc-49	1.E-04	6.E-04	-	-	1.E-07
Ti-44	1.E-02	7.E-06	3.E-11	7.E-11	1.E-11
Ti-45 3/	1.E-02	2.E-04	6.E-08	8.E-08	7.E-08
V-47	1.E-02	9.E-04	2.E-07	2.E-07	-
V-48	1.E-02	2.E-05	3.E-09	2.E-09	-
V-49	1.E-02	3.E-03	8.E-08	4.E-08	-
Cr-48	1.E-01	2.E-04	3.E-08	2.E-08	2.E-08
	1.E-02	2.E-04	-	-	-
Cr-49 3/	1.E-01	8.E-04	2.E-07	2.E-07	2.E-07
	1.E-02	8.E-04	-	-	-
Cr-51	1.E-01	1.E-03	1.E-07	6.E-08	5.E-08
	1.E-02	1.E-03	-	-	-
Mn-51	1.E-01	6.E-04	1.E-07	1.E-07	-
Mn-52m 3/	1.E-01	9.E-04	2.E-07	2.E-07	-
Mn-52	1.E-01	2.E-05	3.E-09	2.E-09	-
Mn-53	1.E-01	1.E-03	6.E-08	3.E-08	-
Mn-54	1.E-01	5.E-05	2.E-09	2.E-09	-
Mn-56 3/	1.E-01	1.E-04	4.E-08	5.E-08	-
Fe-52	1.E-01	3.E-05	7.E-09	6.E-09	-
Fe-55	1.E-01	2.E-04	5.E-09	1.E-08	-
Fe-59	1.E-01	2.E-05	8.E-10	1.E-09	-
Fe-60	1.E-01	9.E-07	2.E-11	4.E-11	-
Co-55	5.E-02	3.E-05	-	7.E-09	6.E-09
	3.E-01	4.E-05	-	-	-
Co-56	5.E-02	1.E-05	-	7.E-10	5.E-10

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Co-56	3.E-01	1.E-05	-	-	-
Co-57	5.E-02	2.E-04	-	7.E-09	2.E-09
	3.E-01	1.E-04	-	-	-
Co-58m	5.E-02	2.E-03	-	2.E-07	2.E-07
	3.E-01	2.E-03	-	-	-
Co-58	5.E-02	5.E-05	-	3.E-09	2.E-09
	3.E-01	4.E-05	-	-	-
Co-60m[3]	5.E-02	4.E-02	-	9.E-06	6.E-06
	3.E-01	4.E-02	-	-	-
Co-60	5.E-02	1.E-05	-	4.E-10	8.E-11
	3.E-01	5.E-06	-	-	-
Co-61	5.E-02	5.E-04	-	1.E-07	1.E-07
	3.E-01	6.E-04	-	-	-
Co-62m	5.E-02	1.E-03	-	4.E-07	4.E-07
	3.E-01	1.E-03	-	-	-
Ni-56	5.E-02	4.E-05	5.E-09	3.E-09	-
Ni-56 (Vapor)	-	-	3.E-09	-	-
Ni-57[3]	5.E-02	4.E-05	1.E-08	7.E-09	-
Ni-57 (Vapor)	-	-	1.E-08	-	-
Ni-59	5.E-02	7.E-04	9.E-09	2.E-08	-
Ni-59 (Vapor)	-	-	4.E-09	-	-
Ni-63	5.E-02	3.E-04	4.E-09	6.E-09	-
Ni-63 (Vapor)	-	-	2.E-09	-	-
Ni-65[3]	5.E-02	2.E-04	6.E-08	7.E-08	-
Ni-65 (Vapor)	-	-	4.E-08	-	-
Ni-66	5.E-02	1.E-05	4.E-09	1.E-09	-
Ni-66 (Vapor)	-	-	7.E-09	-	-
Cu-60	5.E-01	8.E-04	2.E-07	3.E-07	2.E-07
Cu-61[3]	5.E-01	3.E-04	7.E-08	1.E-07	8.E-08
Cu-64	5.E-01	3.E-04	7.E-08	5.E-08	5.E-08
Cu-67	5.E-01	1.E-04	2.E-08	1.E-08	1.E-08
Zn-62	5.E-01	4.E-05	-	-	7.E-09
Zn-63	5.E-01	7.E-04	-	-	2.E-07
Zn-65	5.E-01	9.E-06	-	-	6.E-10
Zn-69m	5.E-01	1.E-04	-	-	2.E-08
Zn-69	5.E-01	2.E-03	-	-	3.E-07
Zn-71m	5.E-01	2.E-04	-	-	4.E-08
Zn-72	5.E-01	3.E-05	-	-	3.E-09
Ga-65	1.E-03	2.E-03	4.E-07	5.E-07	-
Ga-66[3]	1.E-03	3.E-05	8.E-09	-	7.E-09

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Ga-67	1.E-03	2.E-04	3.E-08	2.E-08	-
Ga-68 3/	1.E-03	4.E-04	1.E-07	1.E-07	-
Ga-70	1.E-03	2.E-03	4.E-07	5.E-07	-
Ga-72 3/	1.E-03	3.E-05	8.E-09	7.E-09	-
Ga-73	1.E-03	1.E-04	4.E-08	4.E-08	-
Ge-66	1.E+00	7.E-04	6.E-08	5.E-08	-
Ge-67	1.E+00	1.E-03	2.E-07	2.E-07	-
Ge-68	1.E+00	1.E-04	9.E-09	2.E-10	-
Ge-69	1.E+00	4.E-04	4.E-08	2.E-08	-
Ge-71	1.E+00	1.E-02	1.E-06	1.E-07	-
Ge-75	1.E+00	2.E-03	2.E-07	2.E-07	-
Ge-77	1.E+00	2.E-04	2.E-08	1.E-08	-
Ge-78	1.E+00	7.E-04	5.E-08	5.E-08	-
As-69	5.E-01	1.E-03	-	3.E-07	-
As-70	5.E-01	4.E-04	-	1.E-07	-
As-71	5.E-01	1.E-04	-	1.E-08	-
As-72	5.E-01	2.E-05	-	3.E-09	-
As-73	5.E-01	2.E-04	-	4.E-09	-
As-74	5.E-01	4.E-05	-	2.E-09	-
As-76	5.E-01	3.E-05	-	4.E-09	-
As-77	5.E-01	1.E-04	-	1.E-08	-
As-78	5.E-01	2.E-04	-	5.E-08	-
Se-70	8.E-01	5.E-04	9.E-08	1.E-07	-
	5.E-02	3.E-04	-	-	-
Se-73m	8.E-01	2.E-03	4.E-07	3.E-07	-
	5.E-02	9.E-04	-	-	-
Se-73 3/	8.E-01	2.E-04	3.E-08	4.E-08	-
	5.E-02	9.E-05	-	-	-
Se-75	8.E-01	2.E-05	2.E-09	1.E-09	-
	5.E-02	8.E-05	-	-	-
Se-79	8.E-01	2.E-05	2.E-09	1.E-09	-
	5.E-02	1.E-04	-	-	-
Se-81m	8.E-01	1.E-03	2.E-07	2.E-07	-
	5.E-02	7.E-04	-	-	-
Se-81	8.E-01	2.E-03	5.E-07	6.E-07	-
	5.E-02	2.E-03	-	-	-
Se-83	8.E-01	1.E-03	3.E-07	3.E-07	-
	5.E-02	9.E-04	-	-	-
Br-74m	1.E+00	6.E-04	9.E-08	1.E-07	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Br-74	1.E+00	1.E-03	2.E-07	2.E-07	-
Br-75	1.E+00	1.E-03	1.E-07	1.E-07	-
Br-76	1.E+00	1.E-04	1.E-08	1.E-08	-
Br-77[3/]	1.E+00	4.E-04	6.E-08	5.E-08	-
Br-80m	1.E+00	6.E-04	4.E-08	3.E-08	-
Br-80[3/]	1.E+00	2.E-03	4.E-07	5.E-07	-
Br-82[3/]	1.E+00	8.E-05	1.E-08	9.E-09	-
Br-83	1.E+00	2.E-03	2.E-07	1.E-07	-
Br-84[3/]	1.E+00	9.E-04	1.E-07	2.E-07	-
Rb-79	1.E+00	2.E-03	3.E-07	-	-
Rb-81m	1.E+00	7.E-03	8.E-07	-	-
Rb-81[3/]	1.E+00	1.E-03	1.E-07	-	-
Rb-82m	1.E+00	3.E-04	4.E-08	-	-
Rb-83	1.E+00	2.E-05	2.E-09	-	-
Rb-84	1.E+00	1.E-05	2.E-09	-	-
Rb-86	1.E+00	1.E-05	2.E-09	-	-
Rb-87	1.E+00	3.E-05	4.E-09	-	-
Rb-88[3/]	1.E+00	8.E-04	1.E-07	-	-
Rb-89[3/]	1.E+00	2.E-03	3.E-07	-	-
Sr-80	3.E-01	3.E-02	5.E-06	-	-
	1.E-02	3.E-02	-	-	6.E-06
Sr-81	3.E-01	7.E-04	2.E-07	-	-
	1.E-02	6.E-04	-	-	2.E-07
Sr-83	3.E-01	8.E-05	2.E-08	-	-
	1.E-02	6.E-05	-	-	8.E-09
Sr-85m[3/]	3.E-01	6.E-03	1.E-06	-	-
	1.E-02	6.E-03	-	-	2.E-06
Sr-85	3.E-01	7.E-05	6.E-09	-	-
	1.E-02	1.E-04	-	-	4.E-09
Sr-87m[3/]	3.E-01	1.E-03	3.E-07	-	-
	1.E-02	1.E-03	-	-	4.E-07
Sr-89	3.E-01	2.E-05	2.E-09	-	-
	1.E-02	2.E-05	-	-	3.E-10
Sr-90	3.E-01	1.E-06	5.E-11	-	-
	1.E-02	1.E-05	-	-	9.E-12
Sr-91	3.E-01	6.E-05	1.E-08	-	-
	1.E-02	5.E-05	-	-	8.E-09
Sr-92[3/]	3.E-01	9.E-05	2.E-08	-	-
	1.E-02	7.E-05	-	-	2.E-08
Y-86m	1.E-04	6.E-04	-	1.E-07	1.E-07

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Y-86[3/]	1.E-04	3.E-05	-	8.E-09	7.E-09
Y-87	1.E-04	6.E-05	-	8.E-09	7.E-09
Y-88	1.E-04	3.E-05	-	6.E-10	6.E-10
Y-90m[3/]	1.E-04	2.E-04	-	3.E-08	3.E-08
Y-90	1.E-04	1.E-05	-	2.E-09	1.E-09
Y-91m[3/]	1.E-04	4.E-03	-	6.E-07	4.E-07
Y-91	1.E-04	2.E-05	-	4.E-10	3.E-10
Y-92	1.E-04	7.E-05	-	2.E-08	2.E-08
Y-93	1.E-04	3.E-05	-	7.E-09	6.E-09
Y-94	1.E-04	8.E-04	-	2.E-07	2.E-07
Y-95	1.E-04	1.E-03	-	4.E-07	3.E-07
Zr-86	2.E-03	4.E-05	9.E-09	6.E-09	6.E-09
Zr-88	2.E-03	1.E-04	5.E-10	1.E-09	7.E-10
Zr-89	2.E-03	4.E-05	8.E-09	6.E-09	6.E-09
Zr-93	2.E-03	9.E-05	4.E-11	1.E-10	2.E-10
Zr-95	2.E-03	4.E-05	6.E-10	9.E-10	7.E-10
Zr-97	2.E-03	2.E-05	5.E-09	3.E-09	3.E-09
Nb-88	1.E-02	2.E-03	-	5.E-07	5.E-07
Nb-89 (66 min)	1.E-02	3.E-04	-	1.E-07	9.E-08
Nb-89 (122 min)	1.E-02	1.E-04	-	4.E-08	4.E-08
Nb-90	1.E-02	3.E-05	-	6.E-09	6.E-09
Nb-93m	1.E-02	3.E-04	-	3.E-09	4.E-10
Nb-94	1.E-02	3.E-05	-	5.E-10	4.E-11
Nb-95m	1.E-02	7.E-05	-	6.E-09	5.E-09
Nb-95	1.E-02	6.E-05	-	3.E-09	3.E-09
Nb-96	1.E-02	3.E-05	-	6.E-09	6.E-09
Nb-97[3/]	1.E-02	6.E-04	-	2.E-07	2.E-07
Nb-98	1.E-02	4.E-04	-	1.E-07	1.E-07
Mo-90	8.E-01	1.E-04	2.E-08	-	-
	5.E-02	6.E-05	-	-	1.E-08
Mo-93m	8.E-01	3.E-04	4.E-08	-	-
	5.E-02	1.E-04	-	-	3.E-08
Mo-93	8.E-01	1.E-04	1.E-08	-	-
	5.E-02	6.E-04	-	-	4.E-10
Mo-99	8.E-01	5.E-05	6.E-09	-	-
	5.E-02	3.E-05	-	-	3.E-09
Mo-101[3/]	8.E-01	2.E-03	3.E-07	-	-
	5.E-02	1.E-03	-	-	4.E-07
Tc-93m	8.E-01	2.E-03	4.E-07	7.E-07	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Tc-93	8.E-01	8.E-04	2.E-07	2.E-07	-
Tc-94m	8.E-01	5.E-04	1.E-07	1.E-07	-
Tc-94	8.E-01	2.E-04	4.E-08	6.E-08	-
Tc-96m 3/	8.E-01	4.E-03	7.E-07	6.E-07	-
Tc-96	8.E-01	5.E-05	7.E-09	5.E-09	-
Tc-97m	8.E-01	1.E-04	2.E-08	3.E-09	-
Tc-97	8.E-01	9.E-04	1.E-07	1.E-08	-
Tc-98	8.E-01	3.E-05	4.E-09	7.E-10	-
Tc-99m 3/	8.E-01	2.E-03	4.E-07	6.E-07	-
Tc-99	8.E-01	1.E-04	1.E-08	2.E-09	-
Tc-101 3/	8.E-01	4.E-03	8.E-07	9.E-07	-
Tc-104	8.E-01	8.E-04	2.E-07	2.E-07	-
Ru-94	5.E-02	4.E-04	1.E-07	1.E-07	1.E-07
Ru-97	5.E-02	2.E-04	4.E-08	3.E-08	3.E-08
Ru-103	5.E-02	5.E-05	4.E-09	2.E-09	2.E-09
Ru-105 3/	5.E-02	1.E-04	3.E-08	3.E-08	3.E-08
Ru-106	5.E-02	6.E-06	2.E-10	1.E-10	3.E-11
Rh-99m	5.E-02	5.E-04	1.E-07	2.E-07	2.E-07
Rh-99	5.E-02	7.E-05	7.E-09	5.E-09	5.E-09
Rh-100	5.E-02	4.E-05	1.E-08	9.E-09	9.E-09
Rh-101m	5.E-02	2.E-04	3.E-08	2.E-08	2.E-08
Rh-101	5.E-02	6.E-05	1.E-09	2.E-09	4.E-10
Rh-102m	5.E-02	4.E-05	1.E-09	9.E-10	3.E-10
Rh-102	5.E-02	2.E-05	2.E-10	4.E-10	1.E-10
Rh-103m	5.E-02	1.E-02	3.E-06	3.E-06	3.E-06
Rh-105	5.E-02	1.E-04	3.E-08	1.E-08	1.E-08
Rh-106m	5.E-02	2.E-04	6.E-08	9.E-08	8.E-08
Rh-107	5.E-02	3.E-03	6.E-07	6.E-07	6.E-07
Pd-100	5.E-03	4.E-05	3.E-09	3.E-09	3.E-09
Pd-101	5.E-03	4.E-04	7.E-08	8.E-08	7.E-08
Pd-103	5.E-03	2.E-04	1.E-08	1.E-08	8.E-09
Pd-107	5.E-03	1.E-03	5.E-08	2.E-08	9.E-10
Pd-109	5.E-03	6.E-05	1.E-08	1.E-08	1.E-08
Ag-102	5.E-02	2.E-03	4.E-07	5.E-07	5.E-07
Ag-103	5.E-02	1.E-03	2.E-07	3.E-07	3.E-07
Ag-104m	5.E-02	9.E-04	2.E-07	3.E-07	3.E-07
Ag-104	5.E-02	6.E-04	2.E-07	4.E-07	4.E-07
Ag-105	5.E-02	7.E-05	3.E-09	4.E-09	4.E-09
Ag-106m	5.E-02	2.E-05	2.E-09	2.E-09	2.E-09

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Ag-106	5.E-02	2.E-03	4.E-07	5.E-07	5.E-07
Ag-108m	5.E-02	2.E-05	4.E-10	6.E-10	6.E-11
Ag-110m	5.E-02	1.E-05	3.E-10	4.E-10	2.E-10
Ag-111	5.E-02	3.E-05	4.E-09	2.E-09	2.E-09
Ag-112	5.E-02	9.E-05	2.E-08	2.E-08	2.E-08
Ag-115	5.E-02	9.E-04	2.E-07	2.E-07	2.E-07
Cd-104	5.E-02	6.E-04	2.E-07	3.E-07	3.E-07
Cd-107	5.E-02	6.E-04	1.E-07	1.E-07	1.E-07
Cd-109	5.E-02	1.E-05	1.E-10	3.E-10	3.E-10
Cd-113m	5.E-02	9.E-07	8.E-12	3.E-11	3.E-11
Cd-113	5.E-02	8.E-07	8.E-12	3.E-11	3.E-11
Cd-115m	5.E-02	9.E-06	2.E-10	3.E-10	3.E-10
Cd-115	5.E-02	3.E-05	3.E-09	3.E-09	3.E-09
Cd-117m 3/	5.E-02	1.E-04	3.E-08	4.E-08	3.E-08
Cd-117 3/	5.E-02	1.E-04	3.E-08	4.E-08	3.E-08
In-109	2.E-02	5.E-04	1.E-07	2.E-07	-
In-110 (69 min)	2.E-02	4.E-04	1.E-07	1.E-07	-
In-110 (5 h)	2.E-02	1.E-04	4.E-08	5.E-08	-
In-111	2.E-02	1.E-04	2.E-08	2.E-08	-
In-112	2.E-02	6.E-03	1.E-06	2.E-06	-
In-113m 3/	2.E-02	1.E-03	3.E-07	5.E-07	-
In-114m	2.E-02	9.E-06	2.E-10	2.E-10	-
In-115m	2.E-02	4.E-04	1.E-07	1.E-07	-
In-115	2.E-02	1.E-06	3.E-12	1.E-11	-
In-116m 3/	2.E-02	7.E-04	2.E-07	3.E-07	-
In-117m	2.E-02	3.E-04	8.E-08	1.E-07	-
In-117 3/	2.E-02	2.E-03	4.E-07	5.E-07	-
In-119m	2.E-02	1.E-03	3.E-07	3.E-07	-
Sn-110	2.E-02	9.E-05	3.E-08	3.E-08	-
Sn-111	2.E-02	2.E-03	5.E-07	6.E-07	-
Sn-113	2.E-02	5.E-05	3.E-09	1.E-09	-
Sn-117m	2.E-02	5.E-05	5.E-09	3.E-09	-
Sn-119m	2.E-02	1.E-04	6.E-09	2.E-09	-
Sn-121m	2.E-02	1.E-04	2.E-09	1.E-09	-
Sn-121	2.E-02	2.E-04	4.E-08	3.E-08	-
Sn-123m	2.E-02	1.E-03	3.E-07	3.E-07	-
Sn-123	2.E-02	2.E-05	1.E-09	4.E-10	-
Sn-125	2.E-02	1.E-05	2.E-09	8.E-10	-
Sn-126	2.E-02	8.E-06	1.E-10	2.E-10	-
Sn-127	2.E-02	2.E-04	5.E-08	4.E-08	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Sn-128	2.E-02	3.E-04	6.E-08	9.E-08	-
Sb-115	1.E-01	2.E-03	6.E-07	-	-
	1.E-02	2.E-03	-	7.E-07	-
Sb-116m	1.E-01	6.E-04	2.E-07	-	-
	1.E-02	6.E-04	-	3.E-07	-
Sb-116	1.E-01	2.E-03	7.E-07	-	-
	1.E-02	2.E-03	-	8.E-07	-
Sb-117[3/]	1.E-01	2.E-03	5.E-07	-	-
	1.E-02	2.E-03	-	7.E-07	-
Sb-118m	1.E-01	2.E-04	5.E-08	-	-
	1.E-02	1.E-04	-	5.E-08	-
Sb-119	1.E-01	4.E-04	1.E-07	-	-
	1.E-02	4.E-04	-	6.E-08	-
Sb-120 (16 min)	1.E-01	5.E-03	1.E-06	-	-
	1.E-02	5.E-03	-	1.E-06	-
Sb-120 (6 d)	1.E-01	3.E-05	5.E-09	-	-
	1.E-02	3.E-05	-	3.E-09	-
Sb-122	1.E-01	2.E-05	5.E-09	-	-
	1.E-02	2.E-05	-	3.E-09	-
Sb-124m	1.E-01	7.E-03	2.E-06	-	-
	1.E-02	7.E-03	-	1.E-06	-
Sb-124	1.E-01	2.E-05	2.E-09	-	-
	1.E-02	1.E-05	-	6.E-10	-
Sb-125	1.E-01	6.E-05	6.E-09	-	-
	1.E-02	5.E-05	-	1.E-09	-
Sb-126m[3/]	1.E-01	2.E-03	4.E-07	-	-
	1.E-02	2.E-03	-	5.E-07	-
Sb-126	1.E-01	2.E-05	3.E-09	-	-
	1.E-02	1.E-05	-	1.E-09	-
Sb-127	1.E-01	2.E-05	5.E-09	-	-
	1.E-02	2.E-05	-	2.E-09	-
Sb-128 (9 h)	1.E-01	3.E-05	1.E-08	-	-
	1.E-02	3.E-05	-	8.E-09	-
Sb-128 (10 min)	1.E-01	3.E-03	9.E-07	-	-
	1.E-02	3.E-03	-	1.E-06	-
Sb-129[3/]	1.E-01	8.E-05	2.E-08	-	-
	1.E-02	8.E-05	-	2.E-08	-
Sb-130	1.E-01	5.E-04	1.E-07	-	-
	1.E-02	5.E-04	-	2.E-07	-
Sb-131	1.E-01	5.E-04	9.E-08	-	-
	1.E-02	5.E-04	-	1.E-07	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Te-116	2.E-01	2.E-04	5.E-08	7.E-08	-
Te-121m	2.E-01	2.E-05	9.E-10	1.E-09	-
Te-121	2.E-01	9.E-05	1.E-08	7.E-09	-
Te-123m	2.E-01	3.E-05	1.E-09	1.E-09	-
Te-123	2.E-01	3.E-05	1.E-09	3.E-09	-
Te-125m	2.E-01	4.E-05	2.E-09	2.E-09	-
Te-127m	2.E-01	2.E-05	1.E-09	6.E-10	-
Te-127	2.E-01	2.E-04	5.E-08	4.E-08	-
Te-129m	2.E-01	1.E-05	1.E-09	6.E-10	-
Te-129	2.E-01	7.E-04	2.E-07	2.E-07	-
Te-131m	2.E-01	9.E-06	3.E-09	2.E-09	-
Te-131	2.E-01	7.E-04	1.E-07	1.E-07	-
Te-132	2.E-01	2.E-05	2.E-09	2.E-09	-
Te-133m 3/	2.E-01	2.E-04	3.E-08	3.E-08	-
Te-133 3/	2.E-01	9.E-04	1.E-07	1.E-07	-
Te-134 3/	2.E-01	7.E-04	1.E-07	1.E-07	-
I-120m	1.E+00	4.E-04	5.E-08	-	-
I-120	1.E+00	2.E-04	3.E-08	-	-
I-121	1.E+00	8.E-04	1.E-07	-	-
I-123	1.E+00	3.E-04	4.E-08	-	-
I-124	1.E+00	4.E-06	6.E-10	-	-
I-125	1.E+00	4.E-06	5.E-10	-	-
I-126	1.E+00	2.E-06	3.E-10	-	-
I-128 3/	1.E+00	2.E-03	3.E-07	-	-
I-129	1.E+00	5.E-07	7.E-11	-	-
I-130	1.E+00	3.E-05	5.E-09	-	-
I-131	1.E+00	3.E-06	4.E-10	-	-
I-132m	1.E+00	3.E-04	5.E-08	-	-
I-132 3/	1.E+00	2.E-04	4.E-08	-	-
I-133	1.E+00	1.E-05	2.E-09	-	-
I-134 3/	1.E+00	7.E-04	1.E-07	-	-
I-135 3/	1.E+00	7.E-05	1.E-08	-	-
Cs-125	1.E+00	2.E-03	3.E-07	-	-
Cs-127	1.E+00	2.E-03	2.E-07	-	-
Cs-129 3/	1.E+00	6.E-04	8.E-08	-	-
Cs-130	1.E+00	3.E-03	4.E-07	-	-
Cs-131	1.E+00	6.E-04	7.E-08	-	-
Cs-132	1.E+00	7.E-05	1.E-08	-	-
Cs-134m	1.E+00	3.E-03	3.E-07	-	-
CS-134	1.E+00	2.E-06	2.E-10	-	-
Cs-135m	1.E+00	3.E-03	5.E-07	-	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Cs-135	1.E+00	2.E-05	3.E-09	-	-
Cs-136	1.E+00	1.E-05	2.E-09	-	-
Cs-137	1.E+00	3.E-06	4.E-10	-	-
Cs-138 3/	1.E+00	9.E-04	1.E-07	-	-
Ba-126	1.E-01	2.E-04	4.E-08	-	-
Ba-128	1.E-01	1.E-05	4.E-09	-	-
Ba-131m	1.E-01	1.E-02	3.E-06	-	-
Ba-131	1.E-01	8.E-05	2.E-08	-	-
Ba-133m	1.E-01	7.E-05	2.E-08	-	-
Ba-133	1.E-01	4.E-05	2.E-09	-	-
Ba-135m	1.E-01	9.E-05	3.E-08	-	-
Ba-139	1.E-01	3.E-04	7.E-08	-	-
Ba-140	1.E-01	2.E-05	3.E-09	-	-
Ba-141 3/	1.E-01	7.E-04	2.E-07	-	-
Ba-142 3/	1.E-01	1.E-03	3.E-07	-	-
La-131	1.E-03	1.E-03	3.E-07	4.E-07	-
La-132	1.E-03	9.E-05	2.E-08	3.E-08	-
La-135	1.E-03	1.E-03	3.E-07	2.E-07	-
La-137	1.E-03	3.E-04	2.E-10	6.E-10	-
La-138	1.E-03	2.E-05	8.E-12	3.E-11	-
La-140	1.E-03	2.E-05	3.E-09	3.E-09	-
La-141	1.E-03	1.E-04	2.E-08	3.E-08	-
La-142	1.E-03	2.E-04	5.E-08	8.E-08	-
La-143	1.E-03	1.E-03	2.E-07	2.E-07	-
Ce-134	3.E-04	2.E-05	-	2.E-09	2.E-09
Ce-135	3.E-04	4.E-05	-	9.E-09	8.E-09
Ce-137m	3.E-04	7.E-05	-	1.E-08	9.E-09
Ce-137	3.E-04	1.E-03	-	3.E-07	3.E-07
Ce-139	3.E-04	1.E-04	-	2.E-09	2.E-09
Ce-141	3.E-04	5.E-05	-	2.E-09	1.E-09
Ce-143	3.E-04	3.E-05	-	4.E-09	4.E-09
Ce-144	3.E-04	7.E-06	-	6.E-11	3.E-11
Pr-136	3.E-04	2.E-03	-	6.E-07	5.E-07
Pr-137	3.E-04	1.E-03	-	4.E-07	3.E-07
Pr-138m	3.E-04	3.E-04	-	1.E-07	1.E-07
Pr-139	3.E-04	1.E-03	-	3.E-07	3.E-07
Pr-142m	3.E-04	2.E-03	-	4.E-07	3.E-07
Pr-142	3.E-04	3.E-05	-	5.E-09	4.E-09
Pr-143	3.E-04	3.E-05	-	2.E-09	2.E-09

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Pr-144	3.E-04	1.E-03	-	3.E-07	3.E-07
Pr-145	3.E-04	9.E-05	-	2.E-08	2.E-08
Pr-147	3.E-04	2.E-03	-	5.E-07	4.E-07
Nd-136	3.E-04	4.E-04	-	1.E-07	1.E-07
Nd-138	3.E-04	5.E-05	-	2.E-08	1.E-08
Nd-139m	3.E-04	1.E-04	-	4.E-08	3.E-08
Nd-139	3.E-04	2.E-03	-	8.E-07	7.E-07
Nd-141	3.E-04	4.E-03	-	2.E-06	1.E-06
Nd-147	3.E-04	4.E-05	-	2.E-09	2.E-09
Nd-149 3/	3.E-04	3.E-04	-	6.E-08	6.E-08
Nd-151	3.E-04	2.E-03	-	5.E-07	4.E-07
Pm-141	3.E-04	2.E-03	-	4.E-07	4.E-07
Pm-143	3.E-04	1.E-04	-	1.E-09	2.E-09
Pm-144	3.E-04	3.E-05	-	3.E-10	3.E-10
Pm-145	3.E-04	3.E-04	-	5.E-10	4.E-10
Pm-146	3.E-04	4.E-05	-	1.E-10	1.E-10
Pm-147	3.E-04	1.E-04	-	5.E-10	3.E-10
Pm-148m	3.E-04	2.E-05	-	7.E-10	7.E-10
Pm-148	3.E-04	1.E-05	-	1.E-09	1.E-09
Pm-149	3.E-04	4.E-05	-	5.E-09	4.E-09
Pm-150	3.E-04	1.E-04	-	4.E-08	4.E-08
Pm-151	3.E-04	5.E-05	-	8.E-09	7.E-09
Sm-141m	3.E-04	8.E-04	-	2.E-07	-
Sm-141	3.E-04	2.E-03	-	4.E-07	-
Sm-142	3.E-04	2.E-04	-	6.E-08	-
Sm-145	3.E-04	2.E-04	-	1.E-09	-
Sm-146	3.E-04	7.E-07	-	2.E-13	-
Sm-147	3.E-04	8.E-07	-	2.E-13	-
Sm-151	3.E-04	4.E-04	-	4.E-10	-
Sm-153	3.E-04	5.E-05	-	7.E-09	-
Sm-155	3.E-04	2.E-03	-	5.E-07	-
Sm-156	3.E-04	1.E-04	-	2.E-08	-
Eu-145	1.E-03	4.E-05	-	5.E-09	-
Eu-146	1.E-03	3.E-05	-	3.E-09	-
Eu-147	1.E-03	8.E-05	-	4.E-09	-
Eu-148	1.E-03	3.E-05	-	8.E-10	-
Eu-149	1.E-03	3.E-04	-	7.E-09	-
Eu-150 (12 h)	1.E-03	9.E-05	-	2.E-08	-
Eu-150 (34 yr)	1.E-03	2.E-05	-	4.E-11	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Eu-152m	1.E-03	7.E-05	-	2.E-08	-
Eu-152	1.E-03	2.E-05	-	5.E-11	-
Eu-154	1.E-03	2.E-05	-	5.E-11	-
Eu-155	1.E-03	1.E-04	-	3.E-10	-
Eu-156	1.E-03	2.E-05	-	1.E-09	-
Eu-157	1.E-03	6.E-05	-	1.E-08	-
Eu-158	1.E-03	5.E-04	-	1.E-07	-
Gd-145	3.E-04	1.E-03	4.E-07	4.E-07	-
Gd-146	3.E-04	4.E-05	3.E-10	7.E-10	-
Gd-147	3.E-04	5.E-05	1.E-08	8.E-09	-
Gd-148	3.E-04	7.E-07	4.E-14	1.E-13	-
Gd-149	3.E-04	8.E-05	5.E-09	6.E-09	-
Gd-151	3.E-04	2.E-04	1.E-09	3.E-09	-
Gd-152	3.E-04	9.E-07	5.E-14	2.E-13	-
Gd-153	3.E-04	1.E-04	6.E-10	1.E-09	-
Gd-159	3.E-04	7.E-05	2.E-08	1.E-08	-
Tb-147	3.E-04	2.E-04	-	7.E-08	-
Tb-149	3.E-04	1.E-04	-	2.E-09	-
Tb-150	3.E-04	1.E-04	-	5.E-08	-
Tb-151	3.E-04	1.E-04	-	2.E-08	-
Tb-153	3.E-04	1.E-04	-	2.E-08	-
Tb-154	3.E-04	5.E-05	-	1.E-08	-
Tb-155	3.E-04	2.E-04	-	2.E-08	-
Tb-156m (24 h)	3.E-04	2.E-04	-	2.E-08	-
Tb-156m (5 h)	3.E-04	4.E-04	-	6.E-08	-
Tb-156	3.E-04	3.E-05	-	3.E-09	-
Tb-157	3.E-04	1.E-03	-	1.E-09	-
Tb-158	3.E-04	3.E-05	-	5.E-11	-
Tb-160	3.E-04	2.E-05	-	5.E-10	-
Tb-161	3.E-04	5.E-05	-	4.E-09	-
Dy-155	3.E-04	2.E-04	-	6.E-08	-
Dy-157 3/	3.E-04	5.E-04	-	2.E-07	-
Dy-159	3.E-04	3.E-04	-	6.E-09	-
Dy-165	3.E-04	4.E-04	-	1.E-07	-
Dy-166	3.E-04	2.E-05	-	2.E-09	-
Ho-155	3.E-04	1.E-03	-	4.E-07	-
Ho-157	3.E-04	7.E-03	-	3.E-06	-
Ho-159	3.E-04	6.E-03	-	2.E-06	-
Ho-161	3.E-04	3.E-03	-	1.E-06	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Ho-162m	3.E-04	2.E-03	-	6.E-07	-
Ho-162	3.E-04	2.E-02	-	6.E-06	-
Ho-164m	3.E-04	3.E-03	-	7.E-07	-
Ho-164	3.E-04	6.E-03	-	1.E-06	-
Ho-166m	3.E-04	2.E-05	-	2.E-11	-
Ho-166	3.E-04	2.E-05	-	4.E-09	-
Ho-167	3.E-04	4.E-04	-	1.E-07	-
Er-161	3.E-04	4.E-04	-	2.E-07	-
Er-165	3.E-04	2.E-03	-	4.E-07	-
Er-169	3.E-04	1.E-04	-	6.E-09	-
Er-171	3.E-04	1.E-04	-	2.E-08	-
Er-172	3.E-04	4.E-05	-	3.E-09	-
Tm-162	3.E-04	2.E-03	-	7.E-07	-
Tm-166	3.E-04	1.E-04	-	3.E-08	-
Tm-167	3.E-04	7.E-05	-	5.E-09	-
Tm-170	3.E-04	3.E-05	-	5.E-10	-
Tm-171	3.E-04	4.E-04	-	1.E-09	-
Tm-172	3.E-04	2.E-05	-	3.E-09	-
Tm-173	3.E-04	1.E-04	-	3.E-08	-
Tm-175	3.E-04	3.E-03	-	6.E-07	-
Yb-162	3.E-04	2.E-03	-	7.E-07	7.E-07
Yb-166	3.E-04	4.E-05	-	5.E-09	4.E-09
Yb-167	3.E-04	8.E-03	-	2.E-06	2.E-06
Yb-169	3.E-04	5.E-05	-	2.E-09	2.E-09
Yb-175	3.E-04	9.E-05	-	8.E-09	8.E-09
Yb-177	3.E-04	4.E-04	-	1.E-07	1.E-07
Yb-178	3.E-04	4.E-04	-	1.E-07	9.E-08
Lu-169	3.E-04	7.E-05	-	1.E-08	1.E-08
Lu-170	3.E-04	3.E-05	-	5.E-09	5.E-09
Lu-171	3.E-04	5.E-05	-	4.E-09	5.E-09
Lu-172	3.E-04	3.E-05	-	3.E-09	3.E-09
Lu-173	3.E-04	1.E-04	-	1.E-09	6.E-10
Lu-174m	3.E-04	8.E-05	-	8.E-10	5.E-10
Lu-174	3.E-04	1.E-04	-	6.E-10	4.E-10
Lu-176m	3.E-04	2.E-04	-	6.E-08	5.E-08
Lu-176	3.E-04	2.E-05	-	3.E-11	2.E-11
Lu-177m	3.E-04	2.E-05	-	3.E-10	2.E-10
Lu-177	3.E-04	7.E-05	-	5.E-09	5.E-09
Lu-178m	3.E-04	2.E-03	-	4.E-07	4.E-07

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Lu-178	3.E-04	1.E-03	-	3.E-07	3.E-07
Lu-179	3.E-04	2.E-04	-	4.E-08	4.E-08
Hf-170	2.E-03	7.E-05	1.E-08	1.E-08	-
Hf-172	2.E-03	3.E-05	4.E-11	1.E-10	-
Hf-173	2.E-03	1.E-04	3.E-08	3.E-08	-
Hf-175	2.E-03	8.E-05	2.E-09	3.E-09	-
Hf-177m	2.E-03	5.E-04	1.E-07	2.E-07	-
Hf-178m	2.E-03	7.E-06	6.E-12	2.E-11	-
Hf-179m	2.E-03	3.E-05	1.E-09	1.E-09	-
Hf-180m	2.E-03	2.E-04	5.E-08	6.E-08	-
Hf-181	2.E-03	3.E-05	9.E-10	1.E-09	-
Hf-182m	2.E-03	1.E-03	2.E-07	3.E-07	-
Hf-182	2.E-03	1.E-05	4.E-12	2.E-11	-
Hf-183	2.E-03	6.E-04	1.E-07	1.E-07	-
Hf-184	2.E-03	7.E-05	2.E-08	2.E-08	-
Ta-172	1.E-03	1.E-03	-	3.E-07	2.E-07
Ta-173	1.E-03	2.E-04	-	5.E-08	4.E-08
Ta-174	1.E-03	7.E-04	-	2.E-07	2.E-07
Ta-175	1.E-03	2.E-04	-	4.E-08	3.E-08
Ta-176	1.E-03	1.E-04	-	3.E-08	3.E-08
Ta-177	1.E-03	3.E-04	-	5.E-08	4.E-08
Ta-178	1.E-03	5.E-04	-	2.E-07	2.E-07
Ta-179	1.E-03	6.E-04	-	1.E-08	2.E-09
Ta-180m	1.E-03	6.E-04	-	2.E-07	1.E-07
Ta-180	1.E-03	4.E-05	-	1.E-09	6.E-11
Ta-182m	1.E-03	6.E-03	-	1.E-06	1.E-06
Ta-182	1.E-03	2.E-05	-	7.E-10	3.E-10
Ta-183	1.E-03	3.E-05	-	3.E-09	2.E-09
Ta-184	1.E-03	5.E-05	-	1.E-08	1.E-08
Ta-185	1.E-03	7.E-04	-	2.E-07	2.E-07
Ta-186	1.E-03	2.E-03	-	5.E-07	5.E-07
W-176	1.E-02	3.E-04	-	-	-
	3.E-01	4.E-04	1.E-07	-	-
W-177	1.E-02	6.E-04	-	-	-
	3.E-01	7.E-04	2.E-07	-	-
W-178	1.E-02	1.E-04	-	-	-
	3.E-01	2.E-04	5.E-08	-	-
W-179	1.E-02	2.E-02	-	-	-
	3.E-01	2.E-02	4.E-06	-	-
W-181	1.E-02	4.E-04	-	-	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
W-181	3.E-01	5.E-04	8.E-08	-	-
W-185	1.E-02	7.E-05	-	-	-
	3.E-01	1.E-04	2.E-08	-	-
W-187	1.E-02	5.E-05	-	-	-
	3.E-01	7.E-05	2.E-08	-	-
W-188	1.E-02	2.E-05	-	-	-
	3.E-01	2.E-05	3.E-09	-	-
Re-177	8.E-01	3.E-03	6.E-07	8.E-07	-
Re-178	8.E-01	3.E-03	6.E-07	7.E-07	-
Re-181	8.E-01	1.E-04	2.E-08	2.E-08	-
Re-182 (64 h)	8.E-01	4.E-05	6.E-09	5.E-09	-
Re-182 (12 h)3/	8.E-01	2.E-04	3.E-08	4.E-08	-
Re-184m	8.E-01	6.E-05	7.E-09	1.E-09	-
Re-184	8.E-01	6.E-05	8.E-09	3.E-09	-
Re-186m	8.E-01	4.E-05	5.E-09	4.E-10	-
Re-186	8.E-01	5.E-05	7.E-09	4.E-09	-
Re-187	8.E-01	2.E-02	2.E-06	2.E-07	-
Re-188m	8.E-01	2.E-03	3.E-07	3.E-07	-
Re-188	8.E-01	5.E-05	7.E-09	6.E-09	-
Re-189	8.E-01	9.E-05	1.E-08	1.E-08	-
Os-180	1.E-02	3.E-03	9.E-07	1.E-06	1.E-06
Os-181	1.E-02	4.E-04	1.E-07	1.E-07	1.E-07
Os-182	1.E-02	6.E-05	1.E-08	1.E-08	9.E-09
Os-185	1.E-02	7.E-05	1.E-09	2.E-09	2.E-09
Os-189m	1.E-02	2.E-03	5.E-07	5.E-07	4.E-07
Os-191m	1.E-02	4.E-04	7.E-08	5.E-08	4.E-08
Os-191	1.E-02	7.E-05	5.E-09	4.E-09	3.E-09
Os-193	1.E-02	4.E-05	1.E-08	7.E-09	6.E-09
Os-194	1.E-02	2.E-05	1.E-10	1.E-10	2.E-11
Ir-182	1.E-02	1.E-03	3.E-07	4.E-07	3.E-07
Ir-184	1.E-02	2.E-04	6.E-08	7.E-08	6.E-08
Ir-185	1.E-02	1.E-04	3.E-08	3.E-08	2.E-08
Ir-186	1.E-02	6.E-05	2.E-08	1.E-08	1.E-08
Ir-187	1.E-02	3.E-04	7.E-08	7.E-08	6.E-08
Ir-188	1.E-02	5.E-05	1.E-08	8.E-09	8.E-09
Ir-189	1.E-02	1.E-04	1.E-08	9.E-09	9.E-09
Ir-190m3/	1.E-02	5.E-03	5.E-07	5.E-07	5.E-07
Ir-190	1.E-02	3.E-05	2.E-09	2.E-09	2.E-09
Ir-192m	1.E-02	9.E-05	2.E-10	5.E-10	4.E-11
Ir-192	1.E-02	3.E-05	6.E-10	9.E-10	5.E-10

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Ir-194m	1.E-02	2.E-05	2.E-10	4.E-10	2.E-10
Ir-194	1.E-02	3.E-05	7.E-09	5.E-09	4.E-09
Ir-195m	1.E-02	2.E-04	6.E-08	7.E-08	5.E-08
Ir-195	1.E-02	4.E-04	1.E-07	1.E-07	1.E-07
Pt-186	1.E-02	4.E-04	9.E-08	-	-
Pt-188	1.E-02	4.E-05	4.E-09	-	-
Pt-189	1.E-02	3.E-04	7.E-08	-	-
Pt-191	1.E-02	1.E-04	2.E-08	-	-
Pt-193m	1.E-02	8.E-05	1.E-08	-	-
Pt-193	1.E-02	1.E-03	6.E-08	-	-
Pt-195m	1.E-02	6.E-05	1.E-08	-	-
Pt-197m	1.E-02	4.E-04	1.E-07	-	-
Pt-197	1.E-02	9.E-05	2.E-08	-	-
Pt-199	1.E-02	1.E-03	3.E-07	-	-
Pt-200	1.E-02	3.E-05	8.E-09	-	-
Au-193	1.E-01	2.E-04	3.E-08	4.E-08	4.E-08
Au-194	1.E-01	7.E-05	9.E-09	3.E-09	1.E-08
Au-195	1.E-01	1.E-04	1.E-08	3.E-09	1.E-09
Au-198m	1.E-01	2.E-05	3.E-09	2.E-09	2.E-09
Au-198	1.E-01	6.E-05	4.E-09	6.E-09	7.E-09
Au-199	1.E-01	8.E-05	8.E-09	8.E-09	8.E-09
Au-200m	1.E-01	3.E-05	4.E-09	5.E-09	6.E-09
Au-200	1.E-01	7.E-04	9.E-08	1.E-07	2.E-07
Au-201	1.E-01	2.E-03	3.E-07	5.E-07	5.E-07
Hg-193m (Org)	1.E+00	3.E-04	3.E-08	-	-
	4.E-01	1.E-04	-	-	-
Hg-193m	2.E-02	9.E-05	2.E-08	2.E-08	-
Hg-193m (Vapor)	-	-	2.E-08	-	-
Hg-193 (Org)	1.E+00	1.E-03	2.E-07	-	-
	4.E-01	5.E-04	-	-	-
Hg-193	2.E-02	4.E-04	1.E-07	1.E-07	-
Hg-193 (Vapor)	-	-	7.E-08	-	-
Hg-194 (Org)	1.E+00	5.E-07	7.E-11	-	-
	4.E-01	1.E-06	-	-	-
Hg-194	2.E-02	2.E-05	1.E-10	3.E-10	-
Hg-194 (Vapor)	-	-	7.E-11	-	-
Hg-195m (Org)	1.E+00	1.E-04	1.E-08	-	-
	4.E-01	8.E-05	-	-	-
Hg-195m	2.E-02	6.E-05	1.E-08	9.E-09	-
Hg-195m (Vapor)	-	-	9.E-09	-	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Hg-195 (Org)	1.E+00	1.E-03	1.E-07	-	-
	4.E-01	5.E-04	-	-	-
Hg-195	2.E-02	4.E-04	8.E-08	8.E-08	-
Hg-195 (Vapor)	-	-	7.E-08	-	-
Hg-197m (Org)	1.E+00	2.E-04	2.E-08	-	-
	4.E-01	1.E-04	-	-	-
Hg-197m	2.E-02	8.E-05	2.E-08	1.E-08	-
Hg-197m (Vapor)	-	-	1.E-08	-	-
Hg-197 (Org)	1.E+00	3.E-04	3.E-08	-	-
	4.E-01	2.E-04	-	-	-
Hg-197	2.E-02	1.E-04	3.E-08	2.E-08	-
Hg-197 (Vapor)	-	-	2.E-07	-	-
Hg-199m (Org)	1.E+00	3.E-03	4.E-07	-	-
	4.E-01	2.E-03	-	-	-
Hg-199m	2.E-02	2.E-03	4.E-07	4.E-07	-
Hg-199m (Vapor)	-	-	2.E-07	-	-
Hg-203 (Org)	1.E+00	1.E-05	2.E-09	-	-
	4.E-01	2.E-05	-	-	-
Hg-203	2.E-02	7.E-05	3.E-09	3.E-09	-
Hg-203 (Vapor)	-	-	2.E-09	-	-
Tl-194m	1.E+00	2.E-03	4.E-07	-	-
Tl-194	1.E+00	7.E-03	1.E-06	-	-
Tl-195	1.E+00	2.E-03	3.E-07	-	-
Tl-197	1.E+00	2.E-03	3.E-07	-	-
Tl-198m	1.E+00	8.E-04	1.E-07	-	-
Tl-198	1.E+00	5.E-04	7.E-08	-	-
Tl-199	1.E+00	2.E-03	2.E-07	-	-
Tl-200[3/]	1.E+00	2.E-04	3.E-08	-	-
Tl-201	1.E+00	5.E-04	5.E-08	-	-
Tl-202	1.E+00	9.E-05	1.E-08	-	-
Tl-204	1.E+00	4.E-05	5.E-09	-	-
Pb-195m	2.E-01	2.E-03	5.E-07	-	-
Pb-198	2.E-01	9.E-04	2.E-07	-	-
Pb-199	2.E-01	6.E-04	2.E-07	-	-
Pb-200	2.E-01	9.E-05	1.E-08	-	-
Pb-201	2.E-01	2.E-04	5.E-08	-	-
Pb-202m	2.E-01	2.E-04	7.E-08	-	-
Pb-202	2.E-01	4.E-06	1.E-10	-	-
Pb-203	2.E-01	1.E-04	2.E-08	-	-
Pb-205	2.E-01	9.E-05	3.E-09	-	-
Pb-209	2.E-01	7.E-04	1.E-07	-	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Pb-210	2.E-01	3.E-08	9.E-13	-	-
Pb-211	2.E-01	3.E-04	1.E-09	-	-
Pb-212	2.E-01	3.E-06	8.E-11	-	-
Pb-214	2.E-01	2.E-04	2.E-09	-	-
Bi-200	5.E-02	8.E-04	2.E-07	2.E-07	-
Bi-201	5.E-02	3.E-04	7.E-08	9.E-08	-
Bi-202	5.E-02	4.E-04	1.E-07	2.E-07	-
Bi-203	5.E-02	7.E-05	2.E-08	1.E-08	-
Bi-205	5.E-02	4.E-05	6.E-09	3.E-09	-
Bi-206	5.E-02	2.E-05	3.E-09	2.E-09	-
Bi-207	5.E-02	3.E-05	4.E-09	8.E-10	-
Bi-210m	5.E-02	2.E-06	1.E-11	2.E-12	-
Bi-210	5.E-02	2.E-05	9.E-10	6.E-11	-
Bi-212	5.E-02	1.E-04	6.E-10	7.E-10	-
Bi-213	5.E-02	2.E-04	7.E-10	8.E-10	-
Bi-214	5.E-02	6.E-04	2.E-09	2.E-09	-
Po-203	1.E-01	7.E-04	2.E-07	2.E-07	-
Po-205	1.E-01	6.E-04	9.E-08	2.E-07	-
Po-207	1.E-01	2.E-04	6.E-08	7.E-08	-
Po-210	1.E-01	8.E-08	1.E-12	1.E-12	-
At-207	1.E+00	2.E-04	6.E-09	5.E-09	-
At-211	1.E+00	3.E-06	2.E-10	1.E-10	-
Rn-220	-	4/	4/	4/	4/
Rn-222	-	5/	5/	5/	5/
Fr-222	1.E+00	6.E-05	1.E-09	-	-
Fr-223	1.E+00	2.E-05	2.E-09	-	-
Ra-223	2.E-01	3.E-07	-	2.E-12	-
Ra-224	2.E-01	4.E-07	-	4.E-12	-
Ra-225	2.E-01	4.E-07	-	2.E-12	-
Ra-226	2.E-01	1.E-07	-	1.E-12	-
Ra-227	2.E-01	6.E-04	-	4.E-08	-
Ra-228	2.E-01	1.E-07	-	3.E-12	-
Ac-224	1.E-03	5.E-05	9.E-11	1.E-10	1.E-10
Ac-225	1.E-03	1.E-06	1.E-12	2.E-12	1.E-12
Ac-226	1.E-03	3.E-06	9.E-12	1.E-11	1.E-11
Ac-227	1.E-03	1.E-08	2.E-15	7.E-15	1.E-14
Ac-228	1.E-03	6.E-05	4.E-11	1.E-10	1.E-10

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Th-226	2.E-04	1.E-04	-	4.E-10	3.E-10
Th-227	2.E-04	4.E-06	-	8.E-13	7.E-13
Th-228	2.E-04	4.E-07	-	5.E-14	4.E-14
Th-229	2.E-04	4.E-08	-	6.E-15	7.E-15
Th-230	2.E-04	3.E-07	-	4.E-14	5.E-14
Th-231	2.E-04	1.E-04	-	1.E-08	2.E-08
Th-232	2.E-04	5.E-08	-	7.E-15	1.E-14
Th-234	2.E-04	1.E-05	-	5.E-10	4.E-10
Th-Natural	2.E-04	5.E-08	-	7.E-15	1.E-14
Pa-227	1.E-03	1.E-04	-	3.E-10	2.E-10
Pa-228	1.E-03	3.E-05	-	5.E-11	3.E-11
Pa-230	1.E-03	2.E-05	-	1.E-11	8.E-12
Pa-231	1.E-03	1.E-08	-	9.E-15	1.E-14
Pa-232	1.E-03	4.E-05	-	1.E-10	2.E-10
Pa-233	1.E-03	4.E-05	-	2.E-09	1.E-09
Pa-234[3]	1.E-03	7.E-05	-	2.E-08	2.E-08
U-230	5.E-02	2.E-07	1.E-12	8.E-13	-
	2.E-03	1.E-06	-	-	6.E-13
U-231	5.E-02	1.E-04	2.E-08	1.E-08	-
	2.E-03	1.E-04	-	-	1.E-08
U-232	5.E-02	1.E-07	1.E-12	9.E-13	-
	2.E-03	2.E-06	-	-	2.E-14
U-233	5.E-02	5.E-07	4.E-12	2.E-12	-
	2.E-03	5.E-06	-	-	9.E-14
U-234	5.E-02	5.E-07	4.E-12	2.E-12	-
	2.E-03	5.E-06	-	-	9.E-14
U-235	5.E-02	6.E-07	5.E-12	2.E-12	-
	2.E-03	5.E-06	-	-	1.E-13
U-236	5.E-02	5.E-07	5.E-12	2.E-12	-
	2.E-03	6.E-06	-	-	1.E-13
U-237	5.E-02	5.E-05	6.E-09	4.E-09	-
	2.E-03	5.E-05	-	-	4.E-09
U-238	5.E-02	6.E-07	5.E-12	2.E-12	-
	2.E-03	6.E-06	-	-	1.E-13
U-239[3]	5.E-02	2.E-03	4.E-07	4.E-07	-
	2.E-03	2.E-03	-	-	4.E-07
U-240	5.E-02	3.E-05	9.E-09	7.E-09	-
	2.E-03	3.E-05	-	-	6.E-09
U-Natural	5.E-02	6.E-07	5.E-12	2.E-12	-
	2.E-03	6.E-06	-	-	1.E-13
Np-232	1.E-03[6]	6.E-03[7]	-	1.E-08[8]	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Np-233	1.E-03[6]	2.E-02[7]	-	8.E-06[8]	-
Np-234	1.E-03[6]	8.E-05[7]	-	6.E-09[8]	-
Np-235	1.E-03[6]	6.E-04[7]	-	3.E-09[8]	-
Np-236 (1.E+05 yr)	1.E-03[6]	2.E-07[7]	-	1.E-13[8]	-
Np-236 (22 h)	1.E-03[6]	1.E-04[7]	-	2.E-10[8]	-
Np-237	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Np-238	1.E-03[6]	4.E-05[7]	-	4.E-10[8]	-
Np-239	1.E-03[6]	5.E-05[7]	-	5.E-09[8]	-
Np-240[3]	1.E-03[6]	7.E-04[7]	-	2.E-07[8]	-
Pu-234	1.E-03[6]	1.E-04[7]	-	5.E-10[8]	-
	1.E-05[6]	2.E-04[7]	-	-	4.E-10[8]
Pu-235	1.E-03[6]	1.E-02[7]	-	7.E-06[8]	-
	1.E-05[6]	2.E-02[7]	-	-	6.E-06[8]
Pu-236	1.E-03[6]	1.E-07[7]	-	8.E-14[8]	-
	1.E-05[6]	5.E-06[7]	-	-	9.E-14[8]
Pu-237	1.E-03[6]	1.E-04[7]	-	8.E-09[8]	-
	1.E-05[6]	3.E-04[7]	-	-	7.E-09[8]
Pu-238	1.E-03[6]	4.E-08[7]	-	3.E-14[8]	-
	1.E-05[6]	3.E-06[7]	-	-	4.E-14[8]
Pu-239	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
	1.E-05[6]	2.E-06[7]	-	-	4.E-14[8]
Pu-240	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
	1.E-05[6]	2.E-06[7]	-	-	4.E-14[8]
Pu-241	1.E-03[6]	2.E-06[7]	-	1.E-12[8]	-
	1.E-05[6]	1.E-04[7]	-	-	2.E-12[8]
Pu-242	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
	1.E-05[6]	2.E-06[7]	-	-	4.E-14[8]
Pu-243	1.E-03[6]	4.E-04[7]	-	8.E-08[8]	-
	1.E-05[6]	4.E-04[7]	-	-	9.E-08[8]
Pu-244	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
	1.E-05[6]	2.E-06[7]	-	-	4.E-14[8]
Pu-245	1.E-03[6]	6.E-05[7]	-	1.E-08[8]	-
	1.E-05[6]	6.E-05[7]	-	-	1.E-08[8]
Am-237	1.E-03[6]	2.E-03[7]	-	7.E-07[8]	-
Am-238	1.E-03[6]	8.E-04[7]	-	1.E-08[8]	-
Am-239	1.E-03[6]	1.E-04[7]	-	3.E-08[8]	-
Am-240	1.E-03[6]	5.E-05[7]	-	6.E-09[8]	-
Am-241	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Am-242m	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Am-242	1.E-03[6]	1.E-04[7]	-	2.E-10[8]	-
Am-243	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Am-244m	1.E-03[6]	2.E-03[7]	-	1.E-08[8]	-
Am-244	1.E-03[6]	7.E-05[7]	-	7.E-10[8]	-
Am-245	1.E-03[6]	8.E-04[7]	-	2.E-07[8]	-
Am-246m	1.E-03[6]	2.E-03[7]	-	4.E-07[8]	-
Am-246[3]	1.E-03[6]	9.E-04[7]	-	2.E-07[8]	-
Cm-238	1.E-03[6]	4.E-04[7]	-	3.E-09[8]	-
Cm-240	1.E-03[6]	2.E-06[7]	-	1.E-12[8]	-
Cm-241	1.E-03[6]	3.E-05[7]	-	7.E-11[8]	-
Cm-242	1.E-03[6]	1.E-06[7]	-	7.E-13[8]	-
Cm-243	1.E-03[6]	5.E-08[7]	-	3.E-14[8]	-
Cm-244	1.E-03[6]	6.E-08[7]	-	4.E-14[8]	-
Cm-245	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Cm-246	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Cm-247	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	-
Cm-248	1.E-03[6]	8.E-09[7]	-	6.E-15[8]	-
Cm-249	1.E-03[6]	1.E-03[7]	-	5.E-08[8]	-
Bk-245	5.E-04	6.E-05	-	3.E-09	-
Bk-246	5.E-04	7.E-05	-	7.E-09	-
Bk-247	5.E-04	6.E-08	-	2.E-14	-
Bk-249	5.E-04	2.E-05	-	9.E-12	-
Bk-250	5.E-04	3.E-04	-	2.E-09	-
Cf-244	1.E-03[6]	9.E-04[7]	-	1.E-09[8]	1.E-09[8]
Cf-246	1.E-03[6]	1.E-05[7]	-	2.E-11[8]	2.E-11[8]
Cf-248	1.E-03[6]	5.E-07[7]	-	3.E-13[8]	3.E-13[8]
Cf-249	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	3.E-14[8]
Cf-250	1.E-03[6]	7.E-08[7]	-	5.E-14[8]	6.E-14[8]
Cf-251	1.E-03[6]	3.E-08[7]	-	2.E-14[8]	3.E-14[8]
Cf-252	1.E-03[6]	1.E-07[7]	-	1.E-13[8]	9.E-14[8]
Cf-253	1.E-03[6]	1.E-05[7]	-	5.E-12[8]	4.E-12[8]
Cf-254	5.E-04[6]	5.E-08[7]	-	5.E-14[8]	4.E-14[8]
Es-250	5.E-04	1.E-03	-	3.E-09	-
Es-251	5.E-04	2.E-04	-	3.E-09	-
Es-253	5.E-04	6.E-06	-	4.E-12	-
Es-254m	5.E-04	9.E-06	-	3.E-11	-
Es-254	5.E-04	9.E-07	-	3.E-13	-
Fm-252	5.E-04	1.E-05	-	3.E-11	-
Fm-253	5.E-04	4.E-05	-	2.E-11	-
Fm-254	5.E-04	8.E-05	-	2.E-10	-

Figure III-1 (contd)

Radionuclide	f_1 Value	Ingested Water DCG (μCi/mL)	Inhaled Air DCG (μCi/mL) D	W	Y
Fm-255	5.E-04	1.E-05	-	5.E-11	-
Fm-257	5.E-04	2.E-06	-	6.E-13	-
Md-257	5.E-04	3.E-04	-	2.E-10	-
Md-258	5.E-04	2.E-06	-	8.E-13	-

1/ A dash indicates no values given for this data category.

2/ The inhalation DCG values allow for an additional 50% absorption through the skin, as described in ICRP Publication No. 30: "Limits for Intakes of Radionuclides by Workers." For elemental tritium, the lung dose equivalent is used as the basis for the DCG value shown.

3/ For the radionuclide shown, the DCG for external exposure from immersion in a contaminated plume (listed in Figure III-2) is more restrictive.

4/ DCGs for Rn-220 are being assessed by DOE. Until the review has been completed and new values issued, the value of 3.E-09 μCi/mL given in Figure III-3 shall be used.

5/ DCGs for Rn-222 are being assessed by DOE. Until the review has been completed and new values issued, the value of 3.E-09 μCi/mL given in Figure III-3 shall be used for Rn-222 releases from DOE facilities. In addition, the requirements of Chapter IV, Sections 4b, 6b, and 6d, shall be used when they are applicable.

6/ ICRP Publication No. 48: "The Metabolism of Plutonium and Related Elements."

7/ Based on the listed f_1 value. It is assumed that individual organ doses, except for the gastrointestinal tract, change in proportion to f_1 for all organs, including the "Remainder." Gastrointestinal doses are unchanged because very little material is absorbed in the upper portions of the tract.

8/ It is assumed that the effective dose equivalents are unchanged even though the f_1 values have changed. This is because the contribution to organ dose from inhalation is dependent mainly on transfer from lung to blood when f_1 values are small. Also the gastrointestinal tract dose would be unchanged because the fraction of activity passing through the tract is $(1.0 - f_1)$.

Figure III-1 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Actinium/ Ac	89	Oxides, hydroxides	1.E-03	Y
		Halides, nitrates	1.E-03	W
		All others	1.E-03	D
Aluminum/ Al	13	Oxides, hydroxides, carbides, halides, nitrates, elemental form	1.E-02	W
		All others	1.E-02	D
Americium/ Am	95	All forms	1.E-03	W
Antimony/ Sb	51	Oxides, hydroxides, halides, sulphides, sulphates, nitrates	1.E-01	D
		All others	1.E-02	W
Arsenic/ As	33	All forms	5.E-01	W
Astatine/ At	85	All (as a halide)	1.E+00	W or D; dependent upon associated element
Barium/ Ba	56	All forms	1.E-01	D
Berkelium/ Bk	97	All forms	5.E-04	W
Beryllium/ Be	4	Oxides, halides, nitrates	5.E-03	Y
		All others	5.E-03	W
Bismuth/ Bi	83	All except nitrates	5.E-02	W
		Nitrates	5.E-02	D
Bromine/ Br	35	Bromides	1.E+00	W or D; dependent upon associated element

Figure III-2
Alternative Absorption Factors and Lung Retention Classes for Specific Compounds

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Cadmium/ Cd	48	Oxides, hydroxides	5.E-02	Y
		Sulphates, halides	5.E-02	W
		All others	5.E-02	D
Calcium/ Ca	20	All forms	3.E-01	W
Californium/ Cf	98	Oxides, hydroxides	1.E-03	Y
		All others	1.E-03	W
Carbon/ C	6	Oxides	1/	D
		Organic (^{11}C)	1.E-02	W
		Organic (^{14}C)	7.E-05	W
Cerium/ Ce	58	Oxides, hydroxides, fluorides	3.E-04	Y
		All others	3.E-04	W
Cesium/ Cs	55	All forms	1.E+00	D
Chlorine/ Cl	17	Chloride	1.E+00	W or D; dependent upon associated element
Chromium/ Cr	24	Oxides, hydroxides	1.E-01	Y
		Halides, nitrates	1.E-01	W
		All others	1.E-01	D
		Ingestion 2/		
		Trivalent	1.E-02	-
		Hexavalent	1.E-01	-
Cobalt/ Co	27	Oxides, hydroxides, halides, nitrates	5.E-02	Y
		All others	5.E-02	W
		Ingestion only	3.E-01	-

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Copper/ Cu	29	Oxides, hydroxides	5.E-01	Y
		Sulphites, halides, nitrates	5.E-01	W
		All others	5.E-01	D
Curium/ Cm	96	All forms	1.E-03	W
Dysprosium/ Dy	66	All forms	3.E-04	W
Einsteinium/ Es	99	All forms	5.E-04	W
Erbium/ Er	68	All forms	3.E-04	W
Europium/ Eu	63	All forms	1.E-03	W
Fermium/ Fm	100	All forms	5.E-04	W
Fluorine/ F	9	Fluoride	1.E+00	Y, W, or D; dependent upon associated element
Francium/ Fr	87	All forms	1.E+00	D
Gadolinium/ Gd	64	Oxides, hydroxides, fluorides	3.E-04	W
		All others	3.E-04	
Gallium/ Ga	31	Oxides, hydroxides, carbides, halides, nitrates,	1.E-03	W
		All others	1.E-03	D
Germanium/ Ge	32	Oxides, sulphides, halides	1.E+00	W
		All others	1.E+00	D

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Gold/ Au	79	Oxides, hydroxides	1.E-01	Y
		Halides, nitrates	1.E-01	W
		All others	1.E-01	D
Hafnium/ Hf	72	Oxides, hydroxides, halides, carbides, nitrates	2.E-03	W
		All others	2.E-03	D
Holmium/ Ho	67	All forms	3.E-04	W
Hydrogen/ H	1	Water (^3H)	1.E+00	-
Indium/ In	49	Oxides, hydroxides, halides	2.E-02	W
		All others	2.E-02	D
Iodine/ I	53	All forms	1.E+00	D
Iridium/ Ir	77	Oxides, hydroxides	1.E-02	Y
		Halides, nitrates, metallic form	1.E-02	W
		All others	1.E-02	D
Iron/ Fe	26	Oxides, hydroxides, halides	1.E-01	W
		All others	1.E-01	D
Lanthanum/ La	57	Oxides, hydroxides	1.E-03	W
		All others	1.E-03	D
Lead/ Pb	82	All forms	2.E-01	D
Lutetium/ Lu	71	Oxides, hydroxides, fluorides	3.E-04	Y
		All others	3.E-04	W

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Magnesium/ Mg	12	Oxides, hydroxides, carbides, halides, nitrates	5.E-01	W
		All others	5.E-01	D
Manganese/ Mn	25	Oxides, hydroxides, halides, nitrates	1.E-01	W
		All others	1.E-01	D
Mendelevium/ Md	101	All forms	5.E-04	W
Mercury/ Hg	80	Oxides, hydroxides, halides, nitrates, sulphites	2.E-02	W
		Sulphates, elemental form	2.E-02	D
		Organic forms	1.E+00	D
		Vapor	-	D
Molybdenum/ Mo	42	Oxides, hydroxides, MoS_2	5.E-02	Y
		All others	8.E-01	D
		Ingestion[2/]		
		MoS_2	5.E-02	-
		All others	8.E-01	-
Neodymium/ Nd	60	Oxides, hydroxides, carbides, fluorides	3.E-04	Y
		All others	3.E-04	W
Neptunium/ Np	93	All forms	1.E-03	W
Nickel/ Ni	28	Oxides, hydroxides	5.E-02	W
		All others (vapor)	-	D
Niobium/ Nb	41	Oxides, hydroxides	1.E-02	Y
		All others	1.E-02	W

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Osmium/ Os	76	Oxides, hydroxides	1.E-02	Y
		Halides, nitrates	1.E-02	W
		All others	1.E-02	D
Palladium/ Pd	46	Oxides, hydroxides	5.E-03	Y
		Nitrates	5.E-03	W
		All others	5.E-03	D
Phosphorus/ P	15	Phosphates	8.E-01	W or D; dependent upon associated element
Platinum/ Pt	78	All forms	1.E-02	D
Plutonium/ Pu	94	Oxides, hydroxides	1.E-05	Y
		Nitrates		W
		All others	1.E-04	W
		[Note: Use same values for ingestion]	1.E-03	
Polonium/ Po	84	Oxides, hydroxides, nitrates	1.E-01	W
		All others	1.E-01	D
Potassium/ K	19	All forms	1.E+00	D
Praesodymium/ Pr	59	Oxides, hydroxides, carbides, fluorides	3.E-04	Y
		All others	3.E-04	W
Promethium/ Pm	61	Oxides, hydroxides, carbides, fluorides	3.E-04	Y
		All others	3.E-04	W
Protactinium/ Pa	91	Oxides, hydroxides	1.E-03	Y
		All others	1.E-03	W
Radium/ Ra	88	All forms	2.E-01	W

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Rhenium/ Re	75	Oxides, hydroxides, halides, nitrates	8.E-01	W
		All others	8.E-01	D
Rhodium/ Rh	45	Oxides, hydroxides	5.E-02	Y
		Halides	5.E-02	W
		All others	5.E-02	D
Rubidium/ Rb	37	All forms	1.E+00	D
Ruthenium/ Ru	44	Oxides, hydroxides	5.E-02	Y
		Halides	5.E-02	W
		All others	5.E-02	D
Samarium/ Sm	62	All forms	3.E-04	W
Scandium/ Sc	21	All forms	1.E-04	Y
Selenium/ Se	34	Oxides, hydroxides, carbides	8.E-01	W
		All others	8.E-01	D
		Ingestion only	5.E-02	-
Silicon/ Si	14	Ceramic forms	1.E-02	Y
		Oxides, hydroxides, carbides, nitrates	1.E-02	W
		All others	1.E-02	D
Silver/ Ag	47	Oxides, hydroxides	5.E-02	Y
		Nitrates, sulphides	5.E-02	W
		All others, elemental form	5.E-02	D
Sodium/ Na	11	All forms	1.E+00	D
Strontium/ Sr	38	$SrTiO_3$	1.E-02	Y
		All others (soluble)	3.E-01	D

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Sulfur/ S	16	Sulphates, sulphides	1.E-01	W or D; dependent upon associated element
		All inorganic	8.E-01	-
		Elemental form	1.E-01	W
		Gases	1.E+00	D
Tantalum/ Ta	73	Oxides, hydroxides, halides, carbides, nitrates, nitrides	1.E-03	Y
		All others	1.E-03	W
Technetium/ Tc	43	Oxides, hydroxides, halides, nitrates	8.E-01	W
		All others	8.E-01	D
Tellurium/ Te	52	Oxides, hydroxides, nitrates	2.E-01	W
		All others	2.E-01	D
Terbium/ Tb	65	All forms	3.E-04	W
Thallium/ Tl	81	All forms	1.E+00	D
Thorium/ Th	90	Oxides, hydroxides	2.E-04	Y
		All others	2.E-04	W
Thulium/ Tm	69	All forms	3.E-04	W
Tin/ Sn	50	Oxides, hydroxides, halides, nitrates, sulphides, $Sn_3(PO_4)_4$	2.E-02	W
		All others	2.E-02	D
Titanium/ Ti	22	$SrTiO_3$	1.E-02	Y
		Oxides, hydroxides, carbides, halides, nitrates	1.E-02	W
		All others	1.E-02	D

Figure III-2 (contd)

Element/ Symbol	Atomic Number	Compound	f_1	Lung Retention Class
Tungsten/ W	74	Ingestion[2/]		
		Tungstic acid	1.E-02	-
		All others	3.E-01	-
Uranium/ U	92	UO_2, U_3O_8	2.E-03	Y
		UO_3, tetravalent compounds	5.E-02	W
		UF_6, uranyl compounds	5.E-02	D
Vanadium/ V	23	Oxides, hydroxides, carbides, halides	1.E-02	W
		All others	1.E-02	D
Ytterbium/ Yb	70	Oxides, hydroxides, fluorides	3.E-04	Y
		All others	3.E-04	W
Yttrium/ Y	39	Oxides, hydroxides	1.E-04	Y
		All others	1.E-04	W
Zinc/ Zn	30	All forms	5.E-01	Y
Zirconium/ Zr	40	Carbides	2.E-03	Y
		Oxides, hydroxides, halides, nitrates	2.E-03	W
		All others	2.E-03	D

1/ A dash indicates no data for the value shown.
2/ For ingestion, no lung retention classes are listed.

Figure III-2 (contd)

Radionuclide	Half-Life	Air Immersion DCG (μCi/mL)
C-11	20.48 min	2.E-08
N-13	9.97 min	2.E-08
N-16	7.13 s	3.E-09
O-15	122.24 s	2.E-08
F-18[1/]	109.74 min	2.E-08
Na-24[1/]	15.00 h	4.E-09
Mg-27[2/]	9.458 min	2.E-08
Al-28[2/]	2.240 min	1.E-08
Cl-38[1/]	37.21 min	1.E-08
Ar-37	35.02 d	1.E-02
Ar-39	269 yr	4.E-06[3/]
Ar-41	1.827 h	1.E-08
K-43[1/]	22.6 h	2.E-08
Ca-49[2/]	8.719 min	5.E-09
Sc-44[1/]	3.927 h	9.E-09
Sc-46m[2/]	18.72 s	2.E-07
Ti-45[1/]	3.08 h	2.E-08
Ti-51[2/]	5.752 min	5.E-08
V-52[2/]	3.75 min	1.E-08
Cr-49[1/]	42.09 min	2.E-08
Mn-52m[1/]	21.4 min	8.E-09
Mn-56[1/]	2.5785 h	1.E-08
Mn-57[2/]	1.47 min	2.E-07
Co-60m[1/]	10.47 min	4.E-06
Ni-57[1/, 4/]	36.08 h	1.E-08

Figure III-3
Derived Concentration Guides (DCGs) for Members of the Public from External Exposure During Immersion in a Contaminated Atmospheric Cloud

Radionuclide	Half-Life	Air Immersion DCG (μCi/mL)
Ni-65[1/, 5/]	2.520 h	3.E-08
Cu-61[1/]	3.408 h	2.E-08
Cu-62[2/]	9.74 min	2.E-08
Ga-66[1/]	9.40 h	7.E-09
Ga-68[1/]	68.0 min	2.E-08
Ga-72[1/]	14.1 h	7.E-09
Se-73[1/]	7.15 h	2.E-08
Br-77[1/]	57.04 h	6.E-08[6/]
Br-80[1/]	17.4 min	2.E-07
Br-82[1/]	35.30 h	7.E-09
Br-84[1/]	31.80 min	1.E-08
Br-85[2/]	172 s	2.E-07
Kr-79	35.04 h	8.E-08
Kr-81	2.1E+05 yr	2.E-06
Kr-83m	1.83 h	2.E-04
Kr-85	10.72 yr	3.E-06[3/]
Kr-85m	4.48 h	1.E-07
Kr-87	76.3 min	2.E-08
Kr-88	2.84 h	9.E-09
Kr-89	3.16 min	1.E-08
Kr-90	32.32 s	1.E-08
Rb-81[1/]	4.58 h	3.E-08
Rb-82[2/]	1.25 min	2.E-08
Rb-88[1/]	17.8 min	3.E-08
Rb-89[1/]	15.44 min	9.E-09
Rb-90[2/]	157 s	8.E-09
Rb-90m[2/]	258 s	5.E-09
Sr-85m[1/]	67.66 min	9.E-08
Sr-87m[1/]	2.805 h	6.E-08
Sr-92[1/]	2.71 h	1.E-08
Sr-93[2/]	7.3 min	8.E-09
Y-86[1/]	14.74 h	5.E-09
Y-90m[1/]	3.19 h	3.E-08[6/]
Y-91m[1/]	49.71 min	4.E-08
Nb-90[1/]	14.60 h	4.E-09

Figure III-3 (contd)

Radionuclide	Half-Life	Air Immersion DCG (μCi/mL)
Nb-94m[2]	6.26 min	4.E-06
Nb-97[1]	72.1 min	3.E-08
Nb-97m[1]	60 s	3.E-08
Mo-91[2]	15.49 min	2.E-08
Mo-101[1]	14.61 min	1.E-08
Tc-95[1]	20.0 h	2.E-08
Tc-96m[1]	51.5 min	5.E-07
Tc-99m[1]	6.02 h	1.E-07
Tc-101[1]	14.2 min	6.E-08
Ru-105[1]	4.44 h	2.E-08
Rh-105m[2]	45 s	7.E-07
Rh-106[2]	29.92 s	8.E-08
Ag-108[2]	2.37 min	7.E-07
Ag-109m[2]	39.6 s	4.E-06
Ag-110[2]	24.57 s	4.E-07
Cd-111m[2]	48.7 min	7.E-08
Cd-117[1]	2.49 h	2.E-08
Cd-117m[1]	3.36 h	9.E-09
In-113m[1]	1.658 h	8.E-08
In-114[2]	71.9 s	5.E-07
In-116m[1]	54.15 min	8.E-09
In-117[1]	43.8 min	3.E-08
Sb-117[1]	2.80 h	1.E-07
Sb-126m[1]	19.0 min	1.E-08
Sb-129[1]	4.40 h	1.E-08
Te-133[1]	12.45 min	2.E-08
Te-133m[1]	55.4 min	8.E-09
Te-134[1]	41.8 min	2.E-08
I-122[2]	3.62 min	2.E-08
I-128[1]	24.99 min	2.E-07
I-132[1]	2.30 h	8.E-09
I-134[1]	52.6 min	7.E-09
I-135[1]	6.61 h	1.E-08[6]
I-136[2]	83 s	7.E-09

Figure III-3 (contd)

Radionuclide	Half-Life	Air Immersion DCG (μCi/mL)
Xe-122	20.1 h	3.E-07
Xe-123	2.14 h	3.E-08
Xe-125	16.8 h	8.E-08
Xe-127	36.406 d	7.E-08
Xe-129m	8.89 d	8.E-07
Xe-131m	11.84 d	2.E-06
Xe-133	5.245 d	5.E-07
Xe-133m	2.19 d	6.E-07
Xe-135	9.11 h	8.E-08
Xe-135m	15.36 min	5.E-08
Xe-137	3.83 min	9.E-08
Xe-138	14.13 min	2.E-08
Cs-126[2/]	1.64 min	2.E-08
Cs-129[1/]	32.06 h	8.E-08[6/]
Cs-138[1/]	32.2 min	8.E-09
Cs-139[2/]	9.40 min	5.E-08
Ba-137m[2/]	2.552 min	3.E-08
Ba-141[1/]	18.27 min	2.E-08
Ba-142[1/]	10.70 min	2.E-08
La-142[1/]	95.4 min	6.E-09
Pr-144m[2/]	7.2 min	4.E-06
Nd-149[1/]	1.73 h	5.E-08
Gd-162[2/]	9.7 min	5.E-08
Td-162[2/]	7.76 min	2.E-08
Dy-157[1/]	8.06 h	6.E-08
Re-182m[1/]	12.7 h	2.E-08
Os-190m[2/]	9.9 min	1.E-08
Ir-190m[1/]	3.2 h	5.E-07[6/]
Au-195m[2/]	30.6 s	1.E-07

Figure III-3 (contd)

Radionuclide	Half-Life	Air Immersion DCG (μCi/mL)
Tl-200 1/	26.1 h	1.E-08
Tl-207 2/	4.77 min	1.E-06 3/
Tl-208 2/	3.053 min	5.E-09
Tl-209 2/	2.20 min	9.E-09
Tl-210 2/	1.30 min	7.E-09
Pb-204m 2/	66.9 min	9.E-09
Bi-211 2/	2.13 min	4.E-07
Po-211 2/	0.516 s	2.E-06
Rn-220 7/	55.61 s	3.E-09
Rn-222 7/	3.82 d	3.E-09
Th-233 2/	22.3 min	5.E-07
Pa-234 1/	6.70 h	1.E-08
Pa-234m 2/	1.17 min	8.E-07 3/
U-239 1/	23.40 min	4.E-07 6/
Np-240 1/	65 min	2.E-08
Np-240m 2/	7.4 min	6.E-08
Am-246 1/	25.0 min	2.E-08

1/ Committed effective dose equivalent from inhalation is calculated in ICRP Publication 30, but the DCG value for external exposure to a contaminated atmospheric cloud is more restrictive than the DCG value for inhalation.

2/ Committed effective dose equivalent from inhalation is not calculated in ICRP Publication 30, but DCG value for external exposure to contaminated cloud should be more restrictive than DCG value for inhalation due to relatively short half-life of radionuclide.

3/ DCG value is determined by limit on annual dose equivalent to skin, rather than limit on annual effective dose equivalent.

Figure III-3 (contd)

4/ DCG value applies to radionuclide in vapor form only; DCG value for inhalation is more restrictive for radionuclide in inorganic form.

5/ DCG value applies to radionuclide in inorganic or vapor form.

6/ DCG value for exposure to contaminated atmospheric cloud is the same as DCG value for inhalation.

7/ The value shown for radon gas is a result of unit conversion from 3 pCi/L to 3 μCi/mL.

Figure III-3 (contd)

CHAPTER IV

RESIDUAL RADIOACTIVE MATERIAL

1. PURPOSE. This chapter presents radiological protection requirements and guidelines for cleanup of residual radioactive material and management of the resulting wastes and residues and release of property. These requirements and guidelines are applicable at the time the property is released. Property subject to these criteria includes, but is not limited to sites identified by the Formerly Utilized Sites Remedial Action Program (FUSRAP) and the Surplus Facilities Management Program (SFMP). The topics covered are basic dose limits, guidelines and authorized limits for allowable levels of residual radioactive material, and control of the radioactive wastes and residues. This chapter does not apply to uranium mill tailings or to properties covered by mandatory legal requirements.

2. IMPLEMENTATION. DOE elements shall develop plans and protocols for the implementation of this guidance. FUSRAP sites shall be identified, characterized, and designated, as such, for remedial action and certified for release. Information on applications of the guidelines and requirements presented herein, including procedures for deriving specific property guidelines for allowable levels of residual radioactive material from basic dose limits, is contained in DOE/CH 8901, "A Manual for Implementing Residual Radioactive Material Guidelines, A Supplement to the U.S. Department of Energy Guidelines for Residual Radioactive Material at FUSRAP and SFMP Sites," June 1989.

   a. Residual Radioactive Material This chapter provides guidance on radiation protection of the public and the environment from:

      (1) Residual concentrations of radionuclides in soil (for these purposes, soil is defined as unconsolidated earth material, including rubble and debris that might be present in earth material);

      (2) Concentrations of airborne radon decay products;

      (3) External gamma radiation;

      (4) Surface contamination; and

      (5) Radionuclide concentrations in air or water resulting from or associated with any of the above.

b. Basic Dose Limit. The basic dose limit for doses resulting from exposures to residual radioactive material is a prescribed standard from which limits for quantities that can be monitored and controlled are derived; it is specified in terms of the effective dose equivalent as defined in this Order. The basic dose limits are used for deriving guidelines for residual concentrations of radionuclides in soil. Guidelines for residual concentrations of thorium and radium in soil, concentrations of airborne radon decay products, allowable indoor external gamma radiation levels, and residual surface contamination concentrations are based on existing radiological protection standards (40 CFR Part 192; NRC Regulatory Guide 1.86 and subsequent NRC guidance on residual radioactive material). Derived guidelines or limits based on the basic dose limits for those quantities are used only when the guidelines provided in the existing standards are shown to be inappropriate.

c. Guideline. A guideline for residual radioactive material is a level of radioactive material that is acceptable for use of property without restrictions due to residual radioactive material. Guidelines for residual radioactive material presented herein are of two kinds, generic and specific. The basis for the guidelines is generally a presumed worst-case plausible-use scenario for the property.

(1) Generic guidelines, independent of the property, are taken from existing radiation protection standards. Generic guideline values are presented in this chapter.

(2) Specific property guidelines are derived from basic dose limits using specific property models and data. Procedures and data for deriving specific property guideline values are given by DOE/CH-8901.

d. Authorized Limit. An authorized limit is a level of residual radioactive material that shall not be exceeded if the remedial action is to be considered completed and the property is to be released without restrictions on use due to residual radioactive material.

(1) The authorized limits for a property will include:

(a) Limits for each radionuclide or group of radionuclides, as appropriate, associated with residual radioactive material in soil or in surface contamination of structures and equipment;

(b) Limits for each radionuclide or group of radionuclides, as appropriate, in air or water; and

(c) Where appropriate, a limit on external gamma radiation resulting from the residual material.

(2) Under normal circumstances expected at most properties, authorized limits for residual radioactive material are set equal to, or below, guideline values. Exceptional conditions for which authorized limits might differ from guideline values are specified in paragraphs IV-5 and IV-7.

(3) A property may be released without restrictions if residual radioactive material does not exceed the authorized limits or approved supplemental limits, as defined in paragraph IV.7a, at the time remedial action is completed. DOE actions in regard to restrictions and controls on use of the property shall be governed by provisions in paragraph IV.7b. The applicable controls and restrictions are specified in paragraph IV.6 and IV.7.c.

e. ALARA Applications. The monitoring, cleanup, and control of residual radioactive material are subject to the ALARA policy of this Order. Applications of ALARA policy shall be documented and filed as a permanent record.

3. BASIC DOSE LIMITS.

a. Defining and Determining Dose Limits. The basic public dose limits for exposure to residual radioactive material, in addition to natural occurring "background" exposures, are 100 mrem (1 mSv) effective dose equivalent in a year, as specified in paragraph II.1a.

b. Unusual Circumstances. If, under unusual circumstances, it is impracticable to meet the basic limit based on realistic exposure scenarios, the respective project and/or program office may, pursuant to paragraph II.1a(4), request from EH-1 for a specific authorization for a temporary dose limit higher than 100 mrem (1 mSv), but not greater than 500 mrem (5 mSv), in a year. Such unusual circumstances may include temporary conditions at a property scheduled for remedial action or following the remedial action. The ALARA process shall apply to the selection of temporary dose limits.

4. GUIDELINES FOR RESIDUAL RADIOACTIVE MATERIAL.

a. Residual Radionuclides in Soil. Generic guidelines for thorium and radium are specified below. Guidelines for residual concentrations of other radionuclides shall be derived from the basic dose limits by means of an environmental pathway analysis using specific property data where available. Procedures for these derivations are given in DOE/CH-8901. Residual concentrations of radioactive material in soil are defined as those in excess of background concentrations averaged over an area of 100 m^2.

(1) Hot Spots. If the average concentration in any surface or below-surface area less than or equal to 25 m^2, exceeds the limit or guideline by a factor of $(100/A)^{0.5}$, [where A is the area (in square meters) of the region in which concentrations are elevated], limits for "hot-spots" shall also be developed and applied. Procedures for calculating these hot-spot limits, which depend on the extent of the elevated local concentrations, are given in DOE/CH-8901. In addition, reasonable efforts shall be made to remove any source of radionuclide that exceeds 30 times the appropriate limit for soil, irrespective of the average concentration in the soil.

(2) Generic Guidelines. The generic guidelines for residual concentrations of Ra-226, Ra-228, Th-230, and Th-232 are:

(a) 5 pCi/g, averaged over the first 15 cm of soil below the surface; and

(b) 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface.

(3) Ingrowth and Mixtures. These guidelines take into account ingrowth of Ra-226 from Th-230 and of Ra-228 from Th-232, and assume secular equilibrium. If both Th-230 and Ra-226 or both Th-232 and Ra-228 are present and not in secular equilibrium, the appropriate guideline is applied as a limit for the radionuclide with the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that either the dose for the mixtures will not exceed the basic dose limit or the sum of the ratios of the soil concentration of each radionuclide to the allowable limit for that radionuclide will not exceed 1. Explicit formulas for calculating residual concentration guidelines for mixtures are given in DOE/CH-8901.

b. Airborne Radon Decay Products. Generic guidelines for concentrations of airborne radon decay products shall apply to existing occupied or habitable structures on private property that are intended for release without restriction; structures that will be demolished or buried are excluded. The applicable generic guideline (40 CFR Part 192) is: In any occupied or habitable building, the objective of remedial action shall be, and a reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. [A working level (WL) is any combination of short-lived radon decay products in 1 L of air that will

result in the ultimate emission of 1.3 x 10^5 MeV of potential alpha energy.] In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL. Remedial actions by DOE are not required in order to comply with this guideline when there is reasonable assurance that residual radioactive material is not the source of the radon concentration.

c. External Gamma Radiation. The average level of gamma radiation inside a building or habitable structure on a site to be released without restrictions shall not exceed the background level by more than 20 μR/h and shall comply with the basic dose limit when an "appropriate-use" scenario is considered. This requirement shall not necessarily apply to structures scheduled for demolition or to buried foundations. External gamma radiation levels on open lands shall also comply with the basic limit and the ALARA process, considering appropriate-use scenarios for the area.

d. Surface Contamination. The generic surface contamination guidelines provided in Figure IV-1 are applicable to existing structures and equipment. These guidelines are generally consistent with standards of the NRC (NRC 1982) and functionally equivalent to Section 4, "Decontamination for Release for Unrestricted Use," of Regulatory Guide 1.86, but apply to nonreactor facilities. These limits apply to both interior equipment and building components that are potentially salvageable or recoverable scrap. If a building is demolished, the guidelines in paragraph IV.6a are applicable to the resulting contamination in the ground.

e. Residual Radionuclides in Air and Water. Residual concentrations of radionuclides in air and water shall be controlled to the required levels shown in paragraph II.1a and as required by other applicable Federal and/or State laws.

5. AUTHORIZED LIMITS FOR RESIDUAL RADIOACTIVE MATERIAL.

a. Establishment of Authorized Limits. The authorized limits for each property shall be set equal to the generic or derived guidelines unless it can be established, on the basis of specific property data (including health, safety, practical, programmatic and socioeconomic considerations), that the guidelines are not appropriate for use at the specific property. The authorized limits shall be established to (1) provide that, at a minimum, the basic dose limits of in paragraph IV.3, will not be exceeded under the "worst-case" or "plausible-use" scenarios, consistent with the procedures and guidance provided in DOE/CH-8901, or (2) be consistent with applicable generic guidelines. The authorized limits shall be consistent with limits and guidelines established by other applicable Federal and State laws. The authorized limits are developed through the project offices in the field and are approved by the Headquarters Program Office.

Figure IV-1
Surface Contamination Guidelines

Radionuclides[2]	Allowable Total Residual Surface Contamination (dpm/100 cm²)[1] Average[3,4]	Maximum[4,5]	Removable[4,6]
Transuranics, I-125, I-129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231.	RESERVED	RESERVED	RESERVED
Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232.	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay product, alpha emitters.	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.[7]	5,000	15,000	1,000

1/ As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

2/ Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

3/ Measurements of average contamination should not be averaged over an area of more than 1 m². For objects of less surface area, the average should be derived for each such object.

4/ The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

5/ The maximum contamination level applies to an area of not more than 100 cm².

6/ The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

7/ This category of radionuclides includes mixed fission products, including the Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

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b. Application of Authorized Limits. Remedial action shall not be considered complete until the residual radioactive material levels comply with the authorized limits, except as authorized pursuant to paragraph IV.7 for special situations where the supplemental limits and exceptions should be considered and it is demonstrated that it is not appropriate to decontaminate the area to the authorized limit or guideline value.

6. CONTROL OF RESIDUAL RADIOACTIVE MATERIAL. Residual radioactive material above the guidelines shall be managed in accordance with Chapter II and the following requirements.

a. Operational and Control Requirements. The operational and control requirements specified in the following Orders shall apply to interim storage, interim management, and long-term management.

(1) DOE 5000.3, Unusual Occurrence Reporting System

(2) DOE 5440.1C, Implementation of the National Environmental Policy Act

(3) DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards

(4) DOE 5482.1B, Environmental, Safety, and Health Appraisal Program

(5) DOE 5483.1A, Occupational Safety and Health Program for DOE Employees at Government-Owned, Contractor-Operated Facilities

(6) DOE 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements

(7) DOE 5820.2A, Radioactive Waste Management.

b. Interim Storage.

(1) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years.

(2) Controls shall be designed such that Rn-222 concentrations in the atmosphere above facility surfaces or openings in addition to background levels, will not exceed:

(a) 100 pCi/L at any given point;

(b) An annual average concentration of 30 pCi/L over the facility site; and

(c) An annual average concentration of 3 pCi/L at or above any location outside the facility site.

(d) Flux rates from the storage of radon producing wastes shall not exceed 20 pCi/sq.m-sec., as required by 40 CFR Part 61.

(3) Controls shall be designed such that concentrations of radionuclides in the groundwater and quantities of residual radioactive material will not exceed applicable Federal or State standards.

(4) Access to a property and use of onsite material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These control features should be designed to provide, to the extent reasonable, an effective life of at least 25 years.

c. Interim Management.

(1) A property may be maintained under an interim management arrangement when the residual radioactive material exceeds guideline values if the residual radioactive material is in inaccessible locations and would be unreasonably costly to remove. provided that administrative controls are established by the responsible authority (Federal, State, or local) to protect members of the public and that such controls are approved by the appropriate Program Assistant Secretary or Director.

(2) The administrative controls include but are not limited to periodic monitoring as appropriate; appropriate shielding; physical barriers to prevent access; and appropriate radiological safety measures during maintenance, renovation, demolition, or other activities that might disturb the residual radioactive material or cause it to migrate.

(3) The owner of the property should be responsible for implementing the administrative controls and the cognizant Federal, State, or local authorities should be responsible for enforcing them.

d. Long-Term Management.

(1) Uranium, Thorium, and Their Decay Products.

(a) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 1,000 years with a minimum life of at least 200 years.

(b) Control and stabilization features shall be designed to limit Rn-222 emanation to the atmosphere from the wastes to less than an annual average release rate of 20 $pCi/m^2/s$ and prevent increases in the annual average Rn-222 concentration at or above any location outside the boundary of the contaminated area by more than 0.5 pCi/L. Field verification of emanation rates shall be in accordance with the requirements of 40 CFR Part 61.

(c) Before any potentially biodegradable contaminated wastes are placed in a long-term management facility, such wastes shall be properly conditioned so that the generation and escape of biogenic gases will not cause the requirement in paragraph IV.6d(1)(b) to be exceeded and that biodegradation within the facility will not result in premature structural failure in violation of the requirements in paragraph IV.6d(1)(a).

(d) Ground water shall be protected in accordance with legally applicable Federal and State standards.

(e) Access to a property and use of onsite material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These controls should be designed to be effective to the extent reasonable for at least 200 years.

(2) Other Radionuclides. Long-term management of other radionuclides shall be in accordance with Chapters II, III, and IV of DOE 5820.2A, as applicable.

7. SUPPLEMENTAL LIMITS AND EXCEPTIONS. If special specific property circumstances indicate that the guidelines or authorized limits established for a given property are not appropriate for any portion of that property, then the Operations Office may request that supplemental limits or an exception be applied. The responsible Operations Office shall document the decision that the subject guidelines or authorized limits are not appropriate and that the alternative action selected will provide adequate protection,

giving due consideration to health and safety, the environment, costs, and public policy considerations. The Operations Office shall obtain approval for specific supplemental limits or exceptions from Headquarters as specified in paragraph IV.5, and shall provide to the Headquarters Program Element those materials required by Headquarters for the justification as specified in this paragraph and in the FUSRAP and SFMP protocols and subsequent guidance documents. The Operations Office shall also be responsible for coordination with the State and local government regarding the limits or exceptions and associated restrictions as appropriate. In the case of exceptions, the Operations Office shall be responsible for coordinating with the State and/or local governments to ensure the adequacy of restrictions or conditions of release and that mechanisms are in place for their enforcement.

a. Supplemental Limits. Any supplemental limits shall achieve the basic dose limits set forth in Chapter II of this Order for both current and potential unrestricted uses of a property. Supplemental limits may be applied to any portion of a property if, on the basis of a specific property analysis, it is demonstrated that

(1) Certain aspects of the property were not considered in the development of the established authorized limits for that property; and

(2) As a result of these certain aspects, the established limits either do not provide adequate protection or are unnecessarily restrictive and costly.

b. Exceptions to the authorized limits defined for a property may be applied to any portion of the property when it is established that the authorized limits cannot reasonably be achieved and that restrictions on use of the property are necessary. It shall be demonstrated that the exception is justified and that the restrictions will protect members of the public within the basic dose limits of this Order and will comply with the requirements for control of residual radioactive material as set forth in paragraph IV.6.

c. Justification for Supplemental Limits and Exceptions. The need for supplemental limits and exceptions shall be documented by the Operations Office on a case-by-case basis using specific property data. Every reasonable effort should be made to minimize the use of supplemental limits and exceptions. Examples of specific situations that warrant DOE use of supplemental standards and exceptions are

(1) Where remedial action would pose a clear and present risk of injury to workers or members of the public, notwithstanding reasonable measures to avoid or reduce risk.

(2) Where remedial action, even after all reasonable mitigative measures have been taken, would produce environmental harm that is clearly excessive compared to the health benefits to persons living on or near affected properties, now or in the future. A clear excess of environmental harm is harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated.

(3) Where it is determined that the scenarios or assumptions used to establish the authorized limits do not apply to the property or portion of the property identified, or where more appropriate scenarios or assumptions indicate that other limits are applicable or appropriate for protection of the public and the environment.

(4) Where the cost of remedial action for contaminated soil is unreasonably high relative to long-term benefits and where the residual material does not pose a clear present or future risk after taking necessary control measure. The likelihood that buildings will be erected or that people will spend long periods of time at such a property should be considered in evaluating this risk. Remedial action will generally not be necessary where only minor quantities of residual radioactive material are involved or where residual radioactive material occurs in an inaccessible location at which specific property factors limit its hazard and from which it is difficult or costly to remove. Examples include residual radioactive material under hard-surfaced public roads and sidewalks, around public sewer lines, or in fence-post foundations. A specific property analysis shall be provided to establish that the residual radioactive material would not cause an individual to receive a radiation dose in excess of the basic dose limits stated in paragraph IV.3, and a statement specifying the level of residual radioactive material shall be provided to the appropriate State and/or local agencies for appropriate action, e.g., for inclusion in local land records.

(5) Where there is no feasible remedial action.

8. SOURCES.

a. Basic Dose Limits. Dosimetry model and dose limits are defined in Chapter II of this Order.

b. Generic Guidelines for Residual Radioactive Material. Residual concentrations of radium and thorium in soil are defined in 40 CFR Part 192. Airborne radon decay products are also defined in 40 CFR Part 192, as are guidelines for external gamma radiation. The surface contamination definition is adapted from NRC (1982).

c. Control of Radioactive Wastes and Residues. Interim storage is guided by this Order and DOE 5820.2A. Long-term management is guided by this Order, 40 CFR Part 192, and DOE 5820.2A.

APPENDIX B

6046

Westinghouse
Environmental Management
Company of Ohio

PO Box 398704
Cincinnati, Ohio 45239-8704

(513) 738 6200

WMCO:PM&A(CS)91-826
October 25, 1991

ALL PROSPECTIVE OFFERORS

WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO REQUEST FOR PROPOSAL No. JD-21486, PROCESS AND DISPOSE ESTIMATED 2,210 TONS OF NON-RCRA, SCRAP METAL

Westinghouse Environmental Management Company of Ohio (hereinafter referred to as WEMCO) under prime contract DE-AC05-86OR21600 with the United States Department of Energy (DOE), Oak Ridge, Tennessee, invites you to submit a proposal to process and dispose of approximately 2,210 tons of non-RCRA, Scrap Metal to an approved DOE disposal site.

Information concerning this requirement is included in the enclosed Request for Proposal (RFP). It is contemplated that a Firm-Fixed-Price contract will be issued as a result of any award issued from this Request for Proposal. A pre-proposal conference will be held on November 22, 1991 at 10:00 A.M. at The Plantation, Harrison, Ohio, approximately 15 miles from the FEMP. A directional map is contained in the RFP Section L.

This RFP does not commit WEMCO or the U. S. Government to pay any costs incurred in connection with any proposal, or to procure or contract for any services. WEMCO reserves the right, without limitation, to accept or reject any or all proposals regardless of the terms of the original proposal, and to request additional clarifying information.

Only written questions, other than administrative clarification regarding the RFP, will be received by WEMCO. WEMCO reserves the right to accumulate questions and issue written responses up to three (3) days prior to receipt of proposals.

Very truly yours,

J. L. Davis, III, Contract Administrator
Contracts

JLD:sp

SOLICITATION AND OFFER	PAGE 1 OF PAGES 114

1. CONTRACT NUMBER	2. SOLICITATION NUMBER	3. TYPE OF SOLICITATION	4.REQUISITION/PURCHASE NO.
	WEMCO - JD - 21486	[ ] SEALED BID (IFB) [XX] NEGOTIATED (RFP)	76042

5. DATE ISSUED	6.ISSUED BY:	7. ADDRESS OFFER TO (IF OTHER THAN ITEM 6)
OCTOBER 25, 1991	WESTINGHOUSE ENVIRONMENTAL MANAGEMENT COMPANY OF OHIO (WEMCO) PO BOX 398704 CINCINNATI, OH 45239-8704	

SOLICITATION

8. Sealed offers in original and Sec L copies for furnishing the supplies or services in the Schedule will be received at the place specified in item 6 until 3:00 pm Cincinnati, Ohio time DECEMBER 20, 1991.

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L Provision L.14. All offers are subject to all terms and conditions contained in this solicitation.

9. FOR IMFORMATION CALL >>>>>>>>>	A. NAME	B. TELEPHONE NO.(NO COLLECT CALLS)
	JOHN L. DAVIS, III, CONTRACT ADMINISTRATOR	(513) 738-6024

OFFER (must be fully completed by offeror)

10. IN COMPLIANCE WITH THE ITEM 15 CONTENTS, THE UNDERSIGNED AGREES IF THIS OFFER IS ACCEPTED WITHIN 180 CALENDAR DAYS FROM THE DATE FOR RECEIPT OF OFFERS SPECIFIED IN ITEM 8, TO FURNISH ANY OR ALL THE ITEMS UPON WHICH PRICES ARE OFFERED AT THE PRICE SET OPPOSITE EACH ITEM, DELIVERED AT THE DESIGNATED POINT(S), WITHIN THE TIME SPECIFIED IN THE SCHEDULE

11. DISCOUNT FOR PROMPT PAYMENT >>>>>>>>	10 CALENDAR DAYS %	20 CALENDAR DAYS %	30 CALENDAR DAYS %	CALENDAR DAYS %

12. ACKNOWLEDGEMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated	AMENDMENT NUMBER	DATE	AMENDMENT NUMBER	DATE

13. NAME AND ADDRESS OF OFFEROR >>>>	14. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or Print)

15. TABLE OF CONTENTS

DESCRIPTION	SECTION	PAGE	DESCRIPTION	SECTION	PAGE
PART I - THE SCHEDULE			PART II - CONTRACT CLAUSES		
SOLICITATION/OFFER FORM	A	i, ii	GENERAL PROVISION CONTRACT CLAUSES	I	i - 40
SUPPLIES OR SERVICES AND PRICES/COST	B	1 - 2	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.		
DESCRIPTION/SPECS WORK STATEMENT	C	3 - 10	LIST OF ATTACHMENTS	J	15 PAGES
PACKAGING & MARKING	D	11	PART IV - REPRESENTATIONS AND INSTRUCTIONS		
INSPECTION & ACCEPTANCE	E	11	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS	K	8 PAGES
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SPECIAL CONTRACT REQUIREMENTS	H	13 - 22			

PART I - SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 SUBCONTRACT CONDITIONS

A. _____,Inc. (hereinafter known as the Subcontractor) has entered into a subcontract No. 2-21486 with Westinghouse Environmental Management Company of Ohio, Inc. (hereinafter known as WEMCO) to furnish the supplies or services as described herein.

B. _____,Inc. agrees and acknowledges:

1. That it will fulfill and perform all of the requirements of subcontract No. 2-21486 for the consideration stated herein and that it has read and is familiar with each and every part of the subcontract.

2. That it will not subcontract the performance of any of the requirements of this subcontract to any lower tier subcontractor except as expressly stated in its proposal without the prior written approval of WEMCO's designated Contract Authority.

B.2 ITEMS BEING ACQUIRED

The Subcontractor shall furnish all personnel, facilities, equipment, material, supplies, and services (except as may be expressly set forth in this Subcontract) and otherwise do all things necessary for, or incident to the performance, and provide the following items of work in accordance with its Management, Technical and Cost proposals dated_____and its approved Work Plan dated_____.

ITEM	SUPPLIES/ SERVICES	UNIT	FIXED UNIT PRICE	TOTAL FIRM-FIXED PRICE
001	THE SUBCONTRACTOR SHALL PROVIDE ALL LABOR EQUIPMENT, MATERIAL, SUPPLIES, TRAVEL AND SERVICES FOR THE PROCESSING, PACKAGING, TRANSPORTATION AND DISPOSAL OF OF AN ESTIMATED 2,210 TONS OF LOW-LEVEL RECOVERABLE METAL IN ACCORDANCE WITH SECTION C, STATEMENT OF WORK	TON	$_____	$_____

B.2 (Cont')

ITEM	SUPPLIES/ SERVICES	UNIT	FIXED UNIT PRICE	TOTAL FIRM-FIXED PRICE
002	THE SUBCONTRACTOR SHALL PROVIDE ALL DATA IN ACCORDANCE WITH SECTION C, STATEMENT OF WORK AND THE SUBCONTRACT DATA REQUIREMENTS	1 LOT		$_____
	GRAND TOTAL FIRM-FIXED-PRICE			$ ==========

B.4 SPECIAL NOTES

Sections K, L, and M will be physically removed from any resultant award, but will be deemed to be incorporated, by reference, in that award.

PART I - THE SCHEDULE

SECTION C

STATEMENT OF WORK

FOR

PROCESSING AND DISPOSITION OF RECOVERABLE METAL

SEPTEMBER 1991

C.1 GENERAL

Westinghouse Environmental Management Company of Ohio (WEMCO) is the Management and Operating (M&O) Contractor at the Department of Energy's Fernald Environmental Management Project (FEMP), a National Priotity Listed (NPL) site. Prior to October 1991, the FEMP was a large scale integrated facility for the production of high purity uranium metal to support DOD defense programs. Since October, however, the RCRA closure/corrective actions and CERCLA response actions has redirected the central mission of the FEMP toward the implementation of waste management and environmental restoration initiatives. These initiatives include but are not limited to waste characterization, segregation, processing, minimization, and shipment to a final DOE-approved disposal site.

C.2 OBJECTIVE

It is WEMCO's objective to obtain Turn-Key Commercial Support Services for the processing and off site disposal or beneficial reuse of approximately 2,210 tons of radioactive contaminated scrap metal. All removal actions will be conducted using USEPA methodology as outlined in various USEPA guidance documents. Similarly, the DOE has entered into a Consent Decree with the Ohio EPA and a Consent Agreement with the US EPA which specifies requirements for conducting the removals. As a result, WEMCO and its subcontractors will conduct all removals according to the requirements of all decrees and agreements and other applicable federal and state laws. Currently, WEMCO has identified and segregated four distinct piles of scrap metal for processing and disposal. All scrap metal is considered to be low level waste (LLW).

All processing sites, equipment and interim storage facilities must be wholly-owned and operated by the Subcontractor. No waste will be transported from the FEMP for storage or processing at a lower-tier subcontractor's facility. Additionally, the Subcontractor shall possess all municipal, county, state, and federal agency license and permits necessary to receive, transport, store, process, and package the LLW for final burial at a DOE-approved disposal site.

C.3 SCOPE OF WORK

The scope of this Statement of Work involves the receipt, transportation, necessary interim storage, processing, packing, and disposition or beneficial reuse of an estimated 2,210 tons of low level radioactive scrap metal waste located at the FEMP consistent with the Record of Decisions (RODs) resulting from the CERCLA process. The scrap metal inventory has been divided into four groups (listed below) based on alloy and/or contamination level. High level contamination is defined as activity greater than 200,000 dpm/100 Cu^2.

a.	High level ferrous	238 tons
b.	High level nonferrous	54 tons
c.	Low level ferrous	1,793 tons
d.	Low level nonferrous	125 tons

C.4 GENERAL WORK DESCRIPTION

The Subcontractor shall supply all of their own resources or may subcontract some of the various technical requirements to firms specializing in specific technologies. If the subcontractor elects to subcontract any portion of this work, the lower-tier subcontractor(s) shall be identified as part of the Subcontractor's proposal. WEMCO shall review the qualifications and past performances of any proposed lower-tier subcontractor on this subcontract. Based on this review, WEMCO reserves the right to refuse the use of any proposed subcontractor due to unsatisfactory ratings on previous WEMCO or Government subcontracts or due to insufficient qualifications. The Subcontractor shall be solely responsible for the fulfillment of the requirements of this subcontract and shall be the sole contact with WEMCO through the completion of this subcontract except as agreed between the Subcontractor and WEMCO. The subcontractor must be fully operational by 45 days after contract award.

C.4.1 Meetings, Conferences, Site Visits.

Immediately following subcontract award the Subcontractor shall be required to attend a post award conference at the Fernald Environmental Management Project, Fernald, Ohio. This conference will consist of a meeting with the WEMCO Contract Administrator and an initial orientation meeting with the WEMCO Waste Mangement Project Office. The purpose of the meeting is to familiarize the Subcontractor with the work under this subcontract (terms and conditions), along with FEMP operations and inventory control procedures. This conference may last a maximum of two consecutive days. The Subcontractor's representatives at this conference shall include, at a minimum, the Subcontractor's Program Manager, Contract Administrator, and a Project Manager. The Subcontractor will also be required to attend a monthly Project Management Review or other project-related meetings as required by the WEMCO Project Manager. The Subcontractor shall submit minutes of all meetings and visits in

accordance with Section J, Attachment 1, Data Reporting Requirement No. A001.

C.5. RESPONSIBLE PARTIES

The low-level waste on the FEMP identified by WEMCO for processing and removal is under the control of the U. S. Department of Energy (DOE) and is therefore the generator or potentially responsible party.

C.6 ENVIRONMENTAL REQUIREMENTS

It is WEMCO's intent that all removal actions are performed in full compliance with applicable federal, state, and local environmental laws and regulations. To the extent required by Sections 120 and 121 of the Comprehensive Environmental Response, Compensation and Liability Act, (CERCLA, 42 U.S.C. 9620 and 9621), all operations under this subcontract shall be conducted, at minimum, in compliance with the Applicable or Relevant and Appropriate Requirements (ARARS) listed in C.6.1, below. The Subcontractor shall assure that all activities performed by its personnel, subcontractors and suppliers are executed as required by these current laws and regulations. Nothing in this subcontract shall relieve the Subcontractor of its responsibility to comply with all current laws and regulations.

C.6.1 ARARS

- National Contingency Plan as outlined in 40 CFR 300
- National Environmental Policy Act
- Clean Water Act
- Endangered Species Act
- Toxic Substances Control Act
- Resources Conservation and Recovery Act (RCRA) as amended by the Hazardous and Solid Waste Act
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by Superfund Amendments and Reauthorization Act (SARA)
- State of Ohio Administrative Orders on Consent with FSP
- US EPA RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD) (OSWER 9950.1)

- US EPA Superfund Remedial Design and Remedial Action Guidance (OSWER Directive 9355.0-4A)

- US EPA Environmental Review Requirements for Removal Actions (OSWER Dir 9318.0-05)

- Any pertinent Occupational Safety and Health Administration (29 CFR 1910) and Department of Transportation requirements.

- Any Interagency Agreement between DOE, US EPA and the State of Ohio that may be placed into effect prior to the completion of this subcontract.

- 29 CFR 1926 Construction Standards

- 49 CFR Transportation Requirements

- DOE Order 5400.5, "Radiation Protection of the Public and Environment"

- DOE Order 5820.2A, "Radioactive Waste Management"

C.7 CHARACTERIZATION AND IDENTIFICATION OF METALS

Section J of this subcontract contains a description of the metals identified for processing and disposition.

C.8 TECHNOLOGIES

The Subcontractor shall have the capability and experience to perform services relating to the work described herein; which may include but is not limited to on-site processing shuch as: reduction, stabilization, precipitation, ait stripping, carbon filtration, oxidation, oil/water separation, ion exchange,biodegradation/bioreclemation, thermal destruction (incineration), compacting, transportation, processing, smelting, and disposition at DOE approved facilities.

C.9 LICENSES AND PERMITS

The Subcontractor shall not commence work until the requirements for all environmental permits, licenses, and/or certificates required for this subcontract have been reviewed and accepted by WEMCO. The Subcontractor shall submit certified copies of all its licenses and permits with its proposal.

C.10 HANDLING AND RECEIPT, TRANSPORTATION, AND PROCESSING OF LOW LEVEL WASTE

C.10.1 Handling and Receipt of Waste

If the processing of the low level waste is to be performed off the FEMP site, the Subcontractor will package, identify, label, and document the waste for transport according to all applicable regulations. The subcontractor shall maintain a complete inventory of all metals processed and removed from the FEMP.

C.10.2 Transportation of Waste

The transport of all wastes at any time during the performance of this subcontract shall be by a transporter who is properly registered with all States from/through/to which wastes will be transported. The DOE shall be identified as the generator of all wastes resulting from any operations under this subcontract but WEMCO shall be responsible for signing all waste manifests. A return manifest, signed by the Consignee accepting custody of the waste, shall be sent to the WEMCO Contract Administrator and the Waste Programs Project Manager within ten (10) days of the removal of the waste from the site. Prior to any off-site shipment of the waste, The Subcontractor shall develop and deliver its Waste Transportation Procedure in accordance with Section J, Attachment 1, Data Reporting Requirement No. A002.

C.10.3 On-Site Processing

If the processing of the low level waste is to be performed on the FEMP site, the waste processing site will be in the general area of the metal piles, thus minimizing major material movement activities. Prior to beginning work on the FEMP site, the Subcontractor shall generate for approval a Removal Action Work Plan including a detailed description of the planned implementation activities, a time schedule for those actions, personnel, equipment requirements and site restoration. The Work Plan shall be submitted in accordance with Section J, Attachment 1, Data Reporting Requirement No. A003.

C.10.4 Off-Site Processing

If the processing of the low level waste is to be performed off the FEMP site, i.e., at the subcontractor's processing facility, the subcontractor shall be responsible for all packing and transportation. Prior to beginning work, the Subcontractor shall generate for approval a Removal Action Project Plan including a detailed description of the planned implementation activities, a time schedule for those actions, personnel, equipment requirements and site restoration. The Removal Action Project Plan shall be

submitted in accordance with Section J, Attachment 1, Data Reporting Requirement No. A003.

C.11 WASTE PROCESSING AND DISPOSAL

The Subcontractor shall process the scrap metal so that it is suitable for disposal at a DOE approved disposal site. Upon processing and re-packaging, the Subcontractor shall dispose of all of the waste at a DOE approved disposal site. The Subcontractor shall be totally responsible for meeting all disposal requirements for all waste processed. Any waste processed for beneficial reuse shall be packaged and transported to the end user by the subcontractor.

C.12 ON-SITE OPERATION AND MAINTENANCE OF PROCESSING FACILITY

It will be the Subcontractor's responsibility to assure proper Operation and Maintenance (O&M) of all equipment installed on the Fernald Site pursuant to the work called for under this subcontract. The O&M function will be the total responsibility of the Subcontractor until all work requirements have been fulfilled. Any required O&M as part of this subcontract will be outlined in detail in the Operation and Maintenance Plan. The O&M Plan prepared by the Subcontractor shall be in accordance with Section J, Attachment 1, Data Reporting Requirement A004.

C.13 ON-SITE HOURS OF OPERATION

The regular hours of operation at the FEMP is from 7:30 AM to 4:00 PM, Monday thru Friday. However, the site may be accessed should there arise a situation requires more urgent work during which weekend work would be necessary.

C.14 ON-SITE HEALTH AND SAFETY

The Subcontractor shall have an ongoing Health and Safety Program (SHSP) meeting the requirements of OSHA Standard 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response"; 29 CFR 1926, and all 49 CFR transportation requirements. The Subcontractor shall submit its Site Health and Safety Plan in accordance with Section J, Attachment 1, Data Reporting Requirement No. A005 . WEMCO acceptance of the Subcontractor's SHSP is required prior to start of field activities at the Fernald Site. No changes in the approved plan shall be implemented without written concurrence of the Contract Administrator. WEMCO reserves the right to require the Subcontractor to make changes in its SHSP and operations as necessary to assure the health and safety of all persons on or near the site. Any additions or revisions required by the Contract Administrator shall be incorporated at no additional cost to WEMCO.

C.14.1 Responsibility.

The overall responsibility for the development, implementation, and continued enforcement of the Subcontractor's Health and Safety Program (SHSP) shall lie with the Subcontractor.

C.14.1.1 The Subcontractor shall utilize the services of a Certified Industrial Hygienist (CIH) or a Certified Health Physicist (CHP) to implement and oversee the Health and Safety Program and to develop the SHSP's. Except in an emergency, the SHSO may modify the approved SHSP only after consultation and concurrence of the CIH/CHP and the Contract Administrator.

C.14.1.2 Site Security/Safety

The Subcontractor shall maintain its site and all other Subcontractor controlled areas in such a manner as to minimize the risk of injury or accident to site personnel or others who may be in the area. All equipment, when not in operation, shall be left in a safe manner. The Subcontractor shall also comply with all security requirements of WEMCO and the FEMP.

C.14.1.3 Mandatory Safety Training for On-Site Workers

The Subcontractor shall be responsible for ensuring that involved subcontractor personnel are fully trained and equipped to safely perform assigned work tasks in accordance with the WEMCO Site Access Training Requirements listed in Section J, Attachment 5. If the Subcontractor's employees have received the required training, the Subcontractor shall submit a certified copy of its training record of all personnel who will work on the FEMP as a supplementary attachment to its Technical/Management Proposal. No Subcontractor personnel will be granted access to the FEMP without the required training. This requirement will not be waived under any circumstance.

C.15 SITE RESTORATION AFTER PROCESSING

Upon completion of the work under this subcontract, the Subcontractor shall be responsible for restoring the site where its equipment was installed to its original condition. This includes, but is not limited to removal of all equipment and supplies utilized in the processing and packing of the waste, regrading, seeding, pavement repairs, and utility restoration. All restoration work shall be completed in full accordance with current WEMCO standard site engineering specifications, including general conditions, seeding, concrete, and asphalt work, if required.

C.16 SUBMITTAL/DELIVERABLE REQUIREMENT

In addition to the other Data Reporting Requirements listed in this section, the Subcontractor shall also deliver a Quality Assurance Project Plan, a Monthly Progress Report and a Final Project Report. All required data shall be submitted in accordance with Section J, Attachment 1, Data Reporting Requirements A006, A007 and A008, respectively.

C.17 GOVERNMENT FURNISHED FACILITIES/PROPERTY

WEMCO will provide water, electricity, and local phone service for on-site performance. No other form of government provided support is anticipated for the performance of this subcontract.

PART I - THE SCHEDULE
SECTION D - PACKAGING AND MARKING

D.1 PACKAGING

Packaging of materials for mail or commercial transport shall be in compliance with all applicable Federal, state and local laws and regulations, and sound business practice. Transportation via mail and commercial carrier shall be by the most efficient and economical means that meets the subcontract requirements.

D.2 MARKING

Each package, report or other deliverables shall be accompanied by a letter or other document which:

(a) Identifies the Subcontract Number and Task Order by number under which the item is being delivered.

(b) Identifies the deliverable Item Number or report requirement which requires the delivered item(s).

SECTION E - INSPECTION AND ACCEPTANCE

Inspection and acceptance of all items under this Subcontract shall be accomplished by the WEMCO Project Manager, or any other duly authorized WEMCO representative in accordance with Section I, Article A.11, "Inspection of Supplies".

SECTION F - DELIVERIES OR PERFORMANCE

F.1 PERIOD OF PERFORMANCE

Performance under this subcontract shall be from DATE OF AWARD thru SEPTEMBER 30, 1992.

F.2 PRINCIPAL PLACE OF PERFORMANCE

Services under this Subcontract shall be performed at the following location(s): TBD.

SECTION G - ADMINISTRATION DATA

G.1 CORRESPONDENCE PROCEDURES

To promote timely and effective administration, correspondence (except for invoices and reports) submitted under this Subcontract shall be subject to the following procedures:

(a) **Technical Correspondence.** Technical correspondence (as used herein, excludes technical correspondence where patent or technical data issues are involved and correspondence which proposes or otherwise involves waivers, deviations, or modifications to the requirements, terms, or conditions, of this agreement) shall be addressed to the WEMCO Technical Representative with copies to WEMCO staff as directed by the WEMCO Technical Representative.

(b) **Other Correspondence.** All correspondence, other than technical correspondence, shall reference the sub number and be addressed to the WEMCO Contract Administrator, with information copies of the correspondence to the WEMCO Technical Representative. The mailing address is as follows:

(1) Westinghouse Environmental Management Company of Ohio, Inc.
P. O. Box 398074
Cincinnati, OH 45239-8704
Attn: Mr. John L. Davis, III
Contract Administrator
Contracts
Telephone: (513) 738-6024

G.2 WEMCO Technical Representative Address

The WEMCO Technical Representative's Address is as follows:

Mr. _____
Westinghouse Environmental Management Company of Ohio, Inc.
P. O. Box 398074
Cincinnati, OH 45239-6024
Telephone: (513) 738-_____

PART I - THE SCHEDULE

SECTION H - SPECIAL REQUIREMENTS

H.1 TECHNICAL DIRECTION

(a) Performance of the work under each task order shall be subject to the technical direction of the cognizant Technical Representative. The term "technical direction" is defined to include, without limitation:

(1) Directions to the Subcontractor which redirect the effort, shift work emphasis between work areas or otherwise serve to accomplish the subcontract Statement of Work.

(2) Provision of written information to the Subcontractor which assists in the interpretations of drawings, specifications, or technical portions of the work descriptions.

(3) Review and, where required by the subcontract, approval of technical reports, drawings, specifications and technical information to be delivered by the Subcontractor to WEMCO under the subcontract.

(b) Technical direction must be within the scope of work stated in the subcontract. The cognizant WEMCO Technical Representative does not have the authority to, or may not, issue any technical directions which:

(1) Constitute an assignment of additional work outside the Scope of Work;

(2) Constitute a change as defined in Section I, General Provisions, Article A.4 entitled "Changes, Extras and Substitutions";

(3) In any manner causes an increase or decrease in the total cost or the time required for performance;

(4) Change any of the expressed terms, conditions or specifications of the subcontract;

(5) Interfere with the Subcontractor's right to perform the terms and conditions of the subcontract.

(c) All technical direction shall be issued in writing by the cognizant WEMCO Technical Representative.

(d) The Subcontractor shall proceed promptly with the performance of technical directions duly issued by the appropriate Technical

Representative in the manner prescribed by this clause. If in the opinion of the Subcontractor, any instruction or direction by the Technical Representative falls within one of the categories defined in (b)(1) through (b)(5), above, the Subcontractor shall not proceed but shall notify WEMCO Contract Administrator identified in Section G to modify the subcontract accordingly. Upon receiving the notification from the Subcontractor, the WEMCO Contract Administrator shall:

(1) Advise the Subcontractor in writing within thirty (30) days after receipt of the Subcontractor's letter that the technical direction is within the scope of the subcontract effort and does not constitute a change under the "Changes" clause of the subcontract or;

(2) Advise the Subcontractor in writing within thirty (30) days after receipt of the Subcontractor's letter that the technical direction is outside the scope of the subcontract effort and does constitute a change under the "Changes" clause of the Agreement and subsequently modify subcontract by formal written change order reflecting the stipulated changes.

(e) Failure of the Subcontractor and WEMCO Contract Administrator to agree that the technical direction is within the scope of the subcontract, or a failure to agree upon the subcontract action to be taken with respect thereto shall be subject to the provisions of the Section I clause entitled "Disputes".

H.2 ORDER OF PRECEDENCE

Any inconsistency in this subcontract shall be resolved by giving precedence in the following order: (a) the Schedule (excluding the specifications); (b) representations and other instructions; (c) subcontract clauses; (d) other documents, exhibits, and attachments; and (e) the specifications. Any inconsistencies which require application of this special provision shall be promptly brought to the attention of the WEMCO Contract Administrator prior to any action related thereto by the Subcontractor.

H.3 CONTRACT AUTHORITY

The WEMCO representatives listed in this clause are the only individuals authorized to bind WEMCO contractually in performance of the work under this subcontract:

J. L. Davis, III - Contract Administrator
M. S. Strickland - Manager, Contracts
L. J. Whiting - Manager of Procurement and Materials Management
P. C. Weddle - Vice President, Project Management and Acquisition

H.4 MODIFICATION AUTHORITY

Notwithstanding any of the other clauses of this Subcontract, the Contract Authority shall be the only individual authorized to:

(a) accept nonconforming work,

(b) waive any requirement of this subcontract, or

(c) modify any term or condition of this subcontract.

H.5 CONFIDENTIALITY OF INFORMATION

(a) To the extent that the work under this agreement requires that the Subcontractor be given access to confidential or proprietary business, technical, or financial information belonging to the DOE and/or WEMCO, or other companies, the Subcontractor shall after receipt thereof, treat such information as confidential and agrees not to appropriate such information to its own use or to disclose such information to third parties unless specifically authorized by the WEMCO Contract Administrator in writing. The foregoing obligations, however, shall not apply to:

(1) Information which, at the time of receipt by the Subcontractor, is in public domain;

(2) Information which is published after receipt thereof by the Subcontractor or otherwise becomes part of the public domain through no fault of WEMCO;

(3) Information which the Subcontractor can demonstrate was in its possession at the time of receipt thereof and was not acquired directly or indirectly from WEMCO, the WEMCO, or other companies;

(4) Information which the Subcontractor can demonstrate was received by it from a third party who did not require the Subcontractor to hold it in confidence.

(b) The Subcontractor shall obtain the written agreement, in a form satisfactory to the WEMCO Contract Administrator, of each employee permitted access, whereby the employee agrees that he/she will not discuss, divulge or disclose any such information or data to any

person or entity except those persons within the Subcontractor's organization directly concerned with the performance of the subcontractor.

(c) The Subcontractor agrees, if requested by WEMCO, to sign an agreement identical, in all material respects, to the provisions of this clause, with each company supplying information the Subcontractor under this agreement, and to supply a copy of such agreement to the WEMCO Contract Administrator. From time to time, upon request of the WEMCO Contract Administrator, the Subcontractor shall supply WEMCO with reports itemizing information received as confidential or proprietary and setting forth the company or companies from which the Subcontractor received such information.

(d) The Subcontractor agrees that upon request by DOE/WEMCO it will execute a DOE-approved agreement with any party whose facilities or proprietary data it is given access to or is furnished, restricting use and disclosure of the data or the information obtained from the facilities. Upon request by DOE/WEMCO, such an agreement shall also be signed by Subcontractor personnel.

H.6 NOTIFICATION OF DEBARMENT/SUSPENSION STATUS

The Subcontractor shall provide immediate notice to the Contract Administrator in the event of being suspended, debarred or declared ineligible by any Department or other Federal Agency, or upon receipt of a notice of proposed debarment from a DOE Agency, during the performance of this subcontract.

H.7 REQUIRED INSURANCE

Pursuant to Section I, article A.28 entitled "Worker's Compensation Coverage and Indemnity " the Subcontractor shall, at its own expense, procure and thereafter maintain the following kinds of insurance with respect to performance under the subcontract.

a. Workmen's Compensation and Employers Liability Insurance as required by law except that if this subcontract is to be performed in a State which does not require or permit private insurance, then compliance with the statutory or administrative requirements in any such State will be satisfactory. The required Workmen's Compensation insurance shall extend to cover employer's liability for accidental bodily injury or death and for occupational disease with a minimum liability limit of $100,000.

b. General Liability Insurance. Bodily injury liability insurance, in the minimum limits of $500,000 per occurrence shall be required on the comprehensive form of policy.

c. Automobile Liability Insurance. This insurance shall be required on the comprehensive form of policy and shall provide bodily injury liability and property damage liability covering the operation of all automobiles used in connection with the performance of the subcontract. At least the minimum limits of $100,000 per person and $300,000 per occurrence for bodily injury and $5,000 per occurrence for property damage shall be required.

H.8 INCORPORATION OF SUBCONTRACTING PLAN

The subcontracting plan contained in each offeror's proposal dated same as proposal is incorporated herein by reference.

H.9 UNAUTHORIZED RECONNAISSANCE

The Subcontractor shall inform all personnel working under its jurisdiction (including subcontractor and visiting supplier personnel) that access to areas outside of immediate work area excluding cafeterias and rest rooms in proximity of the work, direct haul and access routes, subcontracting and point of supply and storage is prohibited. Circulation of said personnel will be limited to official business only. Persons engaged in unauthorized reconnaissance of other subcontractor or government activity will be apprehended and appropriately disciplined.

H.10 OPTION FOR INCREASED QUANTITY - SEPARATELY PRICED LINE ITEM

WEMCO may require the delivery of the numbered line item in whole or in part, identified in the Schedule as an option item, at the price stated in the Schedule. The WEMCO Contract Administrator may exercise the option(s) quantities by written notice to the Subcontractor within 30 days before the subcontract term expires. The preliminary notice shall preserve WEMCO's prerogative to exercise the option, but shall not be deemed to commit WEMCO to the exercise of the option. The option shall be exercised by a unilateral modification to this subcontract. If WEMCO exercises the option(s), the extended subcontract shall be considered to include this option provision. Delivery of added item(s) shall continue at the same rate that like items are called for under the subcontract, unless the parties otherwise agree.

H.11 INDEMNIFICATION BY SUBCONTRACTOR

The Subcontractor shall be responsible and liable for, and shall save WEMCO and the Government harmless from all suits, claims and demands of whatsoever kind or nature arising out of/or in connection with the work to be performed under this subcontract.

H.12 HEALTH AND SAFETY REGULATIONS

The Subcontractor shall take all reasonable precautions in the performance of the work under this subcontract to protect the safety and health of employees and of members of the public and shall comply with all applicable safety and health regulations and requirements (including reporting requirements) of WEMCO or DOE. In the event that the Subcontractor fails to comply with said regulations or requirements of WEMCo or DOE, WEMCO or DOE may, without prejudice to any other legal or contractual rights of WEMCO or DOE, issue an order stopping all or any part of the work; thereafter a start order for resumption of the work may be issued at the direction of WEMCO or DOE. The Subcontractor shall make no claim for an extension of time or for compensation or damages by reason of or in connection with such work stoppage. The Subcontractor shall at all times, adhere to the Special Health, Safety and Fire protection Requirements listed in Section J, Attachment 3.

H.13 GENERAL REGULATIONS

a) No cafeteria facilities of WEMCO will be available for the Subcontractor's personnel. The Subcontractor's personnel shall eat their lunches only in areas designated by WEMCO.

b) A representative of the Subcontractor must report to WEMCO's Industrial, Radiological Safety and Training Department before commencing the work for further instructions as to the conduct of the Subcontractor's employees at the FEMP site while working under this subcontract.

c) Any hazard that is peculiar to the work site of this subcontract will be pointed out by WEMCO's Radiological Safety and Training Department in the above discussion. When special permission is necessary to perform certain phases of the work, for example, a "Flame Permit" for welding in a hazardous area, the Subcontractor will obtain this permit from WEMCO's representative. At times when it is necessary to barricade of "rope off" an area, all barricades, ropes, warning signs, etc, will be furnished by the Subcontractor.

H.16 SECURITY REGULATIONS

The Subcontractor must comply with the following security regulations:

a. A complete list of the Subcontractor's personnel, subcontractor firm names and subcontractor personnel shall be furnished to the WEMCO Security Department in writing upon receipt of the subcontract. This list shall include all personnel actively engaged in the work at the FEMP site, but will not include truck drivers or delivery persons that will enter FEMP for the purpose of making deliveries only.

The Subcontractor shall certify that all of the personnel so listed are citizens of the United States of America. This certification shall be attached to the above list and shall be in accordance with the following form:

"I hereby certify that all of the persons listed herein above are citizens of the United States of America:

Signed _____
(corporation, proprietorship, partnership)

BY: _____

Title: _____

Any other personnel not so listed but subsequently required to perform work at the FEMP site shall be listed and certified as to citizenship in the same manner as above prior to the time their work is required.

Failure to comply with the above requirements could cause undue delay to personnel in gaining entrance to FEMP.

b) On the first day of work all Subcontractor personnel must report to the Pass and Public Room of the Main Guard House and present identification, such as driver's license, ID card, etc. for issuance of an appropriate type badge. Any of these employees who will be required to be on the site ten or more working days will be required to have pictures taken for preparation of a laminated picture badge.

Approximately ten minutes per person will be required for taking the necessary picture. Pictures will be taken from 8:00 A.M. to 11:00 A.M., Monday through Friday.

After the first day of work, the picture badge will be used for identification and will be picked up at the turnstiles when reporting for work and deposited there when leaving work.

Employees who will require entrance to the FEMP for less than ten working days will be issued a temporary badge at the Pass and Public Room. These badges will be returned to the Pass and Public Room at the end of each working day.

c) When vehicles are required to perform work under this Subcontract, other than material or equipment deliveries, the WEMCO representative will be advised of the necessity and period of time the vehicle will be in use on the FEMP site. This advice should

be given prior to the time the vehicle is scheduled to be brought on the site.

d) WEMCO's Security Police, or cleared Subcontractor personnel will escort all subcontractor personnel during their work under this Subcontract. Subcontractor personnel will be subject to the orders of the Security Police and Security Regulations.

e) In the event an individual must leave the work site, either for personal reasons or int the line of work, they must be escorted by a cleared individual.

f) All personnel working under this Subcontract will take the same lunch period.

g) Each working day, the Subcontractor's job superintendent will notify the Security Police supervisor how many persons will work the nest working day, the work location or locations, and the hours to be worked and the number of escorts required. Without this notification, escorts may not be available.

h) If any work on this Subcontract is to be performed prior to 7:15 A.M. or after 4:00 P.M., Monday through Friday, or at any time Saturday, Sunday, or holidays, the WEMCO representative shall be notified as far in advance as possible.

i) When work under this Subcontract is complete, authorization for admittance of the involved personnel will be canceled and their picture badges will be destroyed.

H.17 TIME LOSSES

It is estimated that the Subcontractor's employees will lose approximately one-half (1/2) hour per day while complying with the Security, Environmental Safety and Health Regulations. These time losses are in addition to that specifically stated under Security Regulations.

H.18 SUBCONTRACTOR'S OBLIGATION TO PROTECT

The Subcontractor shall at all times, at its own expense be responsible for the protection of its work, material, appliances, supplies, tools, plant and equipment against any damage, injury, destruction, theft, or loss. The Subcontractor shall also hold and save WEMCO and the Government harmless from any damage, injury, destruction, theft or loss of tools, equipment, and supplies belonging to its mechanics, laborers, or workmen, and used on or in connection with the work required under this purchase order.

H.19 SUBCONTRACTOR PERSONNEL

(a) The Subcontractor, in performance of this subcontract shall be responsible for selecting personnel who are well qualified to perform the required services, for supervising its personnel and for keeping them informed of all improvements, changes and methods of operation.

(b) The Contract Administrator may direct the Subcontractor to remove, and the Subcontractor shall remove, any employee from assignment to performance of any services under this subcontract for reasons of security or misconduct.

(c) When the reason for the removal request is due solely to misconduct on the part of the employee, replacement shall be at the Subcontractor's expense and not chargeable to WEMCO.

H.20 HAZARDOUS MATERIALS - CATASTROPHIC AND ENVIRONMENTAL IMPAIRMENT EXPENSE INSURANCE

The Subcontractor shall carry environmental impairment expense insurance to cover the cleanup of mishaps or releases involving hazardous materials as defined in the solicitation and attachments. The coverage shall be a minimum of $2,500,000 per occurrence. This requirement shall be covered for a minimum of two occurrences and an aggregate dollar limitation of $5,000,000. The coverage shall be maintained at this level throughout the life of the subcontractor. Should any incident occur which reduces the number of occurrences, the subcontractor must immediately obtain further (additional) insurance which reestablishes the level of insurance and the number of occurrences called for under the subcontractor. This must be accomplished within 10 calendar days from the date of this incident. If the additional insurance is not obtained within this time period, the subcontractor will immediately cease work until the additional insurance is obtained. Under no circumstances will the subcontractor continue to work after insurance coverage has been canceled or otherwise ceases to exist, for example where the pertaining number of occurrences has in fact occurred. The burden for documentation of the insurance is the responsibility of the subcontractor. In no event shall such incident or work stoppage (for lack of insurance) be a cause for an extension of the subcontractual period of performance. This insurance coverage shall survive the period of performance of this subcontract until such time as all material and hardware so contaminated are satisfactorily placed in the ultimate disposal facility or incinerated and compliance with all legal and environmental requirements has been accomplished.

H.21 PAYMENTS

Notwithstanding Section I, Article A.6, "Delivery and Payment", WEMCO shall pay the Subcontractor, upon the submission of proper invoices, the prices stipulated in this contract for services rendered and accepted,

less any deductions provided in this subcontract. Payment for work performed on this subcontract will be made on a unit price-actual quantity basis and not on the estimated quantity. Unless otherwise specified in this subcontract, payment shall be made on partial deliveries accepted by WEMCO if -

(a) The amount due on the deliveries warrants it; or
(b) The Subcontractor request it and the amount due on the deliveries is at least $1,000 or 50 percent of the total Scheduled line item price.

JD-21486

WMCO-FP-100
SEPTEMBER 1989

SECTION I

WESTINGHOUSE MATERIALS COMPANY OF OHIO
GENERAL PROVISIONS
FOR
FIXED-PRICE ORDERS
AND
SUBCONTRACTS

Westinghouse Materials Company of Ohio

FMPC-625 REV 3-89

PREAMBLE

The terms and conditions of these General Provisions and those set forth in the WMCO purchase Order/Subcontract shall apply, notwithstanding any different or additional terms and conditions which may be submitted or proposed by Seller.

Where the titles of the Articles contained in this document refer to the Federal Acquisition Regulation (FAR), and the Department of Energy Acquisition Regulation (DEAR), it is intended for the Seller's information only, and shall have no other meaning or significance.

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SECTION A

SECTION A - APPLIES REGARDLESS OF ORDER/SUBCONTRACT PRICE.

ARTICLE A.1 DEFINITIONS

Whenever used in this document with initial capitalization, the following definitions shall be applicable unless the context indicates otherwise:

A. "DOE" shall mean the United States Department of Energy or any duly authorized representative thereof, including any successor or predecessor agency thereof, including the Contracting Officer.

B. "Government" shall mean the United States of America.

C. "Contracting Officer" shall mean the Government official executing the contract between WMCO and DOE and includes any appointed successor or authorized representative thereof.

D. "WMCO" shall mean the Westinghouse Materials Company of Ohio.

E. "Seller" shall mean the person or organization entering into this Order/Subcontract with WMCO.

F. "Head of the agency" or "Secretary" shall mean the Secretary, the Under Secretary, and Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency.

G. "Supplies" shall mean equipment, components, parts and materials to be provided by Seller and its Subcontractors pursuant to this Order/Subcontract.

H. "Services" shall mean labor, direction of labor, production of technical information, consulting services or any other services furnished by Seller and its Subcontractors under this Order/ Subcontract.

I. "Subcontractor" shall mean the Seller and/or any Subcontractor or supplier of any tier who supplies goods and/or Services to Seller in connection with Seller's obligations under this Order/Subcontract.

J. "Work" shall mean Supplies, Services and Vendor Data provided by Seller and its Subcontractors and all work performed with respect thereto, pursuant to this Order/Subcontract.

K. "Vendor Data" shall mean any and all information, data and documentation to be provided by Seller and its Subcontractors under this Order/Subcontract.

L. "DEAR" shall mean Department of Energy Acquisition Regulation.

M. "FAR" shall mean Federal Acquisition Regulation.

ARTICLE A.2 GENERAL

A. This Order/Subcontract, which term shall be deemed to include referenced plans, drawings, specifications and other documents, contains the entire agreement and understanding between the parties as to the subject matter of this Order/Subcontract and merges and supersedes all prior agreements, understandings, commitments, representations, writings and discussions between them. Neither of the parties will be bound by any prior obligations, conditions, warranties, or representations with respect to the subject matter of this Order/ Subcontract. The parties agree that recourse may not be had to alleged prior dealings, usage of trade, course of dealing, or course of performance to explain or supplement the express terms of this Order/Subcontract.

B. The failure of either party to enforce at any time any of the provisions of this Order/Subcontract or to require at any time performance by the other party of any of such provisions shall in no way be construed to be a waiver of such provision, nor in any way to affect the validity of this Order/Subcontract or any parts thereof, or the right of either party thereafter to enforce each and every provision.

C. The headings used in this Order/Subcontract are not to be construed as modifying, limiting or expanding in any way the scope or extent of the provisions in this Order/Subcontract.

D. All references herein to the Department of Energy Acquisition Regulation (DEAR) or Federal Acquisition Regulation (FAR) are those in effect on the date of this Order/Subcontract.

E. In the event of an inconsistency between provisions of this Order/Subcontract, the inconsistency shall be resolved by giving precedence as follows: (i) statement of Work; (ii) these General Provisions; and (iii) other provisions of this Order/Subcontract, whether incorporated by reference or otherwise.

F. Seller shall perform all Work pursuant to this Order/Subcontract as an independent contractor. If any part of the Work is subcontracted, Seller is responsible for having that subcontracted Work comply with the terms of this Order/Subcontract. No act or Order/Subcontract of WMCO shall be deemed to be an exercise or supervision or control of performance hereunder. No provision of this Order/Subcontract and no action taken by WMCO under this Order/Subcontract shall be construed to make or constitute WMCO the employer or joint employer of any of the employees of Seller or any Subcontractor.

ARTICLE A.3 SUBCONTRACTING

A. Seller shall not subcontract all or substantially all of the Work without the prior written approval of WMCO. This provision shall not apply to purchases of standard commercial articles or raw materials on which Seller shall perform further Work.

B. Seller shall select Subcontractors on a competitive basis to the maximum practicable extent consistent with the objectives and requirements of this Order/Subcontract.

ARTICLE A.4 CHANGES, EXTRAS AND SUBSTITUTIONS

A. WMCO may at any time, by a written change notice from the WMCO Procurement Department, and without notice to the sureties, if any, make changes, within the general scope of this Order/Subcontract, in any one or more of the following: (i) drawings, designs or specifications, or description of Services to be performed; (ii) method of shipment or packing; and (iii) place of inspection, delivery, acceptance or performance of the Services. If any such change causes an increase or decrease in the cost of, or the time required for, performance of this Order/Subcontract, or otherwise affects any other provisions of this Order/Subcontract, whether changed or not changed by any such change notice, an equitable adjustment shall be made (i) in the Order/Subcontract price or delivery schedule, or both; and (ii) in such other provisions of the Order/Subcontract as may be so affected and this Order/Subcontract shall be modified in writing accordingly. Any proposal by Seller for adjustment under this article, together with such supporting information as WMCO may require, must be submitted in writing within 30 days from the date of receipt by the Seller of the notification of change; provided however, that WMCO, if it decides that the facts justify such action, may receive and act upon any such proposal for adjustment at any time prior to final payment under this Order/Subcontract. Where the cost of property made obsolete or excess as a result of a change is included in Seller's proposal for adjustment, WMCO shall have the right to prescribe the manner of disposition of such property. Failure to agree to any adjustment shall be a dispute within the meaning of the article of this Order/Subcontract entitled "Disputes". However, nothing herein shall excuse Seller from proceeding with this Order/Subcontract as changed.

B. Any changes, extras or additional work made or performed by Seller

without the prior written approval of the WMCO Procurement Department shall be at the sole risk and expense of Seller, there being no financial recourse against WMCO or the Government whatsoever.

C. Seller shall not substitute other equipment or materials for those specified in this Order/Subcontract, or vary the quantity of the Work, or otherwise make any changes in the Work, without prior written consent of WMCO.

ARTICLE A.5 APPROVALS

The approval by WMCO of designs, work drawings, specifications, reports, or any other data submitted by Seller hereunder shall not affect or relieve Seller from any responsibility to furnish said items in full conformance with the requirements of this Order/Subcontract.

ARTICLE A.6 DELIVERY AND PAYMENT

A. Seller shall work such hours, including night shifts and overtime operations, as may be necessary to meet the Order/Subcontract delivery date(s), or any duly authorized extensions thereof, at no increase in the price of this Order/Subcontract.

B. Unless otherwise provided in this Order/Subcontract, delivery shall not be made more than 15 days prior to the delivery dates specified herein and WMCO may return earlier deliveries at Seller's risk and expense. Seller shall comply with the delivery schedule provided in this Order/Subcontract.

C. Unless otherwise specified in this Order/Subcontract, a separate invoice shall be issued upon each delivery of Supplies or completion of Services, and shall be payable by WMCO upon receipt and acceptance of Supplies or completion and acceptance of Services and receipt by WMCO of a proper invoice therefor. Credit and discount periods shall be computed from the date such invoice is payable to the date WMCO's check is mailed. Unless freight and other charges are itemized, the discount will be taken on the full amount of invoice. For purposes of determining payment due dates and for no other purpose, WMCO agrees to inspect and determine the acceptability of items delivered under the terms of this Order/Subcontract within thirty (30) calendar days after the date of receipt or completion of work. If actual acceptance occurs later, constructive acceptance will be deemed to occur on the last day of the above stated inspection period.

D. *Payment Withheld - Vendor Data.* If this Order/Subcontract requires the submittal of Vendor Data, and if such Vendor Data, or any part thereof, is not delivered within the time specified by this Order/Subcontract or is deficient upon delivery, WMCO may, until such Vendor Data is delivered or deficiencies are corrected, without limiting any of its other rights or remedies, withhold payments (not to exceed 20% of the Order/Subcontract price) to the Seller.

E. Notwithstanding anything herein, WMCO shall be entitled at any and all times to set off against any amounts payable at any time by WMCO hereunder any amount owing from Seller to WMCO under this Order/Subcontract or other contracts WMCO may have with Seller.

ARTICLE A.7 RESPONSIBILITY FOR SUPPLIES (FAR 52.246-16) (APRIL 1984)

A. Title to Supplies furnished under this Order/Subcontract shall pass to the Government upon formal acceptance, regardless of when or where WMCO takes physical possession, unless the contract specifically provides for earlier passage of title.

B. Unless the Order/Subcontract specifically provides otherwise, risk of loss of or damage to Supplies shall remain with the Seller until, and shall pass to the Government upon—

(1) Delivery of the Supplies to a carrier, if transportation is f.o.b. origin; or

(2) Acceptance by the Government or delivery of the Supplies to the Government at the destination specified in the Order/Subcontract, whichever is later, if transportation is f.o.b. destination.

C. Paragraph B above shall not apply to Supplies that so fail to conform Order/Subcontract requirements as to give a right of rejection. The risk of loss of or damage to such nonconforming Supplies remains with the Seller until cure or acceptance. After cure or acceptance, Paragraph B above shall apply.

D. Under Paragraph B above, the Seller shall not be liable for loss of or damage to Supplies caused by the negligence of officers, agents, or employees of WMCO acting within the scope of their employment.

ARTICLE A.8 TITLE AND ADMINISTRATION

It is understood and agreed that this Order/Subcontract is entered into by WMCO for and on behalf of the Government, that WMCO is authorized to and will make payment hereunder from Government funds advanced and agreed to be advanced to it by the DOE and not from its own assets and administer this Order/Subcontract in other respects for the DOE, unless otherwise specifically provided for herein, that administration of this Order/Subcontract may be transferred from WMCO to DOE or its designee, and in case of such transfer and notice thereof to the Seller WMCO shall have no further responsibilities hereunder, and that nothing herein shall preclude liability of the Government for any payment properly due hereunder if for any reason such payment is not made by WMCO from such Government funds.

ARTICLE A.9 WORKMANSHIP AND MATERIALS (DEAR 970.5204-25) (APRIL 1984)

A. Unless otherwise directed by WMCO in writing or expressly provided for by specifications issued under this Order/Subcontract, and without limiting any of Seller's other responsibilities hereunder:

(1) All workmanship shall be first class, and

(2) All Supplies and components shall be:

(i) new and of the best suitable grade of their respective kinds for the purpose;

(ii) in accordance with any applicable drawings and specifications; and

(iii) installed in accordance with this Order/Subcontract.

Where items are referred to in the specifications as "equal to" any particular standard, WMCO shall decide the question of equality.

B. If WMCO so requires, Seller shall submit for approval samples of, or test results on, any materials proposed to be incorporated in the Work before making any commitments for the purchase of such materials. Such approval shall not relieve Seller of its obligation hereunder.

ARTICLE A.10 WARRANTY

A. Seller warrants that the Supplies shall be free from defects in material and workmanship and comply with all requirements set forth in this Order/Subcontract, until one year after first placed into service by WMCO or three years after acceptance, whichever first occurs. Seller shall correct any nonconformity with this warranty at its sole expense, as directed by WMCO, by promptly: (i) repairing or replacing the nonconforming Supplies specified (and correcting any plans, specifications, or drawings affected); (ii) furnishing WMCO any materials, parts and instructions necessary to correct or have corrected the nonconformity; or (iii) paying to WMCO a portion of the Order/Subcontract price as is equitable under the circumstances.

B. Seller warrants that the Services shall reflect the highest standards of professional knowledge and judgement, shall be free from defects in workmanship, and shall be in compliance with all requirements of this Order/Subcontract, until one (1) year from the completion of Services. Seller shall correct any nonconformity with this warranty at its sole expense, as directed by WMCO, by promptly: (i) reperforming the nonconforming Services; or (ii) paying to WMCO a portion of the Order/Subcontract price as is equitable under the circumstances.

C. If Seller fails to promptly perform its obligations under this article, WMCO may perform, or have performed, such obligations and Seller shall pay WMCO all charges occasioned thereby.

D. The warranty with respect to corrected Supplies or Services shall be subject to the same terms as the warranty provided for in Paragraphs A and B above. The warranty for other than corrected or replaced Supplies or Services shall continue until the expiration of such period plus a period equal to the time elapsed between the discovery of the nonconformity and its correction.

E. Unless installation is an element of the Work, Seller shall not be obligated under this article for the costs of removal or reinstallation of any Supplies furnished or items Serviced hereunder from the location of their installation, or for the costs of removal or reinstallation of structural parts or items not furnished by Seller hereunder. Seller shall in any event bear all packing, packaging, and shipping costs from the place of delivery, and shall bear all risk of loss or damage for the Supplies or items Serviced while in transit.

F. Unless decontamination is an element of the Work, in the event that Seller's costs in correcting any nonconformity under this article are increased solely because the Supplies furnished or items serviced hereunder must be decontaminated to the level specified in the definition of "radiation area" in 10 CFR 20.202, this Order/Subcontract price shall be equitably adjusted to reflect such additional costs after prompt written notification thereof by Seller to WMCO.

G. The provision of this article shall apply notwithstanding inspection, acceptance, or any other provision of this Order/Subcontract, and shall not limit any other of WMCO's rights and remedies.

ARTICLE A.11 INSPECTION OF SUPPLIES (FAR 52.246-2) (JULY 1985)

A. Definition. "Supplies," as used in this article, includes but is not limited to raw materials, components, intermediate assemblies, end products, and lots of supplies.

B. The Seller shall provide and maintain an inspection system acceptable to WMCO covering Supplies under this Order/Subcontract and shall tender to WMCO for acceptance only Supplies that have been inspected in accordance with the inspection system and have been found by the Seller to be in conformity with Order/Subcontract requirements. As part of the system, the Seller shall prepare records evidencing all inspections made under the system and the outcome. These records shall be kept complete and made available to WMCO during Order/Subcontract performance and for as long afterwards as the Order/Subcontract requires. WMCO may perform reviews and evaluations as reasonably necessary to ascertain compliance with this paragraph. These reviews and evaluations shall be conducted in a manner that will not unduly delay the Order/Subcontract Work. The right of review, whether exercised or not, does not relieve the Seller of the obligations under the Order/Subcontract.

C. WMCO has the right to inspect and test all Supplies called for by the Order/Subcontract, to the extent practicable, at all places and times, including the period of manufacture, and in any event before acceptance. WMCO shall perform inspections and test in a manner that will not unduly delay the work. WMCO assumes no contractual obligation to perform any inspection and test for the benefit of the Seller.

D. If WMCO performs inspection or test on the premises of the Seller or a Subcontractor, the Seller shall furnish, and shall require Subcontractors to furnish, without additional charge, all reasonable facilities and assistance for the safe and convenient performance of these duties. Except as otherwise provided in the Order/Subcontract, WMCO shall bear the expense of WMCO inspections or tests made at other than the Seller's or Subcontractor's premises; *provided*, that in case of rejection, WMCO shall not be liable for any reduction in the value of inspection or test samples.

E. (1) When Supplies are not ready at the time specified by the Seller for inspection or test, WMCO may charge to the Seller the additional cost of inspection or test.

(2) WMCO may also charge the Seller for any additional cost of inspection or test when prior rejection makes reinspection or retest necessary.

F. WMCO has the right either to reject or to require correction of nonconforming Supplies. Supplies are nonconforming when they are defective in material or workmanship or are otherwise not in conformity with Order/Subcontract requirements. WMCO may reject nonconforming Supplies with or without disposition instructions.

G. The Seller shall remove Supplies rejected or required to be corrected. However, WMCO may require or permit correction in place, promptly after notice by and at the expense of the Seller. The Seller shall not tender for acceptance corrected or rejected supplies without disclosing the former rejection or requirement for correction, and, when required, shall disclose the corrective action taken.

H. If the Seller fails to promptly remove, replace, or correct rejected Supplies that are required to be removed or to be replaced or corrected, WMCO may either (1) by contract or otherwise, remove, replace, or correct the Supplies and charge the cost to the Seller or (2) terminate the Order/Subcontract for default. Unless the Seller corrects or replaces the Supplies within the delivery schedule, WMCO may require their delivery and make an equitable price reduction. Failure to agree to a price reduction shall be a dispute.

I. (1) If this Order/Subcontract provides for the performance of WMCO quality assurance at source, and if requested by WMCO, the Seller shall furnish advance notification of the time (i) when Seller inspection or tests will be performed in accordance with the terms and conditions of the Order/Subcontract and (ii) when the Supplies will be ready for WMCO inspection.

(2) The WMCO request shall specify the period and method of the advance notification and the WMCO representative to whom it shall be furnished. Requests shall not require more than 7 workdays of advance notification.

J. WMCO shall accept or reject supplies as promptly as practicable after delivery, unless otherwise provided in the Order/Subcontract. WMCO failure to inspect and accept or reject the Supplies shall not relieve the Seller from responsibility, nor impose liability on WMCO, for nonconforming Supplies.

K. Inspections and tests by WMCO do not relieve the Seller of responsibility for defects or other failures to meet Order/Subcontract requirements discovered before acceptance. Acceptance shall be conclusive, except for latent defects, fraud, gross mistakes amounting to fraud, or as otherwise provided in the Order/Subcontract.

L. If acceptance is not conclusive for any of the reasons in Paragraph K hereof, WMCO, in addition to any other rights and remedies provided by law, or under other provisions of this Order/Subcontract, shall have the right to require the Seller (1) at no increase in Order/ Subcontract price, to correct or replace the defective or nonconforming Supplies at the original point of delivery or at the Seller's plant at WMCO's election, and in accordance with a reasonable delivery schedule as may be agreed upon between the Seller and WMCO; *provided*, that WMCO may require a reduction in Order/Subcontract price if the Seller fails to meet such delivery schedule, or (2) within a reasonable time after receipt by the Seller of notice of defects or nonconformance, to repay such portion of the Order/Subcontract as is equitable under the circumstances if WMCO elects not to require correction of replacement. When Supplies are returned to the Seller, the Seller shall bear the transportation cost from the original point of delivery to the Seller's plant and return to the original point when that point is not the Seller's plant. If the Seller fails to perform or act as required in (1) or (2) above and does not cure such failure within a period of 10 days (or such longer period as WMCO may

authorize in writing) after receipt of notice from WMCO specifying such failure, WMCO shall have the right by contract or otherwise to replace or correct such supplies and charge to the Seller the cost occasioned WMCO thereby.

ARTICLE A.12 INSPECTION OF SERVICES (FAR 52.246-4) (APRIL 1984)

A. Definitions. "Services," as used in this article, includes services performed, workmanship, and material furnished or utilized in the performance of Services.

B. The Seller shall provide and maintain an inspection system acceptable to WMCO covering the Services under this Order/Subcontract. Complete records of all inspection work performed by the Seller shall be maintained and made available to WMCO during Order/Subcontract performance and for as long afterwards as the Order/Subcontract requires.

C. WMCO has the right to inspect and test all Services called for by the Order/Subcontract, to the extent practicable at all times and places during the term of the Order/Subcontract. WMCO shall perform inspections and tests in a manner that will not unduly delay the Work.

D. If any of the Services do not conform with Order/Subcontract requirements, WMCO may require the Seller to perform the services again in conformity with Order/Subcontract requirements, at no increase in Order/Subcontract amount. When the defects in Services cannot be corrected by reperformance, WMCO may (1) require the Seller to take necessary action to ensure that future performance conforms to Order/Subcontract requirements and (2) reduce Order/Subcontract price to reflect the reduced value of the Services performed.

E. If the Seller fails to promptly perform the Services again or to take the necessary action to ensure future performance in conformity with Order/Subcontract requirements, WMCO may (1) by contract or otherwise, perform the Services and charge to the Seller any cost incurred by WMCO that is directly related to the performance of such Service or (2) terminate the Order/Subcontract for default.

ARTICLE A.13 WORK ON WMCO, GOVERNMENT, OR OTHER PREMISES

As to the Work to be done or performed by Seller on premises owned or controlled by WMCO, the Government, or the premises of other WMCO Subcontractors:

A. Seller assumes entire responsibility and liability for losses, expenses, damages, demands, and claims in connection with or arising out of any injury or alleged injury (including death), or damage or alleged damage to property, sustained or alleged to have been sustained in connection with or to have arisen out of performance of the Work. Seller will indemnify and save harmless the Government and WMCO from and against any and all claims, demands, actions, causes of action, suits, damages, expenses (including attorney fees) and liabilities whatsoever resulting from or arising in any manner on account of or by reason of any injury to or death of any person or any damage to or loss of property which may occur or be alleged to have occurred as a result of or in connection with the performance of this Order/Subcontract, unless resulting from the negligence of WMCO or the Government. Nothing in the foregoing shall be construed to require Seller to indemnify and save harmless the Government and WMCO from any liability arising out of or resulting from a nuclear incident.

B. Seller shall procure or cause to be procured at its own expense, and shall likewise maintain or cause to be maintained, while any Work is being performed, and for such period thereafter as may be necessary under the circumstances, insurance sufficient to protect Seller, WMCO, WMCO's subcontractors, and the Government against all liability with respect to bodily injury or death, or property loss or damage, which may be imposed by law upon Seller or which is assumed by Seller under this Order/Subcontract. Such insurance shall be in such amounts, with such companies, and in such forms as are satisfactory to WMCO, ar shall provide for at least thirty (30) days prior written notice to WMCO. cancellation thereof. All such policies of insurance shall contain an article reading substantially as follows: "The insurer waives any right of subrogation against WMCO, its Subcontractors and suppliers, and the United States of America which might arise by reason of any payment under this policy". Certificates of such insurance shall be furnished to WMCO prior to the commencement of any work by or for the Seller. Seller shall not be relieved of liability assumed pursuant to this article by reason of the procurement, maintenance, limits, or coverages of any insurance policies whether or not approved by WMCO.

C. Seller agrees to comply (and require its Subcontractors to comply) with all applicable laws, rules, and regulations with respect to Workers/Workmen's Compensation or occupational disease, or withholding and payment of Social Security and Federal Income Taxes. The Seller further agrees to indemnify WMCO and the Government against, and to save and hold harmless WMCO and the Government from any and all liability and expense with respect to claims against WMCO or the Government which may result from the failure or alleged failure of Seller or of any of its Subcontractors to comply therewith.

D. Seller and its Subcontractors shall comply with all applicable regulations of WMCO, WMCO's Subcontractors, and the Government while at such facility or on such property.

ARTICLE A.14 GOVERNMENT-FURNISHED PROPERTY (FAR 52.245-4) (APRIL 1984)

A. WMCO shall deliver to the Seller, at the time and locations stated in this Order/Subcontract, the Government-furnished property described in the schedule or specifications. If that property, suitable for its intended use, is not delivered to the Seller, WMCO shall equitably adjust affecter provisions of this Order/Subcontract in accordance with Article A when:

(1) The Seller submits a timely written request for an equitable adjustment; and

(2) The facts warrant an equitable adjustment.

B. Title to Government-furnished property shall remain in the Government. The Seller shall use the Government-furnished property only in connection with this Order/Subcontract. The Seller shall maintain adequate property control records in accordance with sound industrial practice and shall make such records available for Government inspection at all reasonable times, unless the article at Federal Acquisition Regulation 52.245-1, Property Records, is in substance included in this Order/Subcontract.

C. Upon delivery of Government-furnished property to the Seller, the Seller assumes the risk and responsibility for its loss or damage, except:

(1) For reasonable wear and tear;

(2) To the extent property is consumed in performing this Order/Subcontract; or

(3) As otherwise provided for by the provisions of this Order/Subcontract.

ARTICLE A.15 RIGHTS IN TECHNICAL DATA— LONG FORM (DEAR 952.227-75) (APRIL 1984)

A. DEFINITIONS.

(1) "Technical Data" means recorded information regardless of form or characteristic, of a scientific or technical nature. It may, for example, be document research, experimental, developmental, demonstration, or engineering work, or be usable or used to defin design or process, or to procure, produce, support, maintain, or operate material. The data may be graphic or pictorial delineations in media such as drawings or photographs, text in specifications or

related performance or design type documents or computer software (including computer programs, computer software data bases, and computer software documentation). Examples of Technical Data include research and engineering data, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identification, and related information. Technical Data as used herein does not include financial reports, cost analyses and other information incidental to Order/ Subcontract administration.

(2) "Proprietary Data" means Technical Data which embody trade secrets developed at private expense, such as design procedures or techniques, chemical composition of materials, or manufacturing methods, processes, or treatments, including minor modifications thereof, provided that such data:

(i) Are not generally known or available from other sources without obligation concerning their confidentiality;

(ii) Have not been made available by the owner to others without obligation concerning its confidentiality; and

(iii) Are not already available to the Government without obligation concerning their confidentiality.

(3) "Contract Data" means Technical Data first produced in the performance of this Order/Subcontract, Technical Data which are specified to be delivered under this Order/Subcontract, Technical Data that may be called for under the Additional Technical Data Requirements article of this Order/Subcontract, if any, or Technical Data actually delivered in connection with this Order/Subcontract.

(4) "Unlimited Rights" means rights to use, duplicate, or disclose Technical Data, in whole or in part, in any manner and for any purpose whatsoever, and to permit others to do so.

ALLOCATION OF RIGHTS.

(1) The Government shall have:

(i) Unlimited Rights in Contract Data except as otherwise provided below with respect to Proprietary Data;

(ii) The right to remove, cancel, correct or ignore any marking not authorized by the terms of this Order/Subcontract on any Technical Data furnished hereunder, if in response to a written inquiry by WMCO concerning the propriety of the markings, the Seller fails to respond thereto within sixty (60) days or fails to substantiate the propriety of the markings. In either case, DOE will notify the Seller of the action taken; and

(iii) No rights under this Order/Subcontract in any Technical Data which are not Contract Data.

(2) The Seller shall have:

(i) The right to withhold Proprietary Data in accordance with the provisions of this article; and

(ii) The right to use for its private purposes, subject to patent, security or other provisions of this Order/Subcontract, data it first produces in the performance of this Order/ Subcontract, provided the data requirements of this Order/Subcontract have been met as of the date of the private use of such data. The Seller agrees that to the extent it receives or is given access to Proprietary Data or other technical, business or financial data in the form of recorded information from DOE or a DOE contractor or subcontractor, the Seller shall treat such data in accordance with any restrictive legend contained thereon, unless use is specifically authorized by prior written approval of WMCO.

) Nothing contained in this Rights in Technical Data Article shall imply a license to the Government under any patent or be construed as affecting the scope of any licenses or other rights otherwise granted to the Government under any patent.

C. COPYRIGHTED MATERIAL.

(1) The Seller shall not, without prior written authorization of the Patent Counsel, establish a claim to statutory copyright in any Contract Data first produced in the performance of this Order/Subcontract. To the extent such authorization is granted, the Government reserves for itself and others acting on its behalf a royalty-free, nonexclusive, irrevocable, worldwide license for Governmental purposes to publish, distribute, translate, duplicate, exhibit, and perform any such data copyrighted by Seller.

(2) The Seller agrees not to include in the Technical Data delivered under this Order/Subcontract any material copyrighted by the Seller and not to knowingly include any material copyrighted by others, without first granting or obtaining at no cost a license therein for the benefit of the Government of the same scope as set forth in Paragraph C (1) above. If such royalty-free license is unavailable and the Seller nevertheless determines that such copyrighted material must be included in the Technical Data to be delivered, rather than merely incorporated therein by reference, the Seller shall obtain the written authorization of WMCO to include such copyrighted material in the Technical Data prior to its delivery.

D. SUBCONTRACTING.

It is the responsibility of the Seller to obtain from its Subcontractors Technical Data and rights therein, on behalf of the Government, necessary to fulfill the Seller's obligations to the Government with respect to such data. In the event of refusal by a Subcontractor to accept an article affording the Government such rights, the Seller shall:

(1) Promptly submit written notice to WMCO setting forth reasons for the Subcontractor refusal and other pertinent information which may expedite disposition of the matter; and

(2) Not to proceed with the subcontract without the written authorization of WMCO.

E. WITHHOLDING OF PROPRIETARY DATA.

Notwithstanding the inclusion of the Additional Technical Data Requirements Article in this Order/Subcontract or any provision of this Order/Subcontract specifying the delivery of Technical Data, the Seller may withhold Proprietary Data from delivery, provided that the Seller furnishes in lieu of any such Proprietary Data so withheld Technical Data disclosing the source, size, configuration, mating and attachment characteristics, functional characteristics, and performance requirements ("Form, Fit and Function" data, e.g., specification control drawings, catalog sheets, envelope drawings, etc.), or a general description of such Proprietary Data where "Form, Fit and Function" data are not applicable. The Government shall acquire no rights to any Proprietary Data so withheld except that such data shall be subject to the "inspection rights" provisions of Paragraph F, "Limited rights in Proprietary Data" provisions of Paragraph G.

F. INSPECTION RIGHTS.

Except as may be otherwise specified in this Order/Subcontract for specific items of Proprietary Data which are not subject to this paragraph, the representatives, at all reasonable times up to three years after final payment under this Order/Subcontract, may inspect at the Seller's facility any Proprietary Data withheld under Paragraph E for the purposes of verifying that such data properly fell within the withholding provisions of Paragraph E and not furnished under Paragraph G for the purpose of verifying that such data properly fell within the withholding provision of Paragraph E, or for evaluating Work performance.

G. LIMITED RIGHTS IN PROPRIETARY DATA.

Except as may be otherwise specified in this Order/Subcontract as Technical Data which are not subject to this paragraph, the Seller shall, upon written request from the WMCO at any time prior to three years after final payment under this Order/Subcontract, promptly deliver to the Government any "Proprietary Data" withheld pursuant to Paragraph E of this article. The legend set forth at DEAR 952.227-75(g) and no

other is authorized to be affixed on any "Proprietary Data" and meets the conditions for initial withholding under Paragraph E of this article. The Government will thereafter treat the "Proprietary Data" in accordance with such legend.

ARTICLE A.16 ADDITIONAL TECHNICAL DATA REQUIREMENTS (DEAR 952.227-73) (APRIL 1984)

A. In addition to the Technical Data specified elsewhere in this Order/Subcontract to be delivered, the Contracting Officer or WMCO may at any time during this Order/Subcontract performance or within one year after final payment call for the Seller to deliver any Technical Data first produced or specifically used in the performance of this Order/Subcontract, except Technical Data pertaining to items of standard commercial design.

B. The provisions of the Rights in Technical Data Article included in this Order/Subcontract are applicable to all Technical Data called for under this Additional Technical Data Requirements Article. Accordingly, nothing contained in this article shall require the Seller to actually deliver any technical data, the delivery of which is excused by Paragraph E of the Rights in Technical Data Article.

C. When Technical Data are to be delivered under this article, the Seller will be compensated for appropriate costs for converting such data into the prescribed form for reproduction, and for delivery.

ARTICLE A.17 CLASSIFICATION (DEAR 952.204-1) (APRIL 1984)

In the performance of the Work, Seller shall ensure that an Authorized Original Classifier or Derivative Classifier shall assign classifications to all documents, materials and equipment originated or generated by Seller in accordance with classification guidance furnished to Seller by WMCO. Every subcontract and purchase order issued hereunder involving the origination or generation of classified documents, material or equipment, shall include a provision to the effect that in the performance of such subcontract or purchase order the Subcontractor shall ensure that an Authorized Original Classifier or Derivative Classifier shall assign classifications to all such documents, material and equipment in accordance with classification guidance furnished to such Subcontractor by Seller.

ARTICLE A.18 PUBLIC RELEASE OF INFORMATION

Information, data, photographs, sketches, advertising, announcements, denial or confirmation of same or items of a similar nature, relating to this Order/Subcontract, which Seller desires to release or publish, shall be submitted to WMCO for approval eight weeks prior to the desired release date. As part of the approval request, Seller shall identify the specific media to be used as well as other pertinent details of the proposed release. All releases by Subcontractors must have the prior approval of WMCO. Seller shall include all provisions of this article including this sentence in all subcontracts or purchase orders under this Order/Subcontract.

ARTICLE A.19 DISPUTES (FAR 52.233-1) (APRIL 1984)

A. By reason of WMCO's entering into this Order/Subcontract as agent for the Government, the Subcontractor is considered a "Contractor" within the meaning of Section 2(4) of the Contract Disputes Act of 1978 (P.L. 95-563) and this Order/Subcontract is subject to such Act.

B. Except as provided in the Act, all disputes arising under or relating to this Order/Subcontract shall be resolved in accordance with this article.

C. (1) As used herein, "claim" means a written demand or assertion by one of the parties seeking, as a legal right, the payment of money, adjustment of interpretation of subcontract terms or other relief, arising under or relating to this Order/Subcontract.

(2) A voucher, invoice, or request for payment that is not in dispute when submitted is not a claim for the purposes of the Act. However, where such submission is subsequently not acted upon in a reasonable time, or disputed either as to liability or amount, it m be converted to a claim pursuant to the Act.

(3) A claim by the Subcontractor shall be made in writing and submitted to the Contracting Officer of WMCO's Contract No. DE-AC05-860R21600 with the Government for decision. A claim by WMCO against the Subcontractor shall be subject to a decision by the Contracting Officer of WMCO's Contract No. DE-AC05-860R21600 with the Government.

D. For Subcontractor claims of more than $50,000, the Subcontractor shall submit with the claim a certification that the claim is made in good faith; the supporting data are accurate and complete to the best of the Subcontractor's knowledge and belief; and the amount requested accurately reflects the Subcontract adjustment for which the Subcontractor believes the Government is liable. The certification shall be executed by the Subcontractor if an individual. When the Subcontractor is not an individual, the certification shall be executed by a senior company official in charge at the Subcontractor's plant or location involved, or by an officer or general partner of the Subcontractor having overall responsibility for the conduct of the Subcontractor's affairs.

E. For Subcontractor claims of $50,000 or less, the Contracting Officer must render a decision within 60 days. For Subcontractor claims in excess of $50,000, the Contracting Officer must decide the claim within 60 days or notify the Seller of the date when the decision will be made.

F. The Contracting Officer's decision shall be final unless the Subcontractor appeals or files a suit as provided in the Act.

G. The authority of the Contracting Officer under the Act does not extend to claims or disputes which by statute or regulation other agencies are expressly authorized to decide.

H. Interest on the amount found due on a Subcontractor claim shall paid from the date the claim is received by the Contracting Officer until the date of payment.

I. Except as the parties may otherwise agree, pending final resolution of claim by the Subcontractor arising under the Subcontract, the Subcontractor shall proceed diligently with the performance of the Subcontract in accordance with the Contracting Officer's decision.

ARTICLE A.20 PRIORITIES, ALLOCATIONS, AND ALLOTMENTS (DEAR 970.5204-33)

Seller shall follow the provisions of the Defense Priorities and Allocations System Regulations and Procedures and all other applicable regulations and orders of the DPAS in obtaining controlled materials and other products and materials needed to fill this Order/Subcontract.

ARTICLE A.21 SECURITY (DEAR 952.204-2) (OCTOBER 1987)

A. SELLER'S DUTY TO SAFEGUARD ALL CLASSIFIED INFORMATION, SPECIAL NUCLEAR MATERIAL, AND OTHER DOE PROPERTY.
The Seller shall, in accordance with DOE security regulations and requirements, be responsible for safeguarding all classified information, and protecting against sabotage, espionage, loss and theft, the classified documents and material in the Seller's possession in connection with the performance of the Work except as otherwise expressly provided in this Order/Subcontract, the Seller shall, upon completion or termination of this Order/Subcontract, transmit to DOE any classified matter in the possession of the Seller or any person under the Seller's control in connection with performance of th Order/Subcontract. If retention by the Seller of any classified matt required after the completion or termination of this Order/ Subconti and such retention is approved by WMCO, the Seller shall complete a certificate of possession to be furnished to WMCO specifying the

classified matter to be retained. The certification shall identify the items and types or categories of matter retained, the conditions governing the retention of the matter, and the period of retention, if known. If the retention is approved by WMCO, the security provisions of this Order/Subcontract shall continue to be applicable to the matter retained. Special nuclear material shall not be retained after the completion or termination of this Order/Subcontract.

B. REGULATIONS.
The Seller agrees to conform to all security regulations and requirements of DOE.

C. DEFINITION OF CLASSIFIED INFORMATION.
The term "Classified Information" means Restricted Data, Formerly Restricted Data, or National Security Information.

D. DEFINITION OF RESTRICTED DATA.
The term "Restricted Data" means all data concerning: (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to Section 142d of the Atomic Energy Act of 1954, as amended.

E. DEFINITION OF FORMERLY RESTRICTED DATA.
The term "Formerly Restricted Data" means all data removed from the Restricted Data category under Section 142 of the Atomic Energy Act of 1954, as amended.

F. DEFINITION OF NATIONAL SECURITY INFORMATION.
The term "National Security Information" means any information or material, regardless of its physical form or characteristics, that is owned or produced for or by, or is under the control of, the United States Government, that has been determined pursuant to Executive Order/Subcontract 12356 or prior orders to require protection against unauthorized disclosure, and which is so designated.

G. DEFINITION OF SPECIAL NUCLEAR MATERIAL (SNM).
SNM means: (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which, pursuant to the provisions of Section 51 of the Atomic Energy Act of 1954, as amended, has been determined to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

H. SECURITY CLEARANCE OF PERSONNEL.
The Seller shall not permit any individual to have access to any classified information, except in accordance with the Atomic Energy Act of 1954, as amended, Executive Order/Subcontract 12356, and the DOE's regulations or requirements applicable to the particular level and category of classified information to which access is required.

I. CRIMINAL LIABILITY.
It is understood that disclosure of any classified information relating to the Work to any person not entitled to receive it, or failure to safeguard any classified information that may come to the Seller or any person under the Seller's control in connection with the Work may subject the Seller, its agents, employees, or Subcontractors to criminal liability under the laws of the United States. (See the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2100 et seq.; 18 U.S.C. 793 and 794; and Executive Order/Subcontract 12356).

J. SUBCONTRACTS AND PURCHASE ORDERS.
Except as otherwise authorized in writing by WMCO, the Seller shall insert provisions similar to the foregoing in all subcontracts and purchase orders under this Order/Subcontract.

ARTICLE A.22 SUSPENSION OF WORK

A. WMCO may order Seller in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as may be determined appropriate for the convenience of WMCO. Upon expiration of the period of suspension, Seller shall promptly proceed with the Work.

B. If the performance of all or any part of the Work is, for an unreasonable period of time, suspended, delayed or interrupted (1) by an act of WMCO in the administration of this Order/Subcontract, or (2) by WMCO failure to act within the time specified in this Order/Subcontract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this Order/Subcontract (excluding profit) necessarily caused by such suspension, delay or interruption of an unreasonable period of time and this Order/Subcontract modified in writing accordingly. However, no adjustment shall be made under this article for any suspension, delay, or interruption to the extent (1) that performance would have been suspended or delayed or interrupted by any other cause, including the fault or negligence of Seller, or (2) for which an equitable adjustment is provided for or excluded under any other provision of this Order/Subcontract.

C. No claim under this article shall be allowed (1) for any costs incurred more than 20 days before Seller shall have notified WMCO in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order pursuant to Paragraph A above), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay or interruption, but not later than the date of final payment under this Order/Subcontract. No part of any claim under this article by Seller shall be allowed if not supported by adequate evidence showing that the cost would not have been incurred but for a suspension within the meaning of this article.

ARTICLE A.23 TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (FAR 52.249-2) (APRIL 1984)

A. WMCO may terminate performance of Work under this Order/Subcontract in whole or, from time to time, in part if WMCO determines that a termination is in the Government's best interest. WMCO shall terminate by delivering to the Seller a Notice of Termination specifying the extent of termination and the effective date.

B. After receipt of a Notice of Termination, and except as directed by WMCO, the Seller shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this article:

(1) Stop Work as specified in the notice.

(2) Place no further subcontracts or orders (referred to as subcontracts in this article) for materials, services or facilities, except as necessary to complete the continued portion of the Order/Subcontract.

(3) Terminate all subcontracts to the extent they relate to the Work terminated.

(4) Assign to the Government, as directed by WMCO, all right, title, and interest of the Seller under the subcontracts terminated, in which case WMCO shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.

(5) With approval or ratification to the extent required by WMCO, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this article.

(6) As directed by WMCO, transfer title to the Government and deliver to WMCO (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the Work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the Order/Subcontract had been completed, would be required to be furnished to WMCO.

(7) Complete performance of the Work not terminated.

(8) Take any action that may be necessary, or that WMCO may direct, for the protection and preservation of the property related to this Order/Subcontract that is in the possession of the Seller and in which the Government has or may acquire an interest.

(9) Use its best efforts to sell, as directed or authorized by WMCO, any property of the types referred to in subparagraph (6) above; *provided*, however, that the Seller (i) is not required to extend credit to any purchaser and (ii) may acquire the property under the conditions prescribed by, and at prices approved by WMCO. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by WMCO under this Order/Subcontract, credited to the price or cost of the Work, or paid in any other manner directed by WMCO.

C. After expiration of the plant clearance period as defined in Subpart 45.6 of the Federal Acquisition Regulation, the Seller may submit to WMCO a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by WMCO. The Seller may request WMCO to remove those items or enter into an agreement for their storage. Within 30 days, WMCO will accept title for and on behalf of the Government to those items and remove them or enter into a storage agreement. WMCO may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the list, as necessary, before final settlement.

D. After termination, the Seller shall submit a final termination settlement proposal to WMCO in the form and with the certification prescribed by WMCO. The Seller shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by WMCO upon written request of the Seller within this 1-year period. However, if WMCO determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Seller fails to submit the proposal within the time allowed, WMCO may determine, on the basis of information available, the amount, if any, due the Seller because of the termination and shall pay the amount determined.

E. Subject to Paragraph D above, the Seller and WMCO may agree upon the whole or any part of the amount to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount, whether under this Paragraph E or Paragraph F below, exclusive of costs shown in Subparagraph F(3) below, may not exceed the total Order/Subcontract price as reduced by (1) the amount of payments previously made and (2) the Order/Subcontract price of Work not terminated. The Order/Subcontract shall be amended, and the Seller paid the agreed amount. Paragraph F below shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

F. If the Seller and WMCO fail to agree on the whole amount to be paid because of the termination of Work, WMCO shall pay the Seller the amounts determined by WMCO as follows, but without duplication of any amounts agreed on under Paragraph E above:

(1) The Order/Subcontract price for completed Supplies or Services accepted by WMCO (or sold or acquired under Subparagraph B(9) above) not previously paid for, adjusted for any saving of freight and other charges.

(2) The total of—

(i) The costs incurred in the performance of the Work terminated, including initial costs and preparatory expense allocable thereto, but excluding any costs attributable to Supplies or Services paid or to be paid under Subparagraph F(1) above;

(ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the Order/Subcontract if not included in Subdivision (i) above; and

(iii) A sum, as profit on Subdivision (i) above, determined by WMC under 49.202 of the Federal Acquisition Regulation, in effect on the date of this Order/Subcontract, to be fair and reasonable; however, if it appears that the Seller would have sustained a loss on the entire Order/Subcontract had it been completed, WMCO shall allow no profit under this Subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(3) The reasonable costs of settlement of the Work terminated, including—

(i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;

(ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

(iii) Storage, transportation, and other costs incurred, reasonably necessary for the preservation, protection, or disposition of the termination inventory.

G. Except for normal spoilage, and except to the extent that WMCO expressly assumed the risk of loss, WMCO shall exclude from amounts payable to the Seller under Paragraph F above, the fair value, as determined by WMCO, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to WMCO or to a buyer.

H. The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this Order/Subcontract, shall govern all costs claimed, agreed to, or determined under this article.

I. The Seller shall have the right of appeal, under the Disputes article, fro any determination made by WMCO under Paragraph D, F, or K, exce that if the Seller failed to submit the termination settlement proposa within the time provided in Paragraph D or K, and failed to request a time extension, there is no right of appeal. If WMCO has made a determination of the amount due under Paragraph D, F, or K, WMCO shall pay the Seller (1) the amount determined by WMCO if there is no right of appeal or if no timely appeal has been taken, or (2) the amount finally determined on an appeal.

J. In arriving at the amount due the Seller under this article, there shall be deducted—

(1) All unliquidated advance or other payments to the Seller under the terminated portion of this Order/Subcontract;

(2) Any claim which WMCO has against the Seller under this Order/Subcontract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Seller or sold under the provisions of this article and not recovered by or credited to WMCO.

K. If the termination is partial, the Seller may file a proposal with WMCO for an equitable adjustment of the price(s) of the continued portion of the Order/Subcontract. WMCO shall make any equitable adjustment agreed upon. Any proposal by the Seller for an equitable adjustment under this article shall be requested within 90 days from the effective date of termination unless extended in writing by WMCO.

L. (1) WMCO may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Seller for the terminated portion of the Order/Subcontract, if WMCO believes the total of these payments will not exceed the amount to which the Seller will be entitled.

(2) If the total payments exceed the amount finally determined to due, the Seller shall repay the excess to WMCO upon demand, together with interest computed at the rate established by the

Secretary of the Treasury under 50 U.S.C. App. 1215 (b)(2). Interest shall be computed for the period from the date the excess payment is received by the Seller to the date the excess is repaid. Interest shall not be charged on any excess payment due to a reduction in the Seller's termination settlement proposal because of retention or other disposition of termination inventory until until 10 days after the date of the retention or disposition, or a later date determined by WMCO because of the circumstances.

M. Unless otherwise provided in this Order/Subcontractor by statute, the Seller shall maintain all records and documents relating to the terminated portion of this Order/Subcontract for 3 years after final settlement. This includes all books and other evidence bearing on the Seller's costs and expenses under this Order/Subcontract. The Seller shall make these records and documents available to WMCO or the Government, at the Seller's office, at all reasonable times, without any direct charge. If approved by WMCO, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

ARTICLE A.24 OFFICIALS NOT TO BENEFIT (FAR 52.203-1) (APRIL 1984)

No member of or delegate of Congress or resident commissioner shall be admitted to any share or part of this Order/Subcontract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Order/Subcontract if made with a corporation for its general benefit.

ARTICLE A.25 PRICING OF ADJUSTMENTS

When costs are a factor in any determination of an Order/Subcontract price adjustment pursuant to the "Changes, Extras and Substitutions" article or any other provisions of this Order/Subcontract, such costs shall in accordance with the contract cost principles and procedures in Part of the FAR as supplemented or modified by Part 931 of the DEAR, in effect on the date of this Order/Subcontract.

ARTICLE A.26 PERMITS OR LICENSES (DEAR 970.5204-29) (APRIL 1984)

Except as otherwise directed by WMCO, Seller shall procure all necessary permits or licenses and abide by all applicable laws, regulations and ordinances of the United States and of the state, territory, and political subdivisions in which the Work is performed.

ARTICLE A.27 CONVICT LABOR (FAR 52.222-3) (APRIL 1984)

In connection with any performance of Work, Seller agrees not to employ any person undergoing sentence of imprisonment, except as provided by 18 U.S.C. 4082(c) (2) and Executive Order 11755, December 29, 1973.

ARTICLE A.28 WORKER'S COMPENSATION COVERAGE AND INDEMNITY

Seller agrees to comply (and furnish evidence of such compliance) with the State Industrial Insurance or Workmen's (Worker's) Compensation laws of any state in which the Work is performed, and, if WMCO should incur any costs whatsoever under the Ohio Workmen's Compensation Laws by reason of the injury or death of any of Seller's employees while engaged in the Work, the Seller will indemnify and hold harmless WMCO for such costs which WMCO may legally be required to pay to employees of the Seller.

ARTICLE A.29 OCCUPATIONAL SAFETY AND HEALTH ACT

Seller warrants that any and all Work performed and/or Supplies furnished all comply with all requirements of the Occupational Safety and Health of 1970, as the same may be amended from time to time and including regulations adopted pursuant to such Act, and shall comply with all requirements of any applicable health or safety statute or regulation of any state or local government agency having jurisdiction in the location to which Supplies are to be shipped or Work is to be performed pursuant to this Order/Subcontract.

ARTICLE A.30 BUY AMERICAN ACT (FAR 52.225-3) (JANUARY 1989)

A. The Buy American Act (41 U.S.C. 10) provides that the Government give preference to domestic end products.

"Components", as used in this article, means those articles, materials and Supplies incorporated directly into the end products.

"Domestic end product", as used in this article, means (1) an unmanufactured end product mined or produced in the United States, or (2) an end product manufactured in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind as the products referred to in Subparagraphs B (2) or (3) of this article shall be treated as domestic. Scrap generated, collected and prepared for processing in the United States is considered domestic. On acquisitions above $25,000 in value, components of Canadian origin are treated as domestic.

"End products", as used in this article, means those articles, materials and supplies to be acquired for public use under this Order/Subcontract.

B. The Seller shall deliver only domestic end products, except those—

(1) For use outside the United States;

(2) That the Government determines are not mined, produced or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality;

(3) For which the agency determines that domestic preference would be inconsistent with the public interest; or

(4) For which the agency determines the cost to be unreasonable (see section 25.105 of the Federal Acquisition Regulation).

(The foregoing requirements are administered in accordance with Executive Order 10582, dated December 17, 1954, as amended, and Subpart 25.1 of the Federal Acquisition Regulation.)

ARTICLE A.31 COVENANT AGAINST CONTINGENT FEES (DEAR 970.5203-1)

A. The Seller warrants that no person or agency has been employed or retained to solicit or obtain this Order/Subcontract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, WMCO shall have the right to annul this Order/Subcontract without liability to WMCO or, in its discretion, to deduct from the Order/Subcontract price or consideration, or otherwise recover, the full amount of the contingent fee.

B. "Bona-fide-agency", as used in this article, means an established commercial or selling agency, maintained by Seller for the purpose of securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee", as used in this article, means a person employed by the Seller and subject to the Seller's supervision and control as to time, place and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee", as used in this article, means any commission, percentage, brokerage or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence", as used in this article, means any influence that

induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

C. Unless otherwise authorized by WMCO in writing, the Seller shall insert provisions similar to the foregoing in all subcontracts and purchase orders entered into under this Order/Subcontract.

ARTICLE A.32 GRATUITIES (FAR 52.203-3) (APRIL 1984)

A. The right of the Seller to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Seller, its agent, or another representative—

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

B. The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

C. If this contract is terminated under Paragraph A above, the Government is entitled—

(1) To pursue the same remedies as in a breach of the contract; and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Seller in giving gratuities to the person concerned, as determined by the agency head or a designee. (This Subparagraph C (2) is applicable only if this Order/Subcontract uses money appropriated to the Department of Defense.)

D. The rights and remedies of the Government provided in this article shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Order/Subcontract.

ARTICLE A.33 SPECIAL TOOLING (FAR 52.245-17) (APRIL 1984)

A. DEFINITION.
"Special tooling" means jigs, dies, fixtures, molds, patterns, taps, gauges, other equipment and manufacturing aids, all components of these items, and replacement of these items, that are of such a specialized nature that without substantial modification or alteration their use is limited to the development or production of particular supplies or parts thereof or performing particular services. It does not include material, special test equipment, facilities (except foundations and similar improvements necessary for installing special tooling), general or special machine tools, or similar capital items. Special tooling, for the purpose of this article, does not include any item acquired by the Seller before the effective date of the Order/Subcontract, or replacement of such items, whether or not altered or adapted for use in performing this Order/Subcontract, or items specifically excluded by the schedule of this Order/Subcontract.

B. USE OF SPECIAL TOOLING.
The Seller agrees to use the special tooling only in performing this Order/Subcontract or as otherwise approved by WMCO.

C. INITIAL LIST OF SPECIAL TOOLING.
If WMCO requests, the Seller shall furnish WMCO an initial list of all special tooling acquired or manufactured by the Seller for performing this Order/Subcontract (but see Paragraph D for tooling that has become obsolete). The list shall specify the nomenclature, tool number, related product part number (or service performed), and unit or group cost of the special tooling. The list shall be furnished within 60 days after delivery of the first production end item under this Order/Subcontract unless a later date is prescribed.

D. CHANGES IN DESIGN.
Changes in the design or specifications of the end items being produced under this Order/Subcontract may affect the interchangeability of end item parts. In such an event, unless otherwise agreed to by WMCO, the Seller shall notify WMCO of any part not interchangeable with a new superseding part. Pending disposition instructions, such usable tooling shall be retained and maintained by the Seller.

E. CONTRACTOR'S OFFER TO RETAIN SPECIAL TOOLING.
The Seller may indicate a desire to retain certain items of special tooling at the time it furnishes a list or notification pursuant to Paragraphs C, D, or H of this article. The Seller shall furnish a written offer designating those items that it wishes to retain by specifically listing the items or by listing the particular products, parts, or services for which the items were used or designed. The offer shall be made on one of the following bases:

(1) An amount shall be offered for retention of the items free of any Government or WMCO interest. This amount should ordinarily not be less than the current fair value of the items, considering, among other things, the value of the items to the Seller for use in future work; or

(2) Retention may be requested for a limited period of time and under terms as may be agreed to by WMCO and the Seller. This temporary retention is subject to final disposition pursuant to Paragraph I of this article.

F. PROPERTY CONTROL RECORDS.
The Seller shall maintain adequate property control records of all special tooling in accordance with its normal industrial practice. The records shall be made available for WMCO's inspection at all reasonable times. To the extent practicable, the Seller shall identify all special tooling subject to this article with an appropriate stamp, tag, or other mark.

G. MAINTENANCE.
The Seller shall take all reasonable steps necessary to maintain the identity and existing condition of usable items of special tooling from the date such items are no longer needed by the Seller until final disposition under Paragraph I of this article. These maintenance requirements do not apply to those items designated by WMCO for disposal as scrap or identified as of no further interest to WMCO or the Government under Subparagraph I (4) of this article. The Seller is not required to keep unneeded items of special tooling in place.

H. FINAL LIST OF SPECIAL TOOLING.
When all, or a substantial part, of the Work is completed or terminated, the Seller shall furnish WMCO a final list of special tooling with the same information as required for the initial list under Paragraph C of this article. The final list shall include all items not previously reported under Paragraph C. WMCO may provide a written waiver of this requirement or grant an extension. The requirement may be extended until the completion of this Order/Subcontract together with the completion of other contracts and subcontracts authorizing the use of the special tooling under Paragraph B of this article. Special tooling that has become obsolete as a result of changes in design or specification need not be reported except as provided for in Paragraph D.

I. DISPOSITION INSTRUCTIONS.
WMCO shall provide the Seller with disposition instructions for special tooling identified in a list or notice submitted under Paragraphs C, D or H of this article. The instructions shall be provided within 90 days of receipt of the list or notice, unless the period is extended by mutual agreement. WMCO may direct disposition by any of the methods listed in Subparagraphs (1) through (4) of this paragraph, or a combination of such methods. Any failure of WMCO to provide specific instructions within the 90-day period shall be construed as direction under Subparagraph I(3).

(1) WMCO shall give the Seller a list specifying the products, parts, Services for which WMCO may require special tooling and request the Seller to transfer title (to the extent not previously transferred under any other article of this Order/Subcontract) and deliver to the

Government all usable items of special tooling that were designed for or used in the production or performance of such products, parts or Services and that were on hand when such production or performance ceased.

(2) WMCO may accept or reject any offer made by the Seller under Paragraph E of this article to retain items of special tooling or may request further negotiation of the offer. The Seller agrees to enter into the negotiations in good faith. The net proceeds from WMCO's acceptance of the Seller's retention offer shall either be deducted from amounts due the Seller under this Order/ Subcontract or shall be otherwise paid to WMCO as directed by WMCO.

(3) WMCO may direct the Seller to sell, or dispose of as scrap, for the account of the Government, any special tooling reported by the Seller under this article. The net proceeds of all sales shall either be deducted from amounts due the Seller under the Order/Subcontract or shall otherwise be paid to WMCO as directed by WMCO. To the extent that the Seller incurs any costs occasioned by compliance with such directions, for which it is not otherwise compensated, the Order/Subcontract price shall be equitably adjusted in accordance with the Changes Article of this Order/Subcontract.

(4) WMCO may furnish the Seller with a statement disclaiming further Government or WMCO interest or rights in any of the special tooling listed.

J. STORAGE OR SHIPMENT.
The Seller shall promptly transfer to the Government title to the special tooling specified by WMCO and arrange for either the shipment or the storage of such tooling in accordance with the final disposition instructions in Subparagraph I(1) of this article. Tooling to be shipped shall be properly packaged, packed and marked in accordance with the directions of WMCO. Tooling shipped or stored shall be accompanied by operation sheets or other appropriate data necessary to show the manufacturing operations or processes for which the items were used or designed. To the extent that the Seller incurs costs for authorized storage or shipment under this paragraph and not otherwise compensated for, the Order/Subcontract price shall be equitably adjusted in accordance with Article A.4 of this Order/Subcontract.

K. SUBCONTRACT PROVISIONS.
In order to perform this Order/Subcontract, the Seller may, subject to Article A.3 hereof, place subcontracts (including purchase orders) involving the use of special tooling. If the full cost of the tooling is charged to those subcontracts, the Seller agrees to include in the subcontracts appropriate provisions to obtain rights comparable to the rights of WMCO and the Government under this article (unless the Seller and WMCO agree that such rights are not of substantial interest to the Government). The Seller agrees to exercise such rights for the benefit of the Government as directed by WMCO.

ARTICLE A.34 PRINTING (DEAR 970.5204-19) (APRIL 1984)

A. To the extent that duplicating or printing services may be required in the performance of this Order/Subcontract, the Seller shall provide or secure such services in accordance with the Government Printing and Binding Regulations, Title 44 of the U.S. Code, and DOE Directives relative thereto.

B. The term "Printing" includes the following processes: composition, platemaking, presswork, binding, microform publishing, or the end items produced by such processes. Provided, however, that performance of a requirement under this Order/Subcontract involving the duplication of less than 5,000 copies of a single page, or no more than 25,000 units in the aggregate of multiple pages, will not be deemed to be printing.

Printing services not obtained in compliance with this guidance shall result in the cost of such printing being disallowed.

(D) In all orders and subcontracts hereunder which require printing (as that term is defined in Title I of the U.S. Government Printing and Binding Regulations), the Seller shall include a provision substantially the same as this article.

ARTICLE A.35 RIGHTS TO PROPOSAL DATA (DEAR 952.227-82) (APRIL 1984)

Except for the Technical Data contained on those pages of the Seller's proposal which are asserted by the Seller as being Proprietary Data, it is agreed that, as a condition of the award of this Order/Subcontract and notwithstanding the provisions of any notice appearing on the proposal or elsewhere, WMCO and the Government shall have the right to use, duplicate, disclose and have others do so for any purpose whatsoever, the Technical Data contained in the proposal upon which this Order/Subcontract is based.

ARTICLE A.36 NUCLEAR HAZARDS REPRESENTATION (DEAR 950.7008)

WMCO represents that there is included in its prime contract with DOE an indemnity agreement, entered into by DOE under the authority of Section 170 of the Atomic Energy Act of 1954, as amended by Public Law 85-256 (the "Price-Anderson Act"), a copy of which may be obtained from WMCO; that under said agreement, DOE has agreed to indemnify WMCO and other persons indemnified, including the Seller, against claims for public liability (as defined in said Act) arising out of or in connection with the contractual activity; and that the indemnity applies to covered nuclear incidents which (1) take place at a "contract location" (which term, as defined in the indemnity agreement, does not include the location of the Seller's plant and facilities); or (2) arise out of or in the course of transportation of source, special nuclear or nuclear by-product material to or from a "contract location"; or (3) involve items produced or delivered under said prime contract. The obligation of DOE to indemnify is subject to the conditions stated in the indemnity agreement.

ARTICLE A.37 DEFAULT (FAR 52.249-8) (APRIL 1984)

A. (1) WMCO may, subject to Paragraphs C and D below, by written notice of default to the Seller, terminate this Order/Subcontract in whole or in part if the Seller fails to: (i) deliver the Supplies or to perform the Services within the time specified in this Order/Subcontract or any extension; (ii) make progress, so as to endanger performance of this Order/Subcontract (but see Subparagraph A (2) below); or (iii) perform any of the other provisions of this Order/Subcontract (but see Subparagraph A (2) below).

(2) WMCO's right to terminate this Order/Subcontract under Subdivisions (1) (ii) and (1) (iii) above, may be exercised if the Seller does not cure such failure within 10 days (or more if authorized in writing by WMCO) after receipt of the notice from WMCO specifying the failure.

B. If WMCO terminates this Order/Subcontract in whole or in part, it may acquire, under the terms and in the manner WMCO considers appropriate, Supplies or Services similar to those terminated, and the Seller will be liable to WMCO for any excess costs for those Supplies or Services. However, the Seller shall continue the Work not terminated.

C. Except for defaults of Subcontractors at any tier, the Seller shall not be liable for any excess costs if the failure to perform this Order/Subcontract arises from causes beyond the control and without the fault or negligence of the Seller. Examples of such causes include, (1) acts of God or of the public enemy, (2) acts of the Government in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance the failure to perform must be beyond the control and without the fault or negligence of the Seller.

D. If the failure to perform is caused by the default of a Subcontractor at any tier, and if the cause of the default is beyond the control of both the Seller and the Subcontractor and without the fault or negligence of either, the Seller shall not be liable for any excess costs for failure to

perform, unless the subcontracted Supplies or Services were obtainable from other sources in sufficient time for the Seller to meet the required delivery schedule.

E. If this Order/Subcontract is terminated for default, WMCO may require the Seller to transfer title to the Government and deliver to WMCO, as directed by WMCO, any (1) completed Supplies, and (2) partially completed Supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information and contract rights (collectively referred to as "manufacturing materials" in this article) that the Seller has specifically produced or acquired for the terminated portion of this Order/Subcontract. Upon direction of WMCO, the Seller shall also protect and preserve property in its possession in which WMCO or the Government has an interest.

F. WMCO shall pay the Order/Subcontract price for completed Supplies delivered and accepted. The Seller and WMCO shall agree on the amount of payment for manufacturing materials delivered and accepted and for the protection and preservation of the property. Failure to agree will be a dispute under the Disputes Article. WMCO may withhold from these amounts any sum it determines to be necessary to protect itself against loss because of outstanding liens or claims of former lien holders.

G. If, after termination, it is determined that the Seller was not in default, or that the default was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of WMCO.

H. The rights and remedies of WMCO in this article are in addition to any other rights and remedies provided by law or under this Order/Subcontract.

ARTICLE A.38 HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (FAR 52.223-3) (AUGUST 1987)

A. The Seller agrees to submit a Material Safety Data Sheet (Department of Labor Form OSHA-20), as prescribed in Federal Standard No. 313B, for all hazardous material 5 days before delivery of the material, whether or not listed in Appendix A of the Standard. This obligation applies to all materials or items containing these materials.

B. "Hazardous material", as used in this article, is as defined in Federal Standard No. 313B in effect on the date of this Order/Subcontract.

C. Neither the requirements of this article nor any act or failure to act by WMCO or the Government shall relieve the Seller of any responsibility of liability for the safety of Government, Seller or Subcontractor personnel or property.

D. The Seller shall comply with applicable federal, state and local laws, codes, ordinances and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

E. The Government's and WMCO's rights in data furnished under this Order/Subcontract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this article is applicable. The purposes of this right are to (i) apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting or disposing of hazardous materials; (ii) obtain medical treatment for those affected by the material; and (iii) have others use, duplicate and disclose the data for WMCO and the Government for these purposes.

(2) To use, duplicate and disclose data furnished under this article, in accordance with Subparagraph E (1) above, in precedence over any other article of this Order/Subcontract providing for rights in data.

(3) That WMCO and the Government are not precluded from using similar or identical data acquired from other sources.

(4) That the data shall not be duplicated, disclosed or released outside of WMCO or the Government, in whole or in part for any acquisition or manufacturing purpose, if the following legend is marked on each piece of data to which this article applies.

"This is furnished under United States Government Contract No. _____ , shall not be used, duplicated or disclosed for any acquisition or manufacturing purpose without the permission of _____
This legend shall be marked on any reproduction of this data."

(5) That the Seller shall not place the legend or any other restrictive legend on any data which (i) the Seller or any Subcontractor previously delivered to WMCO or the Government without limitations or (ii) should otherwise be delivered without limitations.

F. The Seller shall insert this article, including this paragraph F, with appropriate changes in the designation of the parties, in subcontracts at any tier (including purchase designations or purchase orders) under this Order/Subcontract involving hazardous material.

ARTICLE A.39 ANTI-KICKBACK PROCEDURES (FAR 52.203-7) (OCTOBER 1988)

A. DEFINITIONS.

"Kickback," as used in this article, means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, Subcontractor, or Subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime Contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this article, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this article, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor" as used in in this article means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this article means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this article means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this article, (1) means any person, other than the prime Contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subsubcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this article, means any officer, partner, employee or agent of a subcontractor.

B. The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from—

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback; or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

C. (1) When the Seller has reasonable grounds to believe that a violation

described in Paragraph B of this article may have occurred, the Seller shall promptly report in writing the possible violation. Such reports shall be made to WMCO, the inspector general of DOE, or the Department of Justice.

(2) The Seller shall cooperate fully with any federal agency investigating a possible violation described in paragraph B of this article.

(3) The Contracting Officer may—(i) offset the amount of the kickback against any monies owed by the United States under this the prime contract and/or (ii) direct that the prime Contractor withhold from sums owed a subcontractor under the prime contract the amount of the kickback. The Contracting Officer may order that monies withheld under Subdivision C(3)(ii) of this article be paid over to the Government unless the Government has already offset those monies under Subdivision C(3)(i) of this article. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(4) The Seller agrees to incorporate the substance of this article, including this Subparagraph C(4), in all subcontracts under this contract.

ARTICLE A.40 ASSIGNMENT OF CLAIMS (FAR 52.232-23) (JANUARY 1986)

A. The Seller under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this Order/Subcontract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence.

Any assignment or reassignment authorized under the Act and this article shall cover all unpaid amounts payable under this Order/Subcontract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this Order/Subcontract.

C. The Seller shall not furnish or disclose to any assignee under this Order/Subcontract any classified document (including this Order/Subcontract) or information related to Work under this Order/Subcontract until the Contracting Officer authorizes such action in writing.

ARTICLE A.41 SAFETY AND HEALTH (GOVERNMENT OWNED OR LEASED FACILITIES) (DEAR 970.5204-2) (APRIL 1984)

(The following article is applicable only to Work performed under this Order/Subcontract at Government-owned or leased facilities.)

The Seller shall take all reasonable precautions in the performance of the Work under this Order/Subcontract to protect the safety and health of employees and of members of the public and shall comply with all applicable safety and health regulations and requirements (including reporting requirements) of DOE. WMCO shall notify, in writing, the Seller of any noncompliance with the provisions of this article and the corrective action to be taken. After receipt of such notice, the Seller shall immediately take such corrective action. The Seller shall submit a management program and implementation plan to WMCO for review and approval within 30 days after the date of award of the subcontract. In the event that the Seller fails to comply with said regulations or requirements of DOE, WMCO may, without prejudice to any other legal or contractual rights of WMCO, issue an order stopping all or any part of the Work; thereafter, a start order for resumption of the Work may be issued at the discretion of WMCO. The Seller shall make no claim for an extension of time or for compensation or damages by reason of, or in connection with, such Work stoppage.

ARTICLE A.42 FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE OVER SELLER (DEAR 952.204-74) (APRIL 1984)

A. For purposes of this article, a "foreign interest" is defined as any of the following:

(1) A foreign government or foreign government agency;

(2) Any form of business enterprise organized under the laws of any country other than the United States or its possessions;

(3) Any form of business enterprise organized or incorporated under the laws of the U.S., or a state or other jurisdiction within the U.S., which is owned controlled, or influenced by a foreign government, agency, firm, corporation or person; or

(4) Any person who is not a U.S. Citizen.

B. "Foreign ownership, control, or influence" (FOCI) means the situation where the degree of ownership, control, or influence over a Seller by a foreign interest is such that a reasonable basis exists for concluding that compromise of classified information, special nuclear material as defined in 10 CFR Part 710, may result.

C. For purposes of this article, "Subcontractor" means any Subcontractor at any tier and the term "Contracting Officer" shall mean DOE Contracting Officer. When this article is included in a subcontract, the term "Seller" shall mean Subcontractor and the term "contract" shall mean subcontract.

D. The Seller shall immediately provide the Contracting Officer written notice of any changes in the extent and nature of FOCI over the Seller which would affect the answers to the questions presented in DEAR 952.204-73. Further, notice of changes in ownership or control which are required to be reported to the Securities and Exchange Commission, the Federal Trade Commission, or the Department of Justice shall also be furnished concurrently to the Contracting Officer.

E. In those cases where a Seller has changes involving FOCI, the DOE must determine whether the changes will pose an undue risk to the common defense and security. In making this determination, the Contracting Officer shall consider proposals made by the Seller to avoid or mitigate foreign influences.

F. If the Contracting Officer at any time determines that the Seller is, or is potentially, subject to FOCI, the Seller shall comply with such instructions as the Contracting Officer shall provide in writing to safeguard any classified information or significant quantity of special nuclear material.

G. The Seller agrees to insert terms that conform substantially to the language of this article including this Paragraph G in all subcontracts under this contract that will require access to classified information or a significant quantity of special nuclear material. Additionally, the Seller shall require such Subcontractors to submit a completed certification required in DEAR 952.204-73 prior to award of a subcontract. Information to be provided by a Subcontractor pursuant to this article may be submitted directly to the Contracting Officer.

H. Information submitted by the Seller or any affected Subcontractor as required pursuant to this article shall be treated by DOE to the extent permitted by law, as business or financial information submitted in confidence to be used solely for purposes of evaluating FOCI.

I. The requirements of this article are in addition to the requirement that a Seller obtain and retain the security clearances required by the contract. This article shall not operate as a limitation on DOE's rights, including its rights to terminate this contract.

J. The Contracting Officer may terminate this contract for default either if the Seller fails to meet obligations imposed by this article, e.g., provide the information required by this article, comply with the Contracting Officer's instructions about safeguarding classified information, or

make this article applicable to Subcontractors, or if, in the Contracting Officer's judgment, the Contractor creates an FOCI situation in order to avoid performance or a termination for default. The Contracting Officer may terminate this contract for convenience if the Seller becomes subject to FOCI and for reasons other than avoidance of performance of this contract, cannot, or chooses not to, avoid or mitigate the FOCI problem.

ARTICLE A.43 ORGANIZATIONAL CONFLICTS OF INTEREST-GENERAL (DEAR 952.209-71) (APRIL 1984)

A. The Seller warrants that, to the best of his knowledge and belief, and except as otherwise disclosed, there are no relevant facts which could give rise to organizational conflicts of interest, as defined in 48 CFR 909.570, or that the Seller has disclosed all relevant information.

B. The Seller agrees that, if after award, an organizational conflict of interest with respect to this Order/Subcontract is discovered, an immediate and full disclosure in writing shall be made to WMCO which shall include a description of the action which Seller has taken or proposes to take to avoid or mitigate such conflicts. WMCO may, however, terminate this Order/Subcontract for its convenience if deems such termination to be in the best interests of the Governme

C. In the event that the Seller was aware of an organizational conflict of interest prior to the award of this Order/Subcontract and did not disclose the conflict to WMCO, the Government may terminate this Order/Subcontract for default.

D. The provisions of this article shall be included in all subcontracts and purchase orders for Work to be performed similar to that furnished hereunder, and the terms "Order/Subcontract", "Seller" and "WMCO" modified appropriately to preserve WMCO's rights.

E. Prior to an Order/Subcontract modification when the statement of Work is modified to add new Work, the period of performance is significantly increased, or the parties to this Order/Subcontract are changed. WMCO will request, and the Seller is required to submit, either an organizational conflict of interest disclosure or representation (see DEAR 904.70 and DEAR 909.5), or an update of the previously submitted disclosure or representation.

SECTION B

SECTION B - APPLIES IF THE PRICE OF THIS ORDER/SUBCONTRACT EXCEEDS $2,500.

ARTICLE B.1 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT—OVERTIME COMPENSATION (FAR 52.222-4) (MARCH 1986)

A. OVERTIME REQUIREMENTS.
The Seller or any Subcontractor shall not require or permit any laborers or mechanics to work in excess of 40 hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than 1½ times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

B. VIOLATION; LIABILITY FOR UNPAID WAGER; LIQUIDATED DAMAGES.
In the event of any violation of the provisions set forth in Paragraph A of this article, the Seller and any Subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Seller and Subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions set forth in Paragraph A of this article in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in Paragraph A of this article.

C. WITHHOLDING FOR UNPAID WAGES AND LIQUIDATED DAMAGES.
WMCO shall upon his or her own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of Work performed by the Seller or Subcontractor under any such Order/Subcontract or any other Order/Subcontract with WMCO, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by WMCO, such sums as may be determined to be necessary to satisfy any liabilities of such Seller or Subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in Paragraph B of this article.

D. PAYROLLS AND BASIC RECORDS.
(1) The Seller or Subcontractor shall maintain payrolls and basic payroll records during the course of Order/Subcontract Work and shall preserve them for a period of 3 years from the completion of the Order/Subcontract for all laborers and mechanics working on the Order/Subcontract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Nothing in this paragraph shall require the duplication of records required to be maintained for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Davis-Bacon Act.

(2) The records to be maintained under Paragraph D(1) of this article shall be made available by the Seller or Subcontractor for inspection, copying or transcription by authorized representatives of the DOE or the Department of Labor. The Seller or Subcontractor shall permit such representatives to interview employees during working hours on the job.

E. SUBCONTRACTS.
The Seller or Subcontractor shall insert in any Orders/Subcontracts the provisions set forth in Paragraphs A through E of this article and also an article requiring the Subcontractors to include these provisions in any lower tier Orders/Subcontracts.

ARTICLE B.2 AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS (FAR 52.222-36) (APRIL 1984)

A. GENERAL.
(1) Regarding any position for which the employee or applicant for employment is qualified, the Seller shall not discriminate against any employee or applicant because of physical or mental handicap. The Seller agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as: (i) Employment; (ii) Upgrading; (iii) Demotion or transfer; (iv) Recruitment; (v) Advertising; (vi) Layoff or termination; (vii) Rates of pay or other forms of compensation; and (viii) Selection for training, including apprenticeship.

(2) The Seller agrees to comply with the rules, regulations and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. 793) (the Act), as amended.

B. POSTINGS.
(1) The Seller agrees to post employment notices stating (i) the Seller's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped individuals and (ii) the rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. They shall be in a form prescribed by the Director, OFFICE OF FEDERAL CONTRACT COMPLIANCE Programs, Department of Labor (Director), and provided by or through the Contracting Officer.

(3) The Seller shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contractual understanding, that the Seller is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified physically and mentally handicapped individuals.

C. NONCOMPLIANCE.
If the Seller does not comply with the requirements of this article, appropriate actions may be taken under the rules, regulations and relevant orders of the Secretary and issued pursuant to the Act.

D. SUBCONTRACTS.
The Seller shall include the terms of this article in every subcontract or purchase order in excess of $2,500 unless exempted by rules, regulations or orders of the Secretary. The Seller shall act as specified by the Director to enforce the terms, including action for noncompliance.

ARTICLE B.3 SERVICE CONTRACT ACT OF 1965 (FAR 52.222-41) (MAY 1989)

A. DEFINITIONS.
"Act," as used in this article, means the Service Contract Act of 1965, as amended (41 U.S.C. 351, et seq.).

"Contractor," as used in this article or in any subcontract, shall be deemed to refer to the Subcontractor, except in the term "Government Prime Contractor."

"Service employee," as used in this article, means any person engaged in the performance of this contract other than any person employed in a

bona fide executive, administrative, or professional capacity, as these terms are defined in Part 541 of Title 29, Code of Federal Regulations, as revised. It includes all such persons regardless of any contractual relationship that may be alleged to exist between a Contractor or Subcontractor and such persons.

B. APPLICABILITY.
This Order/Subcontract is subject to the following provisions and to all other applicable provisions of the Act and regulations of the Secretary of Labor (29 CFR Part 4). This article does not apply to contracts or subcontracts administratively exempted by the Secretary of Labor or exempted by 41 U.S.C. 356, as interpreted in Subpart C of 29 CFR Part 4.

C. COMPENSATION.

(1) Each Service employee employed in the performance of this Order/Subcontract by the Contractor or any Subcontractor shall be paid not less than the minimum monetary wages and shall be furnished fringe benefits in accordance with the wages and fringe benefits determined by the Secretary of Labor, or authorized representative, as specified in any wage determination attached to this contract.

(2) (i) If a wage determination is attached to this contract, the Contractor shall classify any class of Service employee which is not listed therein and which is to be employed under the contract (i.e., the work to be performed is not performed by any classification listed in the wage determination) so as to provide a reasonable relationship (i.e., appropriate level of skill comparison) between such unlisted classifications and the classifications listed in the wage determination. Such conformed class of employees shall be paid the monetary wages and furnished the fringe benefits as are determined pursuant to the procedures in this Paragraph C.

(ii) This conforming procedure shall be initiated by the Contractor prior to the performance of contract work by the unlisted class of employee. The Contractor shall submit Standard Form (SF) 1444, Request For Authorization of Additional Classification and Rate, to the Contracting Officer no later than 30 days after the unlisted class of employee performs any contract work. The Contracting Officer shall review the proposed classification and rate and promptly submit the completed SF 1444 (which must include information regarding the agreement or disagreement of the employees' authorized representatives or the employees themselves together with the agency recommendation), and all pertinent information to the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor. The Wage and Hour Division will approve, modify, or disapprove the action or render a final determination in the event of disagreement within 30 days of receipt or will notify the Contracting Officer within 30 days of receipt that additional time is necessary.

(iii) The final determination of the conformance action by the Wage and Hour Division shall be transmitted to the Contracting Officer who shall promptly notify the Contractor of the action taken. Each affected employee shall be furnished by the Contractor with a written copy of such determination or it shall be posted as a part of the wage determination.

(iv) (a) The process of establishing wage and fringe benefit rates that bear a reasonable relationship to those listed in a wage determination cannot be reduced to any single formula. The approach used may vary from wage determination to wage determination depending on the circumstances. Standard wage and salary administration practices which rank various job classifications by pay grade pursuant to point schemes or other job factors may, for example, be relied upon. Guidance may also be obtained from the way different jobs are rated under Federal pay systems (Federal Wage Board Pay System and the General Schedule) or from other wage determinations issued in the same local. Basic to the establishment of any conformable wage rate is the concept that a pay relationship should be maintained between job classifications based on the skill required and the duties performed.

(b) In the case of a contract modification, an exercise of an option, or extension of an existing contract, or in any other case where a Contractor succeeds a contract under which the classification in question was previously conformed pursuant to Paragraph C of this article, a new conformed wage rate and fringe benefits may be assigned to the conformed classification by indexing (i.e., adjusting) the previous conformed rate and fringe benefits by an amount equal to the average (mean) percentage increase (or decrease, where appropriate) between the wages and fringe benefits specified for all classifications to be used on the contract which are listed in the current wage determination, and those specified for the corresponding classifications in the previously applicable wage determination. Where conforming actions are accomplished in accordance with this paragraph prior to the performance of contract Work by the unlisted class of employees, the Contractor shall advise the Contracting Officer of the action taken but the other procedures in Subdivision C(2)(ii) of this article need not be followed.

(c) No employee engaged in performing work on this Order/Subcontract shall in any event be paid less than the currently applicable minimum wage specified under section 6(a)(1) of the Fair Labor Standards Act of 1938, as amended.

(v) The wage rate and fringe benefits finally determined under Subparagraph C(2) of this article shall be paid to all employees performing in the classification from the first day on which contract Work is performed by them in the classification. Failure to pay the unlisted employees the compensation agreed upon by the interested parties and/or finally determined by the Wage and Hour Division retroactive to the date such class of employees commenced contract Work shall be a violation of the act and this Order/Subcontract.

(vi) Upon discovery of failure to comply with Subparagraph C(2) of this article, the Wage and Hour Division shall make a final determination of conformed classification, wage rate, and/or fringe benefits which shall be retroactive to the date such class or classes of employees commenced contract Work.

(3) *Adjustment of Compensation.* If the term of this Order/Subcontract is more than 1 year, the minimum monetary wages and fringe benefits required to be paid or furnished thereunder to Service employees under this Order/Subcontract shall be subject to adjustment after 1 year and not less often than once every 2 years, under wage determinations issued by the Wage and Hour Division.

D. OBLIGATION TO FURNISH FRINGE BENEFITS.
The Contractor or Subcontractor may discharge the obligation to furnish fringe benefits specified in the attachment or determined under Subparagraph C(2) of this article by furnishing equivalent combinations of bona fide fringe benefits, or by making equivalent or differential cash payments, only in accordance with Subpart D of 29 CFR Part 4.

E. MINIMUM WAGE.
In the absence of a minimum wage attachment for this Order/Subcontr neither the Contractor nor any Subcontractor under this Ord Subcontract shall pay any person performing work under this contract (regardless of whether the person is a Service employee) less than the minimum wage specified by section 6(a)(1) of the Fair Labor Standards

Act of 1938. Nothing is this article shall relieve the Contractor or any Subcontractor of any other obligation under law or contract for payment of a higher wage to any employee.

F. SUCCESSOR CONTRACTS.
If this Order/Subcontract succeeds a contract subject to the Act under which substantially the same Services were furnished in the same locality and Service employees were paid wages and fringe benefits provided for in a collective bargaining agreement, in the absence of the minimum wage attachment for this Order/Subcontract setting forth such collectively bargained wage rates and fringe benefits, neither the Contractor nor any Subcontractor under this contract shall pay any Service employee performing any of the contract Work (regardless of whether or not such employee was employed under the predecessor contract), less than the wages and fringe benefits provided for in such collective bargaining agreement, to which such employee would have been entitled if employed under the predecessor contract, including accrued wages and fringe benefits and any prospective increases in wages and fringe benefits provided for under such agreement. No Contractor or Subcontractor under this Order/Subcontract may be relieved of the foregoing obligation unless the limitations of 29 CFR 4.1b(b) apply or unless the Secretary of Labor or the Secretary's authorized representative finds, after a hearing as provided in 29 CFR 4.10 that the wages and/or fringe benefits provided for in such agreement are substantially at variance with those which prevail for services of a character similar in the locality, or determines, as provided in 29 CFR 4.11, that the collective bargaining agreement applicable to Service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations. Where it is found in accordance with the review procedures provided in 29 CFR 4.10 and/or 4.11 and Parts 6 and 8 that some or all of the wages and/or fringe benefits contained in a predecessor Contractor's collective bargaining agreement are substantially at variance in the locality, and/or that the collective bargaining agreement applicable to Service employees employed under the predecessor contract was not entered into as a result of arm's length negotiations, the Department will issue a new or revised wage determination setting forth the applicable wage rates and fringe benefits. Such determination shall be made part of the contract or subcontract, in accordance with the decision of the Administrator, the Administrative Law Judge, or the Board of Service Contract Appeals, as the case may be, irrespective of whether such issuance occurs prior to or after the award of a contract or subcontract (53 Comp. Gen. 401 (1973)). In the case of a wage determination issued solely as a result of a finding of substantial variance, such determination shall be effective as of the date of the final administrative decision.

G. NOTIFICATION TO EMPLOYEES.
The Contractor and any Subcontractor under this Order/Subcontract shall notify each Service employee commencing work on this Order/Subcontract of the minimum monetary wage and any fringe benefits required to be paid pursuant to this contract, or shall post the wage determination attached to this contract. The poster provided by the Department of Labor (Publication WH 1313) shall be posted in a prominent and accessible place at the worksite. Failure to comply with this requirement is a violation of section 2(a)(4) of the Act and of this Order/Subcontract.

H. SAFE AND SANITARY WORKING CONDITIONS.
The Contractor or Subcontractor shall not permit any part of the services called for by this Order/Subcontract to be performed in buildings or surroundings or under working conditions provided by or under the control or supervision of the Contractor or Subcontractor which are unsanitary, hazardous, or dangerous to the health or safety of the Service employees. The Contractor or Subcontractor shall comply with the safety and health standards applied under 29 CFR Part 1925.

I. RECORDS.
(1) The Contractor and each Subcontractor performing Work subject to the Act shall make and maintain for 3 years from the completion of the Work, and make them available for inspection and transcription by authorized representatives of the Wage and Hour Division, Employment Standards Administration, a record of the following:
(i) For each employee subject to the Act—
(a) Name and address and social security number;
(b) Correct work classification or classifications, rate or rates of monetary wages paid and fringe benefits provided, rate or rates of payments in lieu of fringe benefits, and total daily and weekly compensation.
(c) Daily and weekly hours worked by each employee; and
(d) Any deductions, rebates, or refunds from the total daily or weekly compensation of each employee.
(ii) For those classes of Service employees not included in any wage determination attached to this Order/Subcontract, wage rates or fringe benefits determined by the interested parties or by the administrator or authorized representative under the terms of Paragraph C of this article. A copy of the report required by Subdivision C(2)(ii) of this article will fulfill this requirement.
(iii) Any list of the predecessor Contractor's employees which had been furnished to the Contractor as prescribed by Paragraph N of this article.
(2) The Contractor shall also make available a copy of this contract for inspection or transcription by authorized representatives of the Wage and Hour Division.
(3) Failure to make and maintain or to make available these records for inspection and transcription shall be a violation of the regulations and this Order/Subcontract, and in the case of failure to produce these records, the Contracting Officer, upon direction of the Department of Labor and notification to the Contractor, shall take action to cause suspension of any further payment or advance of funds until the violation ceases.
(4) The Contractor shall permit authorized representatives of the Wage and Hour Division to conduct interviews with employees at the worksite during normal working hours.

J. PAY PERIODS.
The Contractor shall unconditionally pay to each employee subject to the Act all wages due, free and clear and without subsequent deduction (except as otherwise provided by law or Regulations, 29 CFR Part 4), rebate, or kickback on any account. These payments shall be made no later than one pay period following the end of the regular pay period in which the wages were earned or accrued. A pay period under this Act may not be of any duration longer than semi-monthly.

K. WITHHOLDING OR PAYMENTS AND TERMINATION OF CONTRACT.
The Contracting Officer shall withhold or cause to be withheld from the Government Prime Contractor under this or any other Government contract with the Prime Contractor such sums as an appropriate official of the Department of Labor requests or such sums as the Contracting Officer decides may be necessary to pay underpaid employees employed by the Contractor or Subcontractor. In the event of failure to pay any employees subject to the Act all or part of the wages or fringe benefits due under the Act, the Contracting Officer may, after authorization or by direction of the Department of Labor and written notification to the Contractor take action to cause suspension of any further payment or advance of funds until such violations have ceased. Additionally, any failure to comply with the requirements of this article may be grounds for termination of the right to proceed with the contract Work. In such event, the Government may enter into other contracts or arrangements for completion of the Work, charging the Contractor in default with any additional cost.

L. SUBCONTRACTS.
The Contractor agrees to insert this article in all subcontracts subject to the Act.

M. COLLECTIVE BARGAINING AGREEMENTS APPLICABLE TO SERVICE EMPLOYEES.
If wages to be paid or fringe benefits to be furnished any Service employees employed by the Government Prime Contractor or any Subcontractor under the contract are provided for in a collective bargaining agreement which is or will be effective during any period in which the contract is being performed, the Government Prime Contractor shall report such fact to the Contracting Officer, together with full information as to the application and accrual of such wages and fringe benefits, including any prospective increases, to Service employees engaged in Work on the contract, and a copy of the collective bargaining agreement. Such report shall be made upon commencing performance of the contract, in the case of collective bargaining agreements effective at such time, and in the case of such agreements or provisions or amendments thereof effective at a later time during the period of contract performance such agreements shall be reported promptly after negotiation thereof.

N. SENIORITY LIST.
Not less than 10 days prior to completion of any contract being performed at a Federal facility where Service employees may be retained in the performance of the succeeding contract and subject to a wage determination which contains vacation or other benefit provisions based upon length of service with a Contractor (predecessor) or successor (29CFR 4.173), the incumbent Prime Contractor shall furnish the Contracting Officer a certified list of the names of all Service employees on the Contractor's or Subcontractor's payroll during the last month of contract performance. Such list shall also contain anniversary dates of employment on the contract either with the current or predecessor Contractors of each such service employee. The Contracting Officer shall turn over such list to the successor Contractor at the commencement of the succeeding contract.

O. RULINGS AND INTERPRETATIONS.
Rulings and interpretations of the Act are contained in Regulations, 29 CFR Part 4.

P. CONTRACTOR'S CERTIFICATION.
(1) By entering into this Order/Subcontract, the Contractor (and officials thereof) certifies that neither it (nor he or she) nor any person or firm who has a substantial interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of the sanctions imposed under section 5 of the Act.

(2) No part of this Order/Subcontract shall be subcontracted to any person or firm ineligible for award of a Government contract under section 5 of the Act.

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Q. VARIATIONS, TOLERANCES, AND EXEMPTIONS INVOLVING EMPLOYMENT.
Notwithstanding any of the provisions in Paragraphs B through O of this article, the following employees may be employed in accordance with the following variations, tolerances and exemptions, which the Secretary of Labor, pursuant to section 4(b) of the Act prior to its amendment by Pub. L. 92-473, found to be necessary and proper in the public interest or to avoid serious impairment of the conduct of Government business.

(1) Apprentices, student-learners, and workers whose earning capacity is impaired by age, physical or mental deficiency, or injury may be employed at wages lower than the minimum wages otherwise required by section 2(a)(1) or 2(b)(1) of the Act without diminishing any fringe benefits or cash payments in lieu thereof required under section 2(a)(2) of the Act, in accordance with the conditions and procedures prescribed for the employment of apprentices, student-learners, handicapped persons, and handicapped clients of sheltered workshops under section 14 of the Fair Labor Standards Act of 1938 in the regulations issued by the Administrator (29 CFR Parts 5' 521, 524, and 525).

(2) The Administrator will issue certificates under the Act for the employment of apprentices, student-learners, handicapped persons, or handicapped clients of sheltered workshops not subject to the Fair Labor Standards Act of 1938, or subject to different minimum rates of pay under the two Acts, authorizing appropriate rates of minimum wages (but without changing requirements concerning fringe benefits or supplementary cash payments in lieu thereof), applying procedures prescribed by the applicable regualtions issued under the Fair Labor Standards Act of 1938 (29 CFR Parts 520, 521, 524, and 525).

(3) The Administrator will also withdraw, annul, or cancel such certificates in accordance with the regulations in 29 CFR Parts 525 and 528.

R. APPRENTICES.
Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed and individually registered in a bona fide apprenticeship program registered with a State Apprenticeship Agency which is recognized by the U.S. Department of Labor, or if no such recognized agency exists in a State, under a program registered with the Bureau of Apprenticeship and Training, Employment and Training Administration, U.S. Department of Labor. Any employee who is not registered as an apprentice in an approved program shall be paid the wage rate and fringe benefits contained in the applicable wage determination for journeyman classification of work actually performed. The wage rates paid apprentices shall not be less that the wage rate for their level of progress set forth in the registered program, expressed as the appropriate percentage of the journeyman's rate contained in the applicable w' determination. The allowable ratio of apprentices to journeyr employed on the contract Work in any craft classification shall not be greater than the ratio permitted to the Contractor as to his entire work force under the registered program.

S. TIPS.
An employee engaged in an occupation in which the employee customarily and regularly receives more than $30 a month in tips may have the amount of these tips credited by the employer against the minumum wage required by section 2(a)(1) or section 2(b)(1) of the Act, in accordance with section 3(m) of the Fair Labor Standards Act and Regulations 29 CFR Part 531. However, the amount of credit shall not exceed $1.34 per hour beginning January 1, 1981. To use this provision—

(1) The employer must inform tipped employees about this tip credit allowance before the credit is utilized;

(2) The employees must be allowed to retain all tips (individually or through a pooling arrangement and regardless of whether the employer elects to take a credit for tips received);

(3) The employer must be able to show by records that the employee receives at least the applicable Service Contract Act minimum wage through the combination of direct wages and tip credit; and

(4) The use of such tip credit must have been permitted under any predecessor collective bargaining agreement applicable by virtue of section 4(c) of the Act.

T. DISPUTES CONCERNING LABOR STANDARDS.
The U.S. Department of Labor has set forth in 29 CFR Parts 4, 6, and 8 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with th procedures and not the Disputes article of this Order/Subconti Disputes within the meaning of this article include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

SECTION C

SECTION C - APPLIES IF THE PRICE OF THIS ORDER/SUBCONTRACT EXCEEDS $10,000. *

ARTICLE C.1
EXAMINATION OF RECORDS BY THE COMPTROLLER GENERAL (DEAR 970.5203-2) (APRIL 1984)

A. The Comptroller General of the United States or a duly authorized representative from the General Accounting Office shall, until 3 years after final payment under this Order/Subcontract or for any shorter period specified in Federal Acquisition Regulation (FAR) Subpart 4.7, Contractor Records Retention, have access to and the right to examine any of the Seller's directly pertinent books, documents, papers or other records of the Seller involving transactions related to this Order/Subcontract.

B. The Seller agrees to include in first-tier subcontracts under this Order/Subcontract an article to the effect the Comptroller General or a duly authorized representative from the General Accounting Office shall, until 3 years after final payment under the subcontract or for any shorter period specified in FAR Subpart 4.7, have access to and the right to examine any of the Subcontractor's directly pertinent books, documents, papers, or other records involving transactions related to the subcontract. "Subcontract," as used in this article, excludes (1) purchase orders not exceeding $10,000 and (2) subcontracts or purchase orders for public utility services at rates established to apply uniformly to the public, plus any applicable reasonable connection charge.

C. The periods of access and examination in Paragraphs A and B above for records relating to (1) appeals under the Disputes clause, (2) litigation or settlement of claims arising from the performance of this Order/Subcontract, or (3) costs and expenses of this Order/Subcontract to which the Comptroller General or a duly authorized representative from the General Accounting Office has taken exception shall continue until such appeals, litigation, claims or exceptions are disposed of.

D. Nothing in this Order/Subcontract shall be deemed to preclude an audit by the General Accounting Office of the United States of any transaction under this Order/Subcontract.

* See, however, Article C.3.

ARTICLE C.2 UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL DISADVANTAGED BUSINESS CONCERNS (FAR 52.219-8) (JUNE 1985)

A. It is the policy of the United States that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in performing contracts let by any Federal agency.

B. The Seller hereby agrees to carry out his policy in the awarding of subcontracts to the fullest extent consistent with efficient Order/Subcontract performance. The Seller further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the awarding agency of the United States as may be necessary to determine the extent of the Seller's compliance with this article.

C. As used in this Order/Subcontract, the term "small business concern" shall mean a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto. The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern—

(1) Which is at least 51 percent owned by one or more socially and economically disadvantaged individuals; or, in the case of any publicly owned business, at least 51 per centum of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(2) Whose management and daily business operations are controlled by one or more of such individuals.

The Seller shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans and other minorities, or any other individual found to be disadvantaged by the Administration pursuant to Section 8(a) of the Small Business Act.

D. The Seller, acting in good faith, may rely on written representations by its Subcontractors regarding their status as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

ARTICLE C.3 AFFIRMATIVE ACTION FOR SPECIAL DISABLED AND VIETNAM ERA VETERANS (FAR 52.222-35) (APRIL 1984)

A. DEFINITIONS.

"Appropriate office of the State employment service system", as used in this article, means the local office of the Federal-State national system of public employment offices assigned to serve the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico, Virgin Islands, American Samoa and the Trust Territory of the Pacific Islands.

"Openings that the Seller proposes to fill under a customary and traditional employer-union hiring arrangement", as used in this article, means employment openings that the Seller proposes to fill from union halls, under their customary and traditional employer-union hiring relationship.

"Suitable employment openings", as used in this article—

(1) Includes, but is not limited to, openings that occur in jobs categorized as: (i) Production and nonproduction; (ii) Plant and office; (iii) Laborers and mechanics; (iv) Supervisory and nonsupervisory; (v) Technical; and (vi) Executive, administrative and professional positions compensated on a salary basis of less than $25,000 a year; and

(2) Includes full-time employment, temporary employment of over 3 days, and part-time employment, but not openings that the Seller proposes to fill from within its own organization or under a customary and traditional employer-union hiring arrangement, nor openings in an educational institution that are restricted to students of that institution.

B. GENERAL.

(1) Regarding any position for which the employee or applicant for employment is qualified, the Seller shall not discriminate against the individual because the individual is a special disable or Vietnam Era Veteran. The Seller agrees to take affirmative action to employ, advance in employment and otherwise treat qualified special disabled and Vietnam Era Veterans without discrimination based upon their disability or veteran's status in all employment practices such as: (i) Employment; (ii) Upgrading; (iii) Demotion or transfer; (iv) Recruitment; (v) Advertising; (vi) Layoff or termination; (vii) Rates of pay or other forms of compensation; and (viii) Selection for training, including apprenticeship.

(2) The Seller agrees to comply with the rules, regulations and relevant orders of the Secretary of Labor (Secretary) issued under the Vietnam Era Veterans' Readjustment Assistance Act of 1972 (the Act), as amended.

C. LISTING OPENINGS.

(1) The Seller agrees to list all suitable employment openings existing at order award or occurring during Order/Subcontract performance at an appropriate office of the State employment service system in the locality where the opening occurs. These openings include those occurring at any Seller facility, including ones not connected with performing this Order/Subcontract. An independent corporate affiliate is exempt from this requirement.

(2) State and local government agencies holding Federal contracts of $10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service.

(3) The listing of suitable employment openings with the State employment service system is required at least concurrently with using any other recruitment source or effort and involves the obligations of placing a bona fide job order, including accepting referrals of veterans and nonveterans. This listing does not require hiring any particular job applicant or hiring from any particular group of job applicants and is not intended to relieve the Seller from any requirements of Executive orders or regulations concerning nondiscrimination in employment.

(4) Whenever the Seller becomes contractually bound to the listing terms of this article, it shall advise the State employment service system, in each State where it has establishments, of the name and location of each hiring location in the State. As long as the Seller is contractually bound to these terms and has so advised the State system, it need not advise the State system of subsequent contracts. The Seller may advise the State system when it is no longer bound by this article.

(5) Under the most compelling circumstances, an employment opening may not be suitable for listing, including situations when (i) the Government's needs cannot reasonably be supplied, (ii) listing would be contrary to national security, or (iii) the requirement of listing would not be in the Government's interest.

D. APPLICABILITY.

(1) This article does not apply to the listing of employment openings which occur and are filled outside the 50 states, the District of Columbia, Puerto Rico, Guam, Virgin Islands, American Samoa and the Trust Territory of the Pacific Islands.

(2) The terms of Paragraph C, above, of this article do not apply to openings that the Seller proposes to fill from within its own organization or under a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of its own organization or employer-union arrangement for that opening.

E. POSTINGS.

(1) The Seller agrees to post employment notices stating (i) the Seller's obligation under the law to take affirmative action to employ and advance in employment qualified special disabled veterans and veterans of the Vietnam era, and (ii) the rights of applicants and employees.

(2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. They shall be in a form prescribed by the Director, Office of Federal Contract Compliance Programs, Department of Labor (Director), and provided by or through the Contracting Officer.

(3) The Seller shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding that the Seller is bound by the terms of the Act and is committed to take affirmative action to employ, and advance in employment, qualified special disabled and Vietnam Era Veterans.

F. NONCOMPLIANCE.

If the Seller does not comply with the requirements of this ar appropriate actions may be taken under the rules, regulations, relevant orders of the Secretary issued pursuant to the Act.

G. SUBCONTRACTS.

The Seller shall include the terms of this article in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations or orders of the Secretary. The Seller shall act as specified by the Director to enforce the terms, including action for noncompliance.

ARTICLE C.4 REPORTING OF ROYALTIES

If any royalty payments are directly involved in this Order/Subcontract or are reflected in the Order/Subcontract price, Seller agrees to report, in writing, to WMCO, during the performance of this Order/Subcontract and prior to its completion or final settlement, the amount of any royalties or other payments paid or to be paid by it directly to others in connection with the performance of this Order/Subcontract, together with the names and addresses of licensers to whom such payments are made and either the patent numbers involved or such other information as will permit identification of the patents or other basis on which the royalties are to be paid. The approval of DOE or WMCO of any individual payments or royalties shall not stop the Government or WMCO at any time from contesting the enforceability, validity or scope of, or title to, any patent under which a royalty or payments are made.

ARTICLE C.5 EQUAL OPPORTUNITY (FAR 52.222-26) (APRIL 1984)

A. If, during any 12-month period (including 12 months preceding the award of this Order/Subcontract) the Seller has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of $10,000, the Seller shall comply with Subparagraphs B(1) through (11) below. Upon request, the Seller shall provide information necessary to determine the applicability of article.

B. During performance of this Order/Subcontract, the Seller agrees as follows:

(1) The Seller shall not discriminate against any employee or applicant for employment because of race, color, religion, sex or national origin.

(2) The Seller shall take affirmative action to ensure that applicants are employed, and the employees are treated during employment, without regard to their race, color, religion, sex or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Seller shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this article.

(4) The Seller shall, in all solicitations or advertisement for employees placed by or on behalf of the Seller, state that all qualified applicants will receive consideration for employment with regard to race, color, religion, sex or national origin.

(5) The Seller shall send, to each labor union or representation of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Seller's commitments under this article, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Seller shall comply with Executive Order 11246, as amen and the rules, regulations, and orders of the Secretary of Labor.

(7) The Seller shall furnish to DOE all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. Standard Form 100 (EEO-1), or any successor form, is the prescribed form to be filed within 12 months preceding the date of award.

(8) The Seller shall permit access to its books, records and accounts by DOE or the Office of Federal Contract Compliance Programs (OFCCP) for the purpose of investigation to ascertain the Seller's compliance with the applicable rules, regulations and orders.

(9) If the OFCCP determines that the Seller is not in compliance with this article or any rule, regulation or order of the Secretary of Labor, this Order/Subcontract may be canceled, terminated or suspended in whole or in part and the Seller may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Seller as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

(10) The Seller shall include Subparagraphs B(1) through (11) of this article in every subcontract or purchase order that is not exempted by the rules, regulations or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each Subcontractor.

(11) The Seller shall take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Seller becomes involved in, or is threatened with, litigation to protect the interests of the United States.

C. Notwithstanding any other article in this Order/Subcontract, disputes relative to this article shall be governed by the procedures in 41 CFR 60-1.1.

ARTICLE C.6 NOTICE OF LABOR DISPUTES (DEAR 970.5204-30) (APRIL 1984)

When an actual or potential labor dispute is delaying or threatening the performance of the Work, Seller shall immediately notify WMCO in writing. Such notice shall include all relevant information concerning the dispute and its background.

ARTICLE C.7 WALSH-HEALEY PUBLIC CONTRACTS ACT (FAR 52.222-20) (APRIL 1984)

If this Order/Subcontract is for the manufacture or furnishing of materials, supplies, articles or equipment and is subject to the Walsh-Healey Public Contracts Act, as amended (41 U.S.C. 35-45), the following terms and conditions apply:

A. All representations and stipulations required by the Act and regulations issued by the Secretary of Labor (41 CFR Chapter 50) are incorporated by reference. These representations and stipulations are subject to all applicable rulings and interpretations of the Secretary of Labor that are now, or may hereafter be, in effect.

B. All employees whose Work relates to this Order/Subcontract shall be paid not less than the minimum wage prescribed by regulations issued by the Secretary of Labor (41 CFR 50-202.2). Learners, student learners, apprentices and handicapped workers may be employed at less than the prescribed minimum wage (see 41 CFR 50-202.3) to the same extent that such employment is permitted under Section 14 of the Fair Labor Standards Act (41 U.S.C. 40).

ARTICLE C.8 EMPLOYMENT REPORTS ON SPECIAL DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (FAR 52.222-37) (JANUARY 1988)

A. The Seller shall report at least annually, as required by the Secretary of Labor, on:
   (1) The number of special disabled veterans and the number of veterans of the Vietnam era in the workforce of the Seller by job category and hiring location; and
   (2) The total number of new employees hired during the period covered by the report, and of that total, the number of special disabled veterans, and the number of veterans of the Vietnam era.

B. The above items shall be reported by completing the form entitled "Federal Contractor Veterans' Employment Report VETS-100."

C. Reports shall be submitted no later than March 31 of each year beginning March 31, 1988.

D. The employment activity report required by Paragraph A(2) of this article shall reflect total hires during the most recent 12-month period as of the ending date selected for the employment profile report required by Paragraph A(1) of this article. The Seller may select an ending date: (1) as of the end of any pay period during the period January through March 1st of the year the report is due, or (2) as of December 31, if the Seller has previous written approval from the Equal Opportunity Commission to do so for purposes of submitting the Employer Information Report EEO-1 (Standard Form 100).

E. The count of veterans reported according to Paragraph A of this article shall be based on voluntary disclosure. Each Seller subject to the reporting requirements at 38 U.S.C. 2012(d) shall invite all special disabled veterans and veterans of the Vietnam era who wish to benefit under the affirmative action program at 38 U.S.C. 2012 to identify themselves to the Seller. The invitation shall state that the information is voluntarily provided, that the information will be kept confidential, that disclosure or refusal to provide the information will not subject the applicant or employee to any adverse treatment and that the information will be used only in accordance with the regulations promulgated under 38 U.S.C. 2012.

F. SUBCONTRACTS.
The Seller shall include the terms of this article in every subcontract or purchase order of $10,000 or more unless exempted by rules, regulations, or orders of the Secretary.

SECTION D

SECTION D - APPLIES IF THE PRICE OF THIS ORDER/SUBCONTRACT EXCEEDS $25,000.

ARTICLE D.1 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (FAR 52.227-2) (APRIL 1984)

A. Seller shall report to WMCO, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this Order/Subcontract of which Seller has knowledge.

B. In the event of any claim or suit against the Government or WMCO on account of any alleged patent or copyright infringement arising out of the performance of this Order/Subcontract or out of the use of any Supplies or Vendor Data furnished or Services performed hereunder, Seller shall furnish to the Government, when requested by WMCO or the Contracting Officer, all evidence and information in possession of Seller pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where Seller has agreed to indemnify the Government or WMCO.

C. The Seller agrees to include, and require inclusion of, this article in all subconracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the dollar amount set forth in Section 13.000 of the Federal Acquisition Regulation (FAR).

ARTICLE D.2 PATENT INDEMNITY (FAR 52.227-3) (APRIL 1984)

A. Seller shall indemnify the Government and WMCO and their officers, agents and employees against liability, including costs, for infringement of any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 U.S.C. 181) arising out of the manufacture or delivery of Supplies, the performance of Services, or the construction, alteration, modification, or repair of real property (hereinafter referred to as "construction work") under this Order/Subcontract, or out of the use or disposal by or for the account of the Government or WMCO of such Supplies or construction work.

B. This indemnity shall not apply unless Seller shall have been informed as soon as practicable by the Government or WMCO of the suit or action alleging such infringement, and shall have been given such opportunity as is afforded by applicable laws, rules or regulations to participate in its defense. Further, this indemnity shall not apply to: (1) an infringement resulting from compliance with specific written instructions of WMCO directing a change in the Supplies to be delivered or in the performance of this Order/Subcontract not normally used by Seller; (2) an infringement resulting from addition to or change in Supplies furnished or construction work performed that was made subsequent to delivery or performance; or (3) a claimed infringement that is unreasonably settled without the consent of Seller, unless required by final decree of a court of competent jurisdiction.

ARTICLE D.3 AUTHORIZATION AND CONSENT (FAR 52.227-1) (APRIL 1984)

A. The Government authorizes and consents to all use and manufacture, in performing this Order/Subcontract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by WMCO under this Order/Subcontract or (2) used in machinery, tools or methods whose use necessarily results from compliance by the Seller or a Subcontractor with (i) specifications or written provisions forming a part of this Order/ Subcontract or (ii) specific written instructions given by WMCO directing the manner of performance. The entire liability to WMCO and the Government for infringement of a patent of the United States shall be determined solely by the provisions of the article entitled "Patent Indemnity", included in this Order/Subcontract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

B. The Seller agrees to include and require inclusion of, this article, suitably modified to identify the parties, in all subcontracts at any tier for Supplies and Services (including construction, architect-engineer services, and materials, supplies, models, samples and design or testing services) expected to exceed $25,000; however, omission of this article from any subcontract, under or over $25,000, does not affect this authorization and consent.

ARTICLE D.4 FEDERAL, STATE AND LOCAL TAXES (FAR 52.229-3) (APRIL 1984)

A. "Contract date", as used in this article, means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this Order/Subcontract or modification.

"All applicable Federal, State and local taxes and duties", as used in this article, means all taxes and duties, in effect of the Order/ Subcontract date, that the taxing authority is imposing and collecting on the transactions or property covered by this Order/Subcontract.

"After-imposed Federal tax", as used in this article, means any new or increased Federal excise tax or duty, or tax that was exempted or excluded on the Order/Subcontract date but whose exemption was later revoked or reduced during this Order/Subcontract period, on the transactions or property covered by this Order/Subcontract that the Seller is required to pay or bear as the result of legislative, judicial or administrative action taking effect after the Order/Subcontract date. It does not include Social Security tax or other employment taxes.

"After-relieved Federal tax", as used in this article, means any amount of Federal excise tax or duty, except Social Security or other employment taxes, that would otherwise have been payable on the transactions or property covered by this Order/Subcontract, but which the Seller is not required to pay or bear, or for which the Seller obtains a refund or drawback, as the result of legislative, judicial or administrative action taking effect after the Order/Subcontract date.

B. The Order/Subcontract price includes all applicable Federal, State and local taxes and duties.

C. The Order/Subcontract price shall be increased by the amount of any after-imposed Federal tax, provided the Seller warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the Order/Subcontract price, as a contingency reserve or otherwise.

D. The Order/Subcontract price shall be decreased by the amount of any after-relieved Federal tax.

E. The Order/Subcontract price shall be decreased by the amount of any Federal excise tax or duty, except Social Security or other employment taxes, that the Seller is required to pay or bear, or does not obtain a refund of, through the Seller's fault, negligence or failure to follow instructions of WMCO.

F. No adjustment shall be made in the Order/Subcontract price under this article unless the amount of the adjustment exceeds $100.

G. The Seller shall promptly notify WMCO of all matters relating to any

Federal excise tax or duty that reasonably may be expected to result in either an increase or decrease in the Order/Subcontract price and shall take appropriate action as WMCO directs.

H. WMCO shall, without liability, furnish evidence appropriate to establish exemption from any Federal, State, or local tax when the Seller requests such evidence and a reasonable basis exists to sustain the exemption.

ARTICLE D.5 PREFERENCE FOR U.S.-FLAG AIR CARRIERS (FAR 52.247-63) (APRIL 1984)

A. "International air transportation", as used in this article, means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

"United States", as used in this article, means the 50 States, the District of Columbia, the Commonwealth of Puerto Rico and possessions of the United States.

"U.S.-flag air carrier", as used in this article, means an air carrier holding a certificate under Section 401 of the Federal Aviation Act of 1958 (49 U.S.C. 1371).

B. Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 1517) (Fly America Act) requires that all Federal agencies and Government contractors and subcontractors use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

C. The Seller agrees, in performing Work, to use U.S.-flag air carriers for international air transportation of personnel (and their personal effects) or property to the extent that service by those carriers is available.

D. In the event that the Seller selects a carrier other than U.S.-flag air carrier for international air transportation, the Seller shall include a certification on vouchers involving such transportation, essentially, as follows:

CERTIFICATION OF UNAVAILABILITY OF U.S.-FLAG AIR CARRIERS

I hereby certify that international air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reason(s) (see Section 47.403 of the Federal Acquisition Regulation): [State Reason(s):]

_____

_____

(End of Certification)

E. The Seller shall include the substance of this article, including this Paragraph E, in each subcontract or purchase order under this Order/Subcontract that may involve international air transportation.

ARTICLE D.6 PREFERENCE FOR PRIVATELY OWNED U.S.-FLAG COMMERCIAL VESSELS (FAR 52.247-64) (APRIL 1984)

A. The Cargo Preference Act of 1954 [46 U.S.C. 1241(b)] requires that Federal departments and agencies shall transport in privately owned U.S.-flag commercial vessels at least 50 percent of the gross tonnage of equipment, materials, or commodities that may be transported in ocean vessels (computed separately for dry bulk carriers, dry cargo liners and tankers). Such transportation shall be accomplished when any equipment, materials or commodities, located within or outside the United States, that may be transported by ocean vessel are: (i) Acquired for a U.S. Government agency account; (ii) Furnished to, or for the account any foreign nation without provision for reimbursement; (iii) Furnisl for the account of a foreign nation in connection with which the Unitеu States advances funds or credits, or guarantees the convertibility of foreign currencies; or (iv) Acquired with advance of funds, loans, or guaranties made by or on behalf of the United States.

B. The Seller shall use privately owned U.S.-flag commercial vessels to ship at least 50 percent of the gross tonnage involved under this Order/Subcontract (computed separately for dry bulk carriers, dry cargo liners and tankers) whenever shipping any equipment, materials, or commodities under the conditions set forth in Paragraph A above, to the extent that such vessels are available at rates that are fair and reasonable for privately owned U.S.-flag commercial vessels.

C. (1) The Seller shall submit one legible copy of a rated on-board ocean bill of lading for each shipment to both (i) WMCO and (ii) the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590. Subcontractor bills of lading shall be submitted through the Prime Contractor.

(2) The Seller shall furnish these bill of lading copies (i) within 20 working days of the date of loading for shipments originating in the United States or (ii) within 30 working days for shipments originating outside the United States. Each bill of lading copy shall contain the following information: (i) Sponsoring U.S. Government agency; (ii) Name of vessel; (iii) Vessel flag of registry; (iv) Date of loading; (v) Port of loading; (vi) Port of final discharge; (vii) Description of commodity; (viii) Gross weight in pounds and cubic feet, if available; and (ix) Total ocean freight revenue in U.S. dollars.

D. Except for small purchases as described in 48 CFR 13, the Seller sha" insert the substance of this article, including this Paragraph D, in subcontracts or puchase orders under this Order/Subcontract.

E. The requirement in Paragraph A does not apply to: (i) Small purchases as defined in 48 CFR 13; (ii) Cargoes carried in vessels of the Panama Canal Commission or as required or authorized by law or treaty; (iii) Ocean transportation between foreign countries of supplies purchased with foreign currencies made available, or derived from funds that are made available under the Foreign Assistance Act of 1961 (22 U.S.C. 2353); and (iv) Shipments of classified supplies when the classification prohibits the use of non-Government vessels.

F. Guidance regarding fair and reasonable rates for privately owned U.S.-flag commercial vessels may be obtained from the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington DC 20590, Phone: (202) 426-4610.

ARTICLE D.7 UTILIZATION OF WOMEN-OWNED SMALL BUSINESSES (FAR 52.219-13) (AUGUST 1986)

A. "Women-owned small businesses", as used in this article, means businesses that are at least 51 percent owned by women who are United States citizens and who also control and operate the business.

"Control", as used in this article, means exercising the power to make policy decisions.

"Operate", as used in this article, means being actively involved in the day-to-day management of the business.

"Small Business Concern", as used in this article, means a concern including its affiliates, that is independently owned and operated, r dominant in the field of operation in which it is bidding on governn contracts, and qualified as a small business under the criteria and s. standards in 13 CFR 121.

B. It is the policy of the United States that women-owned small businesses

shall have the maximum practicable opportunity to participate in performing contracts awarded by any Federal agency.

The Seller agrees to use its best efforts to give women-owned small businesses the maximum practicable opportunity to participate in the subcontracts it awards to the fullest extent consistent with the efficient performance of this Order/Subcontract.

ARTICLE D.8 UTILIZATION OF LABOR SURPLUS AREA CONCERNS (FAR 52.220-3) (APRIL 1984)

A. POLICY.
It is the policy of the Government to award contracts to concerns that agree to perform substantially in labor surplus areas (LSA's) when this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Seller agrees to use its best efforts to place subcontracts in accordance with this policy.

B. ORDER/SUBCONTRACT OF PREFERENCE.
In complying with Paragraph A above and with Paragraph C of the article of this Order/Subcontract entitled Utilization of Small Business Concerns and Small Disadvantaged Business Concerns, the Seller shall observe the following order of preference in awarding subcontracts: (1) small business concerns that are LSA concerns, (2) other small business concerns, and (3) other LSA concerns.

C. DEFINITIONS.
"Labor surplus area," as used in this article, means a geographical area identified by the Department of Labor in accordance with 20 CFR 654, Subpart A, as an area of concentrated unemployment or under-employment or an area of labor surplus.

"Labor surplus area concern," as used in this article, means a concern that together with its first-tier subcontractors will perform substantially in labor surplus areas. Performance is substantially in labor surplus areas if the costs incurred under this Order/Subcontract on account of manufacturing, production, or performance of appropriate services in labor surplus areas exceed 50 percent of the Order/Subcontract price.

ARTICLE D.9 AUDIT (FAR 52.215-2) (APRIL 1988)

A. EXAMINATION OF COSTS.
If this is a cost-reimbursement, incentive, time-and-materials, labor-hour or price-redeterminable contract, or any combination of these, the Seller shall maintain, and the Contracting Officer, or representatives of the Contracting Officer, shall have the right to examine and audit books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly all costs claimed to have been incurred or anticipated to be incurred in performing this Order/Subcontract. This right of examination shall include inspection at all reasonable times of the Seller's plants, or parts of them, engaged in performing this Order/Subcontract.

B. COST OR PRICING DATA.
If, pursuant to law, the Seller has been required to submit cost or pricing data in connection with pricing this Order/Subcontract or any modification to this Order/Subcontract, the Contracting Officer, or representatives of the Contracting Officer who are employes of the Government, shall have the right to examine and audit all books, records, documents and other data of the Seller (including computations and projections) related to proposing, negotiating, pricing or performing this Order/Subcontract or modification in Order/Subcontract, to evaluate the accuracy, completeness and currency of the cost or pricing data. The right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used.

C. REPORTS.
If the Seller is required to furnish cost, funding or performance reports, the Contracting Officer, or representatives of the Contracting Officer who are employees of the Government, shall have the right to examine and audit books, records, and other documents and supporting materials, for the purpose of evaluating (1) the effectiveness of the Seller's policies and procedures to produce data compatible with the objectives of these reports and (2) the data reported.

D. AVAILABILITY.
The Seller shall make available at its office at all reasonable times the materials described in Paragraphs A and B above, for examination, audit or reproduction, until 3 years after final payment under this Order/Subcontract, or for any shorter period specified in Subpart 4.7, Seller Records Retention, of the Federal Acquisition Regulation, or for any longer period required by statute or by other articles of this Order/Subcontract. In addition:

(1) If this Order/Subcontract is completely or partially terminated, the records relating to the Work terminated shall be made available for 3 years after any resulting final termination settlement; and

(2) Records relating to appeals under the Disputes Article or to litigation or the settlement of claims arising under or relating to this Order/Subcontract shall be made available until such appeals, litigation or claims are disposed of.

E. The Seller shall insert an article containing all the terms of this article, including this Paragraph E, in all subcontracts over $25,000 under this Order/Subcontract, altering the article only as necessary to identify properly the contracting parties and the Contracting Officer under the Government prime contract.

ARTICLE D.10 PATENT RIGHTS (OTHER THAN SMALL BUSINESS FIRMS AND DOMESTIC NON-PROFIT ORGANIZATIONS) (DEAR 927.300)

A. DEFINITIONS.

(1) "Subject invention" means any invention or discovery of the Seller conceived or first actually reduced to practice in the course of or under this Order/Subcontract, and includes any art, method, process, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, whether patented or unpatented under the Patent Laws of the United States of America or any foreign country.

(2) "Order/Subcontract", as used in this article means any Order/Subcontract, grant, agreement, understanding or other arrangement, which includes research, development or demonstration work and includes any assignment or substitution of parties.

(3) "States and domestic municipal governments" means the States of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam, the Trust Territory of the Pacific Islands, and any political subdivision and agencies thereof.

(4) "Government agency" includes an executive department, independent commission, board, office, agency, administration, authority, Government corporation or other Government establishment of the Executive Branch of the Government of the United States of America.

(5) "To the point of practical application" means to manufacture, in the case of a composition or product; to practice, in the case of a process; or to operate, in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(6) "Patent Counsel" means the Department of Energy Patent Counsel assisting the procuring activity.

B. ALLOCATION OF PRINCIPAL RIGHTS.

(1) Assignment to the Government. The Seller agrees to assign to the Government the entire right, title and interest throughout the world

in and to each subject invention, except to the extent that rights are retained by the Seller under Paragraphs B(2) and C of this article.

(2) Greater right determinations. The Seller or the employee-inventor with authorization of the Seller may request greater rights than the nonexclusive license and the foreign patent rights provided in Paragraph C of this article on identified inventions in accordance with 41 CFR Section 9-9.109-6(d). Such request must be submitted to the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer) at the time of the first disclosure pursuant to Paragraph E(2) of this article, or not later than 9 months after conception or first actual reduction to practice, whichever occurs first, or such longer periods as may be authorized by the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer) for good cause shown in writing by the Seller.

C. MINIMUM RIGHT TO THE SELLER.

(1) Seller License. The Seller reserves a revocable, nonexclusive, paid-up license in each patent application filed in any country on a subject invention and any resulting patent in which the Government acquires title. The license shall extend to the Seller's domestic subsidiaries and affiliates, if any, within the corporate structure of which the Seller is a part and shall include the right to grant sublicenses of the same scope to the extent the Seller was legally obligated to do so at the time this Order/Subcontract was awarded. The license shall be transferable only with approval of DOE except when transferred to the successor of that part of the Seller's business to which the invention pertains.

(2) Revocation Limitations. The Seller's nonexclusive license retained pursuant to Paragraph C(1) of this article and sublicenses granted thereunder may be revoked or modified by DOE, either in whole or in part, only to the extent necessary to achieve expeditious practical application of the subject invention under DOE's published licensing regulations (10 CFR 781), and only to the extent an exclusive license is actually granted. This license shall not be revoked in that field of use and/or the geographical areas in which the Seller, or its sublicensee, has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public, or is expected to do so within a reasonable time.

(3) Revocation Procedures. Before modification or revocation of the license or sublicense, pursuant to Paragarph C(2) of this article, DOE shall furnish the Seller a written notice of its intention to modify or revoke the license and any sublicense thereunder, and the Seller shall be allowed 30 days, or such longer periods as may be authorized by the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) for good cause why the license or any sublicense should not be modified or revoked. The Seller shall have the right to appeal, in accordance with 10 CFR 781, any decision concerning the modification or revocation of his license or any sublicense.

(4) Foreign Patent Rights. Upon written request to the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer), and subject to DOE security regulations and requirements, there shall be reserved to the Seller, or the employee-inventor with authorization of the Seller, the patent rights to a subject invention in any foreign country where the Government has elected not to secure such right provided:

(i) The recipient of such rights, when specifically requested by DOE and three years after issuance of a foreign patent disclosing said subject invention, shall furnish DOE a report setting forth:

(a) The commercial use that is being made, or is intended to be made, of said invention; and

(b) The steps taken to bring the invention to the point of practical application or to make the invention available for licensing.

(ii) The Government shall retain at least an irrevocable nonexclusive, paid-up license to make, use and sell invention throughout the world by or on behalf of Government (including any Government agency) and States and domestic municipal governments, unless the Head of the Agency or designee determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments.

(iii) Subject to the rights granted in C(1), (2) and (3) of this article, the Head of the Agency or designee shall have the right to terminate the foreign patent rights granted in this Paragraph C(4), in whole or in part, unless the recipient of such rights demonstrates to the satisfaction of the Head of the Agency or designee that effective steps necessary to accomplish substantial utilization of the invention have been taken or, within a reasonable time, will be taken.

(iv) Subject to the rights granted in C(1), (2) and (3) of this article, the Head of the Agency or designee shall have the right, commencing four years after foreign patent rights are accorded under this Paragraph C(4), to require the granting of a nonexclusive or partially exclusive license to a responsible applicant or applicants, upon terms reasonable under the circumstances,and, in appropriate circumstances, to terminate said foreign patent rights, in whole or in part, following a hearing upon notice thereof to the public, upon a petition by an interested person justifying such hearing:

(a) If the Head of the Agency or designee determines, upon review of such material as he deems relevant, and after the recipient of such rights or other interested person has had the opportunity to provide such relevant and material information as the Head of the Agency or designee m- require, that such foreign patent rights have ten substantially to lessen competition or to result in uno. market concentration in any section of the United States in any line of commerce to which the technology relates; or

(b) Unless the recipient of such rights demonstrates to the satisfaction of the Head of the Agency or designee at such hearing that the recipient has taken effective steps or, within a reasonable time thereafter, is expected to take such steps necessary to accomplish substantial utilization of the invention.

D. FILING OF PATENT APPLICATIONS.

(1) With respect to each subject invention in which the Seller or the inventor requests foreign patent rights in accordance with Paragraph C(4) of this article, a request may also be made for the right to file and prosecute the U.S. application on behalf of the Government. If such request is granted, the Seller or inventor shall file a domestic patent application on the invention within six months after the request for foreign patent rights is granted, or such longer period of time as may be approved by the Patent Counsel for good cause shown in writing by the requester. With respect to the invention, the requester shall promptly notify the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) of any decision not to file an application.

(2) For each subject invention on which a domestic patent application is filed by the Seller or inventor, the Seller or inventor shall:

(i) Within two months after the filing of a patent application or within two months after submission of the invention disclosure, if the patent application has been filed previously, deliver to the Patent Counsel a copy of the application as filed includ the filing date and serial number;

(ii) Within six months after filing the application or within six months after submitting the invention disclosure if the application has been filed previously, deliver to the Patent Counsel a duly executed and approved assignment to the

Government, on a form specified by the Government;

(iii) Provide the Patent Counsel with the original patent grant promptly after a patent is issued on the application; and

(iv) Not less than 30 days before the expiration of the response period for any action required by the Patent and Trademark Office, notify the Patent Counsel of any decision not to continue prosecution of the application.

(3) With respect to each subject invention in which the Seller or inventor has requested foreign patent rights, the Seller or inventor shall file a patent application on the invention in each foreign country in which such request is granted and within one of the following periods:

(i) Eight months from the date of filing a corresponding United States application, or if such an application is not filed, six months from the date the request was granted;

(ii) Six months from the date a license is granted by the Commissioner of Patents and Trademarks to file the foreign patent application, where such filing has been prohibited by security reasons; or

(iii) Such longer periods as may be approved by the Patent Cousel for good cause shown in writing by the Seller or inventor.

(4) Subject to the license specified in Paragraphs C(1), (2) and (3) of this article, the Seller or inventor agrees to convey to the Government, upon request, the entire right, title and interest in any foreign country in which the Seller or inventor fails to have a patent application filed in accordance with Paragraph D(3) of this article, or decides not to continue prosecution or to pay any maintenance fees covering the invention. To avoid forfeiture of the patent application, or patent, the Seller or inventor shall, not less than 60 days before the expiration period for any action required by any patent office, notify the Patent Counsel of such failure or decision, and deliver to the Patent Counsel the executed instruments necessary for the conveyance specified in this paragraph.

E. INVENTION IDENTIFICATION, DISCLOSURES AND REPORTS.

(1) The Seller shall establish and maintain active and effective procedures to ensure that subject inventions are promptly identified and timey disclosed. These procedures shall include the maintenance of laboratory notebooks or equivalent records and other records that are reasonably necessary to document the conception and/or the first actual reduction to practice of subject inventions, and records which show that the procedures for identifying and disclosing the inventions are followed. Upon request, the Seller shall furnish the Contracting Officer a description of these procedures so that he may evaluate and determine their effectiveness.

(2) The Seller shall furnish the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer) on a DOE-approved form:

(i) A written report containing full and complete technical information concerning each subject invention within six months after conception or first actual reduction to practice, whichever occurs first in the course of or under this Order/Subcontract, but in any event, prior to any sale, public use, or public disclosure of such invention known to the Seller. The report shall identify this Order/Subcontract and inventor and shall be sufficiently complete in technical detail and appropriately illustrated by sketch or diagram to convey to one skilled in the art to which the invention pertains, a clear understanding of the nature, purpose, operation and to the extent known, the physical, chemical, biological or electrical characteristics of the invention. The report should also include any request for foreign patent rights under Paragraph C(4) of this article and any request to file a domestic patent application made within the period set forth in Paragraph B(2) of this article. When an invention is reported under this Paragraph E(2)(i), it shall be presumed to have been conceived or first actually reduced to practice in the course of or under this Order/Subcontract, unless the Seller contends it was not so made, in accordance with Paragraph G(2)(ii) of this article.

(ii) Upon request, but not more than annually, interim reports on a DOE-approved form listing subject inventions and subcontract award(s) containing a Patent Rights Article for that period and certifying that:

(a) The Seller's procedures for identifying and disclosing subject inventions as required by this Paragraph E have been followed throughout the reporting periods;

(b) All subject inventions have been disclosed or that there are no such inventions; and

(c) All subcontracts containing a Patent Rights Article have been reported or that no such subcontracts have been awarded.

(iii) A final report on a DOE-approved form within three months after completion of this Order/Subcontract Work listing all subject inventions and all subcontracts awarded containing a Patent Rights Article and certifying that:

(a) All subject inventions have been disclosed or that there were no such inventions; and

(b) All subcontracts containing a Patent Rights Article have been reported or that no such subcontracts have been awarded.

(3) The Seller shall obtain patent agreements to effectuate the provisions of this article from all persons in its employ who perform any part of the Work under this Order/Subcontract except nontechnical personnel, such as clerical employees and manual laborers.

(4) The Seller agrees that the Government may duplicate and disclose subject invention disclosures and all other reports and papers furnished or required to be furnished pursuant to this article. If the Seller is to file a foreign patent application on a subject invention, the Government agrees, upon written request, to use its best efforts to withhold publication of such invention disclosures until expiration of the time period specified in Paragraph D(1) of this article, but in no event shall the Government or its employees be liable for any publication thereof.

F. PUBLICATION.

It is recognized that during the course of the Work under this Order/Subcontract, the Seller or its employees may, from time to time, desire to release or publish information regarding scientific or technical developments conceived or first actually reduced to practice in the course of or under this Order/Subcontract. In order that public disclosure of such information will not adversely affect the patent interests of DOE or the Seller, patent approval for release or publication shall be secured from the Patent Counsel through WMCO prior to any such release or publication.

G. FORFEITURE OF RIGHTS IN UNREPORTED SUBJECT INVENTIONS.

(1) The Seller shall forfeit to the Government, at the request of the Head of the Agency or designee, all rights in any subject invention which the Seller fails to report to Patent Counsel (with notification by Patent Counsel to the Contracting Officer) within six months after the time the Seller:

(i) Files or causes to be filed a United States or foreign patent application thereon; or

(ii) Submits the final report required by Paragraph E(2)(ii) of this article, whichever is later.

(2) However, the Seller shall not forfeit rights in a subject invention if,

within the time specified, in (1)(i) or (1)(ii) of this Paragraph G, the Seller:

(i) Prepares a written decision based upon a review of the record that the invention was neither conceived nor first actually reduced to practice in the course of or under this Order/Subcontract and delivers the same to Patent Counsel (with notification by the Patent Counsel to the Contracting Officer); or

(ii) Contending that the invention is not a subject invention, the Seller, nevertheless, discloses the invention and all facts pertinent to this contention to the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer); or

(iii) Establishes that the failure to disclose did not result from the Seller's fault or negligence.

(3) Pending written assignment of the patent application and patents on a subject invention determined by the Head of the Agency or designee to be forfeited (such determination to be a final decision under the Disputes Article of this Order/Subcontract), the Seller shall be deemed to hold the invention and the patent applications and patents pertaining thereto in trust for the Government. The forfeiture provision of this Paragraph G shall be in addition to and shall not supersede other rights and remedies which the Government may have with respect to subject inventions.

H. EXAMINATION OF RECORDS RELATING TO INVENTIONS.

(1) The Contracting Officer or his authorized representative, until the expiration of three years after final payment under this Order/Subcontract, shall have the right to examine any books (including laboratory notebooks), records, documents, and other supporting data of the Seller which the Contracting Officer or his authorized representative reasonably deems pertinent to the discovery or identification of subject inventions or to determine compliance with the requirements of this article.

(2) The Contracting Officer or authorized representative shall have the right to examine all books (including laboratory notebooks), records and documents of the Seller relating to the conception of first actual reduction to practice of inventions in the same field of technology as the Work under this Order/Subcontract to determine whether any such inventions are subject inventions, if the Seller refuses or fails to:

(i) Establish the procedures of Paragraph E(1) of this article; or

(ii) Maintain and follow such procedures; or

(iii) Correct or eliminate any material deficiency in the procedures within 30 days after the Contracting Officer notifies the Seller of such a deficiency.

I. (RESERVED).

J. SUBCONTRACTS.

(1) For the purpose of this paragraph, the term "contractor" means the party awarding a subcontract and the term "subcontractor" means the party being awarded a subcontract, regardless of tier.

(2) The contractor will include the clause at 952.227-71, "Patent Rights-Small Business Firms or Nonprofit Organizations", of the Department of Energy Acquisition Regulation 48 CFR Part 952, suitably modified to identify the parties, in all subcontracts regardless of tier, for experimental, developmental, demonstration of research work to be performed by a small business firm or domestic nonprofit organization. In all other subcontracts, regardless of tier, for experimental, developmental, demonstration, or research work, the Seller will include the Patent Rights clause of 41 CFR 9-9.107-5(a) or 41 9-9.107-6 as appropriate, modified to identify the parties. In the event of a refusal by a subcontractor to accept this article, or, if in the opinion of the contractor, this article is inconsistent with DOE's patent policies, the contractor:

(i) Shall promptly submit written notice to the Contracting Officer setting forth reasons for the subcontractor refusal and other pertinent information which may expedite disposition of the matter; and

(ii) Shall not proceed with the subcontract without the written authorization of the Contracting Officer.

(3) Except as may be otherwise provided in this article, the contractor shall not, in any subcontract, by using a subcontract as consideration therefor, acquire any rights in its subcontractor's subject invention for the contractor's own use (as distinguished from such rights as may be required solely to fulfill the contractor's obligations to the Government in the performance of this Order/Subcontract).

(4) All invention disclosures, reports, instruments and other information required to be furnished by the subcontractor to DOE, under the provisions of a Patent Rights Article in any subcontract hereunder may, in the discretion of the Contracting Officer, be furnished to the contractor for transmission to DOE.

(5) The contractor shall promptly notify the Contracting Officer in writing upon the award of any subcontract containing a Patent Rights Article by identifying the subcontractor, the work to be performed under the subcontract, and the dates of award and estimated completion. Upon the request of the Contracting Officer, the contractor shall furnish a copy of the subcontract.

(6) The contractor shall identify all subject inventions of the subcontractor of which it acquires knowledge in the performance of this Order/Subcontract and shall notify the Patent Counsel (with notification by the Patent Counsel to the Contracting Officer) promptly upon the identification of the inventions.

(7) It is understood that the Government is third party beneficiary of any subcontract article granting rights to the Government in subject inventions and the contractor hereby assigns to the Government rights that the contractor would have to enforce the subcontract obligations for the benefit of the Government with respect to subject inventions. The contractor shall not be obligated to enforce the agreements of any subcontractor hereunder relating to the obligations of the subcontractor to the Government regarding subject inventions.

K. BACKGROUND PATENTS.

(1) "Background Patent" means a domestic patent covering an invention of discovery which is not a subject invention and which is owned or controlled by the Seller at any time through the completion of this Order/Subcontract.

(i) Which the Seller, but not the Government, has the right to license to others without obligation to pay royalties thereon; and

(ii) Infringement of which cannot reasonably be avoided upon the practice of any specific process, method, machine, manufacture of composition of matter (including relatively minor modifications thereof) which is a subject of the research, development or demonstration work performed under this Order/Subcontract.

(2) The Seller agrees to and does hereby grant to the Government a royalty-free, nonexclusive, license under any background patent for purpose of practicing a subject of this Order/Subcontract by or for the Government in research, development and demonstration work only.

(3) The Seller also agrees that upon written application by DOE, it will grant to responsible parties for purposes of practicing a subject of this Order/Subcontract, nonexclusive licenses under any background patent on terms that are reasonable under the circumstances. If, however, the Seller believes that exclusive or partially exclusive rights are necessary to achieve expeditious commercial development or utilization, then a request may be made to DOE for DOE approval of such licensing by the Seller.

(4) Notwithstanding the foregoing Paragraph K(3), the Seller shall not

be obligated to license any background patent if the Seller demonstrates to the satisfaction of the Head of the Agency or designee that:

(i) A competitive alternative to the subject matter covered by said background patent is commercially available or readily introducible from one or more other sources; or

(ii) The Seller or its licensees are supplying the subject matter covered by said background patent in sufficient quantity and at reasonable prices to satisfy market needs, or have taken effective steps, or within a reasonable time are expected to take effective steps, to so supply the subject matter.

L. ATOMIC ENERGY.

(1) No claim for pecuniary award of compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Seller or its employees with respect to any invention or discovery made or conceived in the course of or under this Order/Subcontract.

(2) Except as otherwise authorized in writing by the Contracting Officer, the Seller shall obtain patent agreements to effectuate the provisions of Paragraph L (1) from employees who perform any part of the Work under this Order/Subcontract, except nontechnical personnel, such as clerical employees and manual laborers.

M. LIMITATION OF RIGHTS.

Nothing contained in this Patent Rights Article shall be deemed to give the Government any rights with respect to any invention other than a subject invention except as set forth herein with respect to background patents and the facilities license.

ARTICLE D.11 PATENT RIGHTS
(SMALL BUSINESS FIRMS AND NONPROFIT ORGANIZATIONS)
(DEAR 952.227-71) (APRIL 1987)

A. DEFINITIONS

(1) "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

(2) "Subject Invention" means any invention of the Seller conceived or first actually reduced to practice in the performance of Work under this Order/Subcontract, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act 7 U.S.C. 2401(d)) must also occur during the period of contract performance.

(3) "Practical Application" means to manufacture, in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

(4) "Made", when used in relation to any invention, means the conception or first actual reduction to practice of such invention.

(5) "Small Business Firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this article, the size standards for small business concerns involved in Government procurement and subcontracting, at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) "Nonprofit Organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 [26 U.S.C. 501(c)] and exempt from taxation under section 501(a) of the Internal Revenue Code [26 U.S.C. 501(a)] or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(7) "Patent Counsel" means the Department of Energy (DOE) Patent Counsel assisting the DOE contracting activity.

B. ALLOCATION OF PRINCIPAL RIGHTS.

The Seller may retain the entire right, title and interest throughout the world to each subject invention subject to the provisions of this article and 35 U.S.C. 203. With respect to any subject invention in which the Seller retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

C. INVENTION DISCLOSURE, ELECTION OF TITLE, AND FILING OF PATENT APPLICATIONS BY THE SELLER.

(1) The Seller will disclose each subject invention to the Patent Counsel within two months after the inventor discloses it in writing to Seller personnel responsible for the administration of patent matters. The disclosure to the Patent Counsel shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be in sufficiently complete technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention, and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the Patent Counsel, the Seller will promptly notify the Patent Counsel of the acceptance of any manuscript describing the invention or of any on sale or public use planned by the Seller.

(2) The Seller will elect in writing whether or not to retain title to any such invention by notifying the Patent Counsel within two years of disclosure to the Patent Counsel. However, in any case where publication, on sale or public use has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the Patent Counsel to a date that is no more than 60 days prior to the end of the statutory period.

(3) The Seller will file its initial patent application on a subject invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Seller will file patent applications in additional countries within either ten months of the corresponding initial patent application or six months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure, election, and filing under Subparagraphs C(1), (2), and (3) may, at the discretion of the Patent Counsel be granted.

D. CONDITIONS WHEN THE GOVERNMENT MAY OBTAIN TITLE.

The Seller will convey to DOE upon written request, title to any subject invention.

(1) If the Seller fails to disclose or elect title to the subject invention within the times specified in C above, or elects not to retain title; provided that the Patent Counsel may only request title within 60 days after learning of the failure of the Seller to disclose or elect within the specified times.

(2) In those countries in which the Seller fails to file patent applications within the times specified in C above; provided, however, that if the Seller has filed a patent application in a country after the times specified in C above, but prior to its receipt of the written request of the Patent Counsel, the Seller shall continue to retain title in that country.

(3) In any country in which the Seller decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in a reexamination or opposition proceeding on, a patent on a subject invention.

E. MINIMUM RIGHTS TO SELLER AND PROTECTION OF THE SELLER'S RIGHT TO FILE

(1) The Seller will retain a nonexclusive, royalty-free license throughout the world in each subject invention to which the Government obtains title except if the Seller fails to disclose the invention within the times specified in C above. The Seller's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which the Seller is a party and includes the right to grant sublicenses of the same scope to the extent the Seller was legally obligated to do so at the time the contract was awarded. The license is transferable only with the approval of DOE except when tranferred to the successor of that part of the Seller's business to which the invention pertains.

(2) The Seller's domestic license may be revoked or modified by DOE to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in acccordance with applicable provisions at 37 CFR Part 404 and DOE licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Seller has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of DOE to the extent the Seller, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, DOE will furnish the Seller a written notice of its intention to revoke or modify the license, and the Seller will be allowed 30 days (or such other time as may be authorized by DOE for good cause shown by the Seller) after the notice to show cause why the license should not be revoked or modified. The Seller has the right to appeal, in accordance with applicable regulations in 37 CFR Part 404 and DOE regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of its license.

F. SELLER'S ACTION TO PROTECT THE GOVERNMENT'S INTEREST.

(1) The Seller agrees to execute, or to have executed, and promptly deliver to the Patent Counsel instruments necessary to: (i) establish or confirm the rights the Government has throughout the world in those subject inventions for which the Seller elects to retain title, and (ii) convey title to DOE when requested under Paragraph D above and to enable the Government to obtain patent protection throughout the world in that subject invention.

(2) The Seller agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Seller each subject invention made under contract in order that the Seller can comply with the disclosure provisions of Paragraph C above, and to execute all papers necessary to file patent applications on subject inventions and to establish the government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by C(1) above. The Seller shall instruct such employee through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Seller will notify the Patent Counsel of any decisions not to continue prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Seller agrees to include, within the specification of any Ur States patent application and any patent issuing thereon coverin subject invention, the following statement, "This invention was made with Government support under (identify the contract) awarded by the Department of Energy. The Government has certain rights in this invention".

G. SUBCONTRACTS.

(1) The Seller will include this article, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or domestic nonprofit organization. The subcontractor will retain all rights provided for the Seller in this article, and the Seller will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The Seller will include in all other subcontracts, regardless of tier, for experimental, developmental, demonstration or research work the patent rights clause of 41CFR 9-9.107-5(a) or 9.9.107-6, as appropriate, modified to identify the parties.

(3) In the case of subcontracts, at any tier, when the prime award with DOE was a contract (but not a grant or cooperative agreement), DOE, subcontractor, and the Seller agree that the mutual obligations of the parties created by this article constitute a contract between the subcontractor and DOE with respect to those matters covered by this article; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the Contract Disputes Act in connection with proceedings under Paragraph J of this article.

H. REPORTING ON UTILIZATION OF SUBJECT INVENTIONS.

The Seller agrees to submit on request periodic reports no m frequently than annually on the utilization of a subject invention c efforts at obtaining such utilization that are being made by the Selle its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Seller, and such other data and information as DOE may reasonably specify. The Seller also agrees to provide additional reports as may be requested by DOE in connection with any march-in proceeding undertaken by DOE in accordance with Paragraph J of this article. As required by 35 U.S.C. 202(c)(5), DOE agrees it will not disclose such information to persons outside the government without permission of the Seller.

I. PREFERENCE FOR UNITED STATES INDUSTRY.

Notwithstanding any other provision of this article, the Seller agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by DOE upon a showing by the Seller or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

J. MARCH-IN RIGHTS.

The Seller agrees that with respect to any subject invention in which it has acquired title, DOE has the right, in accordance with the procedures in 37 CFR 401.6 and any supplemental regulation of the DOE to require the Seller, an assignee or exclusive licensee of a subject inventio grant a nonexclusive, partially exclusive, or exclusive license ir field of use to a responsible applicant or applicants, upon terms tha reasonable under the circumstances, and if the Seller, assignee, or exclusive licensee refuses such a request, DOE has the right to grant such license itself if DOE determines that:

(1) Such action is necessary because the Seller or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Seller, assignee, or their licensees;

(3) Such action is necessary to meet requirements for public use specified by federal regulations and such requirements are not reasonably satisfied by the Seller, assignee, or licensees; or

(4) Such action is necessary because the agreement required by Paragraph I of this article has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

K. SPECIAL PROVISIONS FOR CONTRACTS WITH NONPROFIT ORGANIZATIONS.

If the Seller is a nonprofit organization, it agrees that:

(1) Rights to a subject invention in the United States may not be assigned without the approval of DOE, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Seller.

(2) The Seller will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the Seller with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the Seller determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the Seller is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Seller. However, the Seller agrees that the Secretary may review the Seller's licensing program and decisions regarding small business applicants, and the Seller will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the Seller could take reasonable steps to implement more effectively the requirements of this Paragraph K(4).

L. COMMUNICATIONS.

The DOE central point of contact for communications or matter relating to this article is the Patent Counsel.

SECTION E

SECTION E - APPLIES IF THE PRICE OF THIS ORDER/SUBCONTRACT EXCEEDS $100,000.

ARTICLE E.1 CERTIFIED COST OR PRICING DATA (DEAR 970.5204-24) (APRIL 1984)

A. (1) The Seller shall require under the situations described in A(2) below, unless exempted under the exceptions set forth in A(3) below, each Subcontractor under this Order/Subcontract to submit cost or pricing data to certify that, to the best of his knowledge and belief, such cost or pricing data are accurate, complete and current.

(2) Except as provided in A(3) below, certified cost or pricing data shall be submitted prior to: (i) the award of each subcontract, the price of which is expected to exceed $100,000, and (ii) the negotiation of the price of each change or modification to a subcontract under this Order/Subcontract for which the price adjustment is expected to exceed $100,000.

(3) Certified cost or pricing data need not be furnished pursuant to this Paragraph A where: (i) the Seller has not been required to furnish cost or pricing data; or (ii) the price adjustment is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or the prices are set by law or regulation; and the Seller states in writing the basis for applying this exception.

(4) In submitting the cost or pricing data, the Subcontractor shall use the form of certificate set forth in Paragraph B below and shall certify that the data are accurate, complete and current. Such certificate and data (actual or identified, as provided in the certificate prescribed below) shall be submitted by Subcontractors to the next higher-tier Subcontractor or the Seller, as applicable, for retention.

B. SUBCONTRACTOR'S CERTIFICATE OF CURRENT COST OR PRICING DATA.

The certificates required by this clause shall be the form set forth below:

"Subcontractor's Certificate of Current Cost or Pricing Data"

This is to certify that, to the best of my knowledge and belief, cost or pricing data submitted in writing, or specifically identified in writing if actual submission of the data is impracticable [see FAR 15.804-6(d)], to (name) in support of _____* are accurate, complete and current as of _____**.

Firm _____

Name _____

Title _____

Date of Execution*** _____

*Identify the proposal, quotation, request for price adjustment, or other submission involved.

**Insert the day, month and year when price negotiations were concluded and price agreement was reached.

***Insert the day, month and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed upon.

C. For purposes of verifying that certified cost or pricing data submitted in conjunction with the negotiation of this Order/Subcontract, change or other modification involving an amount in excess of $100,000 were accurate, complete and current, DOE shall, until the expiration of three years from the date of final payment under this Order/Subcontract, have the right to examine those books, records, documents, papers and other supporting data which involve transactions related to this Order/Subcontract or which will permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

D. If the original price of this Order/Subcontract exceeds $100,000 or the price of any change or other modification to this Order/Subcontract is expected to exceed $100,000, the Seller agrees to furnish the WMCO certified cost or pricing data, using the certificate set forth in Paragraph B above, unless the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

E. The requirement for submission of certified cost or pricing data with respect to any change or other modification does not apply to any subcontract change or other modification, at any tier, where this Order/Subcontract is firm fixed-price or fixed-price with escalation unless such change or other modification results from a change or modification to this Order/Subcontract, nor does it apply to a subcontract change or modification, at any tier, where this Order/Subcontract is not firm-fixed-price or fixed-price with escalation unless the price for such change or other modification becomes reimbursable under this Order/Subcontract.

F. The Seller agrees to insert Paragraph C, without change, and the substance of Paragraphs A, B, D, E, and F of this article in each subcontract hereunder in excess of $100,000 and in each such subcontract of $100,000 or less, at the time of making a change or other modification thereto in excess of $100,000.

G. If WMCO determines that any price, including profit or fee, negotiated in connection with this Order/Subcontract or any cost reimbursable under this Order/Subcontract was increased by any significant sums because the Seller or any Subcontractor, pursuant to this article or any subcontract article herein required, furnished incomplete or inaccurate cost or pricing data or data not current as certified in the Seller's Certificate of Current Cost or Pricing Data, then such price or cost shall be reduced accordingly and this Order/Subcontract shall be modified in writing to reflect such reduction.

H. Failure of WMCO and the Seller to agree on any of the matters in Paragraph G above shall be a dispute concerning a question of fact subject to the Disputes Article of this Order/Subcontract.

NOTE: Since this Order/Subcontract is subject to reduction under this article by reason of defective cost or pricing data submitted in connection with certain subcontracts, it is expected that the Seller may wish to include an article in each such subcontract requiring the Subcontractor to appropriately indemnify the Seller. It is also expected that any Subcontractor subject to such indemnification will generally require substantially similar indemnification for defective cost or pricing data required to be submitted by its lower tier subcontractors.

ARTICLE E.2 PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA (FAR 52.215-22) (APRIL 1988)

A. If any price, including profit or fee, negotiated in connection with this Order/Subcontract or any cost reimbursable under this Order/Subcontract, was increased by any significant amount because (1) the Seller or a Subcontractor furnished cost or pricing data that were not complete, accurate and current as certified in its Certificate of Current Cost or Pricing Data, (2) a Subcontractor or prospective Subcontractor furnished the Seller cost or pricing data that were not complete, accurate and current as certified in the Seller's Certificate of Current Cost or Pricing Data, or (3) any of these parties furnished data of any description that were not accurate, the price or cost shall be reduced

accordingly and this Order/Subcontract shall be modified to reflect the reduction.

B. Any reduction in this Order/Subcontract price under Paragraph A above due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the *amount, plus applicable overhead and profit markup*, by which: (1) the actual subcontract, or (2) the actual cost to the Seller, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Seller; *provided*, that the actual subcontract price was not itself affected by defective cost or pricing data.

C. (1) If the Contracting Officer determines under Paragraph A of this article that a price or cost reduction should be made, the Seller agrees not to raise the following matters as a defense:

(i) The Seller or subcontractor was a sole source supplier or otherwise was in a superior bargaining position and thus the price of the Order/Subcontract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted.

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Seller or Subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer.

(iii) The Order/Subcontract was based on an agreement about the total cost of the Order/Subcontract and there was no agreement about the cost of each item procured under the Order/Subcontract.

(iv) The Seller or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2) (i) *Except as prohibited by Subdivision C(2)(ii) of this article*, an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of an Order/Subcontract price reduction if—

(a) The Seller certifies to the Contracting Officer that, to the best of the Seller's knowledge and belief, the Seller is entitled to the offset in the amount requested; and

(b) The Seller proves that the cost or pricing data were available before the date of agreement on the price of the Order/Subcontract (or price of the modification) and that the data were not submitted before such date.

(ii) An offset shall not be allowed if—

(a) The understated data were known by the Seller to be understated when the Certificate of Current Cost or Pricing Data was signed; or

(b) The Government proves that the facts demonstrate that the Order/Subcontract price would not have increased in the amount to be offset even if the available data had been submitted before the date of agreement on price.

ARTICLE E.3 CLEAN AIR AND WATER (FAR 52.223-2) (APRIL 1984)

A. "Air Act", as used in this article, means the Clean Air Act (42 U.S.C. 7401 et seq.).

"Clean air standards", as used in this article, means: (i) Any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, work practices, or other requirements contained in, issued under, or otherwise adopted under the Air Act or Executive Order/Subcontract 11738; (ii) An applicable implementation plan as described in Section 110(d) of the Air Act [42 U.S.C. 7410(d)]; (iii) An approved implementation procedure or plan under Section 111(c) or Section 111(d) of the Air Act [42 U.S.C. 7411(c) or (d)]; (iv) An approved implementation procedure under Section 112(d) of the Air Act [42 U.S.C. 7412(d)].

"Clean water standards", as used in this article, means any enforceable limitation, control, condition, prohibition, standard, or other requirement promulgated under the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by Section 402 of the Water Act U.S.C. 1342), or by local government to ensure compliance w pretreatment regulations as required by Section 307 of the Water Act (33 U.S.C. 1317).

"Compliance", as used in this article, means compliance with: (i) Clean air and water standards; or (ii) A schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency, or an air or water pollution control Agency under the requirements of the Air Act or Water Act and related regulations.

"Facility", as used in this article, means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased or supervised by a contractor or subcontractor, used in the performance of a contract or subcontract. When a location or site of operations includes more than one building, plant, installation or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, or the Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

"Water Act", as used in this article, means Clean Water Act (33 U.S.C. 1251 et seq.).

B. The Seller agrees:

(1) To comply with all the requirements of Section 114 of the Clean Air Act (42 U.S.C. 7414) and Section 308 of the Clean Water Act (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports and information, as well as other requirements specified in Section 114 and Section 308 of the Air Act and the Water Act, and all regulations and guidelines issued to implement those acts before the award of this Order/Subcontract;

(2) That no portion of the Work required by this Order/Subcontract be performed in a facility listed on the Environmental Protec Agency List of Violating Facilities on the date when this Order/ Subcontract was awarded unless and until the EPA eliminates the name of the facility from the listing;

(3) To use best efforts to comply with clean air standards and clean water standards at the facility in which this Order/Subcontract is being performed; and

(4) To insert the substance of this article into any nonexempt subcontract, including this Subparagraph B(4).

ARTICLE E.4 COST ACCOUNTING STANDARDS (FAR 52.230-3) (SEPTEMBER 1987)

A. Unless the Order/Subcontract is exempt under FAR 30.201-1 and 30.201-2, the provisions of Federal Acquisition Regulation (FAR) Subpart 30.3 are incorporated herein by reference and the Seller in connection with this contract, shall—

(1) (National Defense Contracts Only) By submission of Disclosure Statement, disclose in writing the Seller's cost accounting practices as required by FAR 30.202-1 through 30.202-5. The practices disclosed for the Order Subcontract shall be the same as the practices currently disclosed and applied on all other contracts and subcontracts being performed by the Seller and which contain a Cost Accounting Standards (CAS) clause. If the Seller has notified the Contracting Officer that the Disclosure Statement contains trade secrets and commercial or financial information which is privileged and confidential, the Disclosure Statement shall be protected and shall not be released outside of the Government.

(2) Follow consistently the Seller's cost accounting practices accumulating and reporting Order/Subcontract performance data concerning this Order/Subcontract. If any change in cost accounting practices is made for the purposes of any contract or subcontract subject to CAS requirements, the change must be applied prospectively to this Order/Subcontract and the Disclosure

Statement must be amended accordingly. If the Order/Subcontract price or cost allowance of this Order/Subcontract is affected by such changes, adjustment shall be made in accordance with Subparagraph A(4) or A(5) of the article, as appropriate.

(3) Comply with all CAS, including any modifications and interpretations indicated thereto contained in FAR Subpart 30.4, in effect on the date of award of this Order/Subcontract or, if the Seller has submitted cost or pricing data, on the date of final agreement on price as shown on the Seller's signed certificate of current cost or pricing data. The Seller shall also comply with any CAS (or modifications to CAS) which hereafter become applicable to a contract or subcontract of the Seller. Such Compliance shall be required prospectively from the date of applicability to such contract or subcontract.

(4) (i) Agree to an equitable adjustment as provided in the Changes article of this Order/Subcontract if the Order/Subcontract cost is affected by a change which, pursuant to Subparagraph A(3) of this article, the Seller is required to make to the Seller's established cost accounting practices.

(ii) Negotiate with the Contracting Officer to determine the terms and conditions under which a change may be made to a cost accounting practice, other than a change made under other provisions of Subparagraph A(4) of this article; provided that no agreement may be made under this provision that will increase costs paid by the United States.

(iii) When the parties agree to a change to a cost accounting practice, other than a change under Subdivision A(4)(i) of this article, negotiate an equitable adjustment as provided in the Changes article of this Order/Subcontract.

(5) Agree to an adjustment of the Order/Subcontract price or cost allowance, as appropriate, if the Seller or a Subcontractor fails to comply with an applicable Cost Accounting Standard, or to follow any cost accounting practice consistently and such failure results in any increased costs paid by the United States. Such adjustment shall provide for recovery of the increased costs to the United States together with interest thereon computed at the rate determined by the Secretary of the Treasury pursuant to Pub. L. 92-41, 85 Stat. 97, from the time the payment by the United States was made to the time the adjustment is effected.

B. If the parties fail to agree whether the Seller or a Subcontractor has complied with an applicable CAS in FAR Subpart 30.4 or a CAS rule or regulation in FAR Subpart 30.3 and as to any cost adjustment demanded by the United States, such failure to agree shall be a dispute concerning a question of fact within the meaning of the Disputes article of this Order/Subcontract.

C. The Seller shall permit any authorized representatives of the Government to examine and make copies of any documents, papers, or records relating to compliance with the requirements of this article.

D. The Seller shall include in all negotiated subcontracts which the Seller enters into, the substance of this article, except Paragraph B, and shall require such inclusion in all other subcontracts, of any tier, including the obligation to comply with all CAS in effect on the subcontract's award date or if the Subcontractor has submitted cost or pricing data, on the date of final agreement on price as shown on the Subcontractor's signed Certificate of Current Cost or Pricing Data. This requirement shall apply only to negotiated subcontracts in excess of $100,000 where the price negotiated is not based on—

(1) Established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(2) Prices set by law or regulation, and except that the requirement shall not apply to negotiated subcontracts otherwise exempt from the requirement to include a CAS clause as specified in FAR 30.201-1.

NOTE (1):
New or modified CAS shall be applicable to both national defense and nondefense CAS-covered contracts upon award of a new national defense CAS-covered contract containing the new or modified Standard. The award of a new nondefense CAS-covered contract shall not trigger application of new CAS or modification to CAS.

NOTE (2):
Subcontractors shall be required to submit their Disclosure Statements to the Seller. However, if a Subcontractor has previously submitted its Disclosure Statement to a Government Administrative Contracting Officer (ACO), it may satisfy that requirement by certifying to the Seller the date of the Statement and the address of the ACO.

NOTE (3):
In any case where a Subcontractor determines that the Disclosure Statement information is privileged and confidential and declines to provide it to the Seller or higher tier subcontractor, the Seller may authorize direct submission of that Subcontractor's Disclosure Statement to the same Government offices to which the Seller was required to make submission of its Disclosure Statement. Such authorization shall in no way relieve the Seller of liability as provided in Subparagraph A(5) of this article. In view of the foregoing and since the Order/Subcontract may be subject to adjustment under this article by reason of any failure to comply with rules, regulations, and Standards as specified in FAR Subparts 30.3 and 30.4 in connection with covered subcontracts, it is expected that the Seller may wish to include a clause in each such subcontract requiring the subcontractor to appropriately indemnify the Seller. However, the inclusion of such a clause and the terms thereof are matters of negotiation and agreement between the Seller and the subcontractor, provided that they do not conflict with the duties of the Seller under its Order/Subcontract with WMCO. It is also expected that any subcontractor subject to such indemnification will generally require substantially similar indemnification to be submitted by its Subcontractors.

NOTE (4):
If the subcontractor is a business unit which pursuant to FAR 30.201-2(b) is entitled to elect modified contract coverage and to follow 30.401 and 30.402, the clause at 52.230-5, "Disclosure Consistency of Cost Accounting Practices," of the Federal Acquisition Regulation shall be inserted in lieu of this clause.

NOTE (5):
The terms defined in FAR 30.301 and 31.001 shall have the same meanings herein. As there defined "negotiated subcontract" means any subcontract except a firm-fixed-price subcontract made by a Contractor or Subcontractor after receiving offers from at least two persons not associated with each other or with such Contractor or Subcontractor, providing (1) the solicitation to all competitors is identical, (2) price is the only consideration in selecting the Subcontractor from among the competitors solicited, and (3) the lowest offer received in compliance with the solicitation from among those solicited is accepted.

ARTICLE E.5 ADMINISTRATION OF COST ACCOUNTING STANDARDS (FAR 52.230-4) (SEPTEMBER 1987)

For the purpose of administering the Cost Accounting Standards (CAS) requirements under this Order/Subcontract, the Seller shall take the steps outlined in A through F below:

A. Submit to the cognizant Contracting Officer a description of any accounting change, the potential impact of the change on contracts containing a CAS Article, and if not obviously immaterial, a general dollar magnitude cost impact analysis of the change which displays the potential shift of costs between CAS-covered contracts by contract type (i.e., firm-fixed-price, incentive, cost-plus-fixed-fee, etc.) and other Seller business activity. As related to CAS-covered contracts, the analysis should display the potential impact of funds of the various agencies/departments (i.e., Department of Energy, National Aeronautics

and Space Administration, Army, Navy, Air Force, other Department of Defense, other Government) as follows:

(1) For any change in cost accounting practices required to comply with a new CAS in accordance with Paragraphs A(3) and A(4)(i) of the CAS Article, within 60 days (or such other date as may be mutually agreed to) after award of a contract requiring this change.

(2) For any change in cost accounting practices proposed in accordance with Paragraph A(4)(ii) or A(4)(iii) of the CAS Article or with Paragraph A(3) or A (5) of the Disclosure and Consistency of Cost Accounting Practices Article, not less than 60 days (or such other date as may be mutually agreed to) before the effective date of the proposed change.

(3) For any failure to comply with an applicable CAS or to follow a disclosed practice as contemplated by Paragraph A(5) of the CAS article or by Paragraph A(4) of the Disclosure and Consistency of Cost Accounting Practices article, within 60 days (or such other date as may be mutually agreed to) after the date of agreement of noncompliance by the Seller.

B. Submit a cost impact proposal in the form and manner specified by WMCO within 60 days (or such other date as may be mutually agreed to) after the date of determination of the adequacy and compliance of a change submitted pursuant to A above. If the above proposal is not submitted within the specified time, or any extension granted by WMCO, an amount not to exceed 10 percent of each payment made after that date may be withheld until such time as a proposal has been provided in the form and manner specified by WMCO.

C. Agree to appropriate Order/Subcontract and subsubcontract amendments to reflect adjustments established in accordance with Paragraphs A(4) and A(5) of the CAS Article or with Paragraphs A(3) or A(4) of the Disclosure and Consistency of Cost Accounting Practices article.

D. For all subcontracts subject either to the CAS article or to the Disclosure and Consistency of Cost Accounting Practices article:

(1) So state in the body of the subcontract, in the letter of award, or in both (self-deleting articles shall not be used); and

(2) Include the substance of this article in all negotiated subcontracts. In addition, within 30 days after award of the subcontract, submit the following information to the Seller's cognizant contract administration office for transmittal to the contract administration office cognizant of the Subcontractor's facility: (i) Subcontractor's name and subcontract number; (ii) Dollar amount and date of award; (iii) Name of contractor making the award; (iv) Any changes the Subcontractor has made or proposes to make to accounting practices that affect prime contracts or subcontracts containing the CAS article or Disclosure and Consistency of Cost Accounting Practices article, unless these changes have already been reported. If award of the subcontract results in making one or more CAS effective for the first time, this fact shall also be reported.

E. Notify WMCO in writing of any adjustment required to subcontracts under this Order/Subcontract and agree to an adjustment, based on them, to this Order's price or estimated cost and fee. This notice is due within 30 days after proposed subcontract adjustments are received and shall include a proposal for adjusting the higher tier subcontract or the prime contract appropriately.

F. For subcontracts containing the CAS article, require the Subcontractor to comply with all Standards in effect on the date of award or of final agreement on price, as shown on the Subcontractor's signed Certificate of Current Cost or Pricing Data, whichever is earlier.

ARTICLE E.6 DISCLOSURE AND CONSISTENCY OF COST ACCOUNTING PRACTICES (FAR 52.230-5) (SEP 1987)

A. The Seller, in connection with this Order/Subcontract, shall—

(1) Comply with the requirements of 4 CFR Parts 401, Consistency in Estimating, Accumulating and Reporting Costs; and 402, Consistency in Allocating Costs Incurred for the Same Purpose, in effect on date of award of this Order/Subcontract.

(2) (National Defense Contracts Only) If it is a business unit of a company required to submit a Disclosure Statement, disclose in writing its cost accounting practices as required by FAR 30.202-1 through 30.202-5. If the Seller has notified the Contracting Officer that the Disclosure Statement contains trade secrets and commercial or financial information which is privileged and confidential, the Disclosure Statement shall be protected and shall not be released outside of the Government.

NOTE(1):
Subcontractors shall be required to submit their Disclosure Statements to the Seller. However, if a Subcontractor has previously submitted its Disclosure Statement to a Government Administrative Contracting Officer (ACO), it may satisfy that requirement by certifying to the Seller the date of the Statement and the address of the Contracting Officer.

NOTE(2):
In any case where a Subcontractor determines that the Disclosure Statement information is privileged and confidential and declines to provide it to the Seller or higher tier Subcontractor, the Seller may authorize direct submission of the Subcontractor's Disclosure Statement to the same Government offices to which the Seller was required to make submission of its Disclosure Statement. Such authorization shall in no way relieve the Seller of liability if it or a Subcontractor fails to comply with an applicable Cost Accounting Standard (CAS) or to follow any practice disclosed pursuant to this paragraph and such failure results in any increased costs paid by the United States. In view of the foregoing and since this Order/Subcontract may be subject to adjustment under this article by reason of any failure to comply with rules, regulations and Standards as specified in FAR subparts 30.3 and 30.4 in connection with covered subcontracts, it is expected that the Seller may wish to include an article in each such subcontract requiring the Subcontractor to appropriately indemnify the Seller. However, the inclusion of such an article and the terms thereof are matters for negotiation and agreement between the Seller and Subcontractor, provided that they do not conflict with the duties of the Seller hereunder. It is also expected that any Subcontractor subject to such indemnification will generally require substantially similar indemnification to be submitted by its subcontractors.

NOTE(3):
The terms defined in 4 CFR 331.20 shall have the same meanings in this article. As there defined, "negotiated subcontract" means any subcontract except a firm-fixed-price subcontract made by Seller or Subcontractor after receiving offers from at least two persons not associated with each other or such Seller or Subcontractor, *providing* (1) the solicitation to all competitors is identical, (2) price is the only consideration in selecting the subcontractor from among the competitors solicited, and (3) the lowest offer received in compliance with the solicitation from among those solicited is accepted.

(3) (i) Follow consistently the Seller's cost accounting practices. A change to such practices may be proposed, however, by either the Government or the Seller, and the Seller agrees to negotiate with the Contracting Officer the terms and conditions under which a change may be made. After the terms and conditions under which the change is to be made have been agreed to, the change must be applied prospectively to this Order/Subcontract, and the Disclosure Statement, if affected, must be amended accordingly.

(ii) The Seller shall, when the parties agree to a change to a cost accounting practice and the Contracting Officer has made the finding that the change is desirable and not detrimental to the interests of the Government, negotiate an equitable adjustment

as provided in the changes article of this Order/Subcontract. In the absence of the required finding, no agreement may be made under this article that will increase costs paid by the United States.

(4) Agree to an adjustment of the Order/Subcontract price or cost allowance, as appropriate, if the Seller or a Subcontractor fails to comply with the applicable CAS or to follow any cost accounting practice, and such failure results in any increased costs paid by the United States. Such adjustment shall provide for recovery of the increased costs to the United States together with interest thereon computed at the rate determined by the Secretary of the Treasury pursuant to Public Law 92-41, 85 Stat. 97, from the time the payment by the United States was made to the time the adjustment is effected.

B. If the parties fail to agree whether the Seller has complied with an applicable CAS, rule, or regulation as specified in FAR subpart 30.3 and 30.4 and as to any cost adjustment demanded by the United States, such failure to agree shall be a dispute within the meaning of the Disputes article of this Order/Subcontract.

C. The Seller shall permit any authorized representatives of the Government to examine and make copies of any documents, papers and records relating to compliance with the requirements of this article.

D. The Seller shall include in all negotiated subcontracts, which the Seller enters into, the substance of this article, except Paragraph B, and shall require such inclusion in all other subcontracts of any tier, except that:

(1) If the subcontract is awarded to a business unit which, pursuant to FAR 30.201, is required to follow all CAS, the article entitled "Cost Accounting Standards", set forth in FAR 52.230-3 shall be inserted in lieu of this article; or

(2) This requirement shall apply only to negotiated subcontracts in excess of $100,000 where the price negotiated is not based on: (i) Established catalog or market prices of commercial items sold in substantial quantities to the general public; or (ii) Price set by law or regulation; or

(3) The requirement shall not apply to negotiated subcontracts otherwise exempt from the requirement to include a CAS article as specified in FAR 30.201-1.

SECTION F

SECTION F - APPLIES IF THE PRICE OF THIS ORDER/SUBCONTRACT EXCEEDS $500,000.

ARTICLE F.1 SMALL BUSINESS AND SMALL DISADVANTAGED BUSINESS SUBCONTRACTING PLAN (FAR 52.219-9) (AUGUST 1989)

A. This article does not apply to small business concerns.

B. "Commercial product", as used in this article, means a product in regular production that is sold in substantial quantities to the general public and/or industry at established catalog or market prices. It also means a product which, in the opinion of WMCO, differs only insignificantly from the Seller's commercial product.

"Subcontract", as used in this article, means any agreement (other than one involving an employer-employee relationship) entered into by a Federal Government prime contractor or subcontractor calling for supplies or services required for performance of the contract or subcontract.

C. The Seller, upon request by WMCO, shall submit and negotiate a subcontracting plan, where applicable, which separately addresses subcontracting with small business concerns and small disadvantaged business concerns. If the Seller is submitting an individual contract plan, the plan must separately address subcontracting with small business concerns and with small disadvantaged business concerns with a separate part for the basic contract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant contract. The subcontracting plan shall be negotiated within the time specified by WMCO. Failure to submit and negotiate the subcontracting plan shall make the Seller ineligible for award of a contract.

D. The Seller's subcontracting plan shall include the following:

(1) Goals, expressed in terms of percentages of total planned subcontracting dollars, for the use of small business concerns and small disadvantaged business concerns as subcontractors. The Seller shall include all subcontracts that contribute to Order/Subcontract performance, and may include a proportionate share of products and services that are normally allocated as indirect costs.

(2) A statement of:
- (i) Total dollars planned to be subcontracted;
- (ii) Total dollars planned to be subcontracted to small business concerns; and
- (iii) Total dollars planned to be subcontracted to small disadvantaged business concerns.

(3) A description of the principal types of supplies and services to be subcontracted, and an identification of the types planned for subcontracting to (i) small business concerns and (ii) small disadvantaged business concerns.

(4) A description of the method used to develop the subcontracting goals in (1) above.

(5) A description of the method used to identify potential sources for solicitation purposes [e.g., existing company source lists, the Procurement Automated Source System (PASS) of the Small Business Administration, the National Minority Purchasing Council Vendor Information Service, the Research and Information Division of the Minority Business Development Agency in the Department of Commerce, or small and small disadvantaged business concerns trade associations].

(6) A statement as to whether or not the Seller included indirect costs in establishing subcontracting goals, and a description of the method used to determine the proportionate share of indirect costs to be incurred with (i) small business concerns and (ii) small disadvantaged business concerns.

(7) The name of the individual employed by the Seller who will administer the Seller's subcontracting program, and a description of the duties of the individual.

(8) A description of the efforts the Seller will make to assure that small business concerns and small disadvantaged business concerns have an equitable opportunity to compete for subcontracts.

(9) Assurances that the Seller will include the article in this Order/Subcontract entitled "Utilization of Small Business Concerns and Small Disadvantaged Business Concerns" in all subcontracts that offer further subcontracting opportunities, and that the Seller will require all Subcontractors (except small business concerns) who receive subcontracts in excess of $500,000 ($1,000,000 for construction of any public facility), to adopt a plan similar to the plan agreed to by the Seller.

(10) Assurances that the Seller will (i) cooperate in any studies or surveys as may be required, (ii) submit periodic reports in Order/Subcontract to allow the Government to determine the extent of compliance by the Seller with the subcontracting plan, (iii) submit Standard Form (SF) 294, Subcontracting Report for Individual Contracts, and/or SF 295, Summary Subcontract Report, in accordance with the instructions on the forms, and (iv) ensure that its Subcontractors agree to submit Standard Forms 294 and 295..

(11) A recitation of the types of records the Seller will maintain to demonstrate procedures that have been adopted to comply with the requirements and goals in the plan, including establishing source lists; and a description of its efforts to locate small and small disadvantaged business concerns and award subcontracts to them. The records shall include at least the following (on a plant-wide or company-wide basis, unless otherwise indicated):

- (i) Source lists, guides and other data that identify small and small disadvantaged business concerns.
- (ii) Organizations contacted in an attempt to locate sources that are small or small disadvantaged business concerns.
- (iii) Records on each subcontract solicitation resulting in an award of more than $100,000, indicating (a) whether small business concerns were solicited, and if not, why not, (b) whether small disadvantaged business concerns were solicited, and if not, why not, and (c) if applicable, the reason award was not made to a small business concern.
- (iv) Records of any outreach efforts to contact (a) trade associations, (b) business development organizations, and (c) conferences and trade fairs to locate small and small disadvantaged business sources.
- (v) Records of internal guidance and encouragement provided to buyers through (a) workshops, seminars, training, etc., and (b) monitoring performance to evaluate compliance with the programs' requirements.
- (vi) On a contract-by-contract basis, records to support award data submitted by the Seller to the Government, including the name, address and business size of each Subcontractor. Contractors having company or division-wide annual plans need not comply with this requirement.

E. In Order/Subcontract to effectively implement this plan to the extent consistent with efficient contract performance, the Seller shall perform the following functions:

(1) Assist small business and small disadvantaged business concerns by arranging solicitations, time for the preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation by such concerns. Where the Seller's lists of potential small business and small disadvantaged Subcontractors are excessively long, reasonable effort shall be made to give all such small business concerns an opportunity to compete over a period of time.

(2) Provide adequate and timely consideration of the potentialities of small business and small disadvantaged business concerns in all "make-or-buy" decisions.

(3) Counsel and discuss subcontracting opportunities with representatives of small and small disadvantaged business firms.

F. A master subcontracting plan on a plant or division-wide basis which contains all the elements required by D above, except goals, may be incorporated by reference as a part of the subcontracting plan required of the Seller by this article; *provided*, (1) the master plan has been approved, (2) the Seller provides copies of the approved master plan and evidence of its approval to WMCO and (3) goals and any deviations from the master plan deemed necessary by WMCO to satisfy the requirements of this Order/Subcontract are set forth in the individual subcontracting plan.

G. (1) If a commercial product is offered, the subcontracting plan required by this article may relate to the Seller's production generally, for both commercial and noncommercial products, rather than solely to the Government contract. In these cases, the Seller shall, with the concurrence of WMCO, submit one company-wide or division-wide annual plan.

(2) The annual plan shall be reviewed for approval by the agency awarding the Seller its first prime contract requiring a subcontracting plan during the fiscal year, or by an agency satisfactory to WMCO.

(3) The approved plan shall remain in effect during the Seller's fiscal year for all of the Seller's commercial products.

H. Prior compliance of the Seller with other such subcontracting plans under previous contracts will be considered by WMCO in determining the responsibility of the Seller for award of the Order/Subcontract.

I. The failure of the Seller or Subcontractor to comply in good faith with (1) the article of this Order/Subcontract entitled "Utilization of Small Business Concerns and Small Disadvantaged Business Concerns", or (2) an approved plan required by this article, shall be a material breach of the contract.

NOTE: When contracting by sealed bidding rather than by negotiation, the following paragraph shall be substituted for Paragraph C of the basic article.

J. The apparent low bidder, upon request by WMCO, shall submit a subcontracting plan, where applicable, which separately address subcontracting with small business concerns and with sm disadvantaged business concerns. If the bidder is submitting an individual contract plan, the plan must separately address subcontracting with small business concerns and with small disadvantaged business concerns with a separate part for the basic Order/Subcontract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant Order/Subcontract. The subcontracting plan shall be submitted within the time specified by WMCO. Failure to submit the subcontracting plan shall make the bidder ineligible for the award of an Order/Subcontract.

ARTICLE F.2 LABOR SURPLUS AREA SUBCONTRACTING PROGRAM (FAR 52.220-4) (APRIL 1984)

A. See the Utilization of Labor Surplus Area Concerns Article of this Order/Subcontract for applicable definitions.

B. The Seller agrees to establish and conduct a program to encourage labor surplus area (LSA) concerns to compete for subcontracts within their capabilities when the subcontracts are consistent with the efficient performance of this Order/Subcontract at prices no higher than obtainable elsewhere. The Seller shall:

(1) Designate a liaison officer who will (i) maintain liaison with authorized representatives of the Government of LSA matters; (ii) supervise compliance with the Utilization of Labor Surplus Area Concerns Article, and (iii) administer the Seller's labor surplus area subcontracting program;

(2) Provide adequate and timely consideration of the potentialities of LSA concerns in all make-or-buy decisions;

(3) Ensure that LSA concerns have an equitable opportunity to compe for subcontracts, particularly by arranging solicitations, time or the preparation of offers, quantities, specifications and delivery schedules so as to facilitate the participation of LSA concerns;

(4) Include the Utilization of Labor Surplus Area Concerns Article in subcontracts that offer substantial LSA subcontracting opportunities; and

(5) Maintain records showing (i) the procedures adopted and (ii) the Seller's performance, to comply with this article. The records will be kept available for review by WMCO or the Government until the expiration of 1 year after the award of this Order/ Subcontract, or for such longer period as may be required by any other article of this Order/Subcontract or by applicable law or regulations.

C. The Seller further agrees to insert in any related subcontract that may exceed $500,000 and that contains the Utilization of Labor Surplus Area Concerns article, terms that conform substantially to the language of this article, including this Paragraph C, and to notify WMCO of the names of subcontractors.

PART IV
SECTION J
ATTACHMENTS

ATTACHMENT No.	DESCRIPTION	PAGES
1	DATA REPORTING REQUIREMENTS	J1-1 thru J1-8
2	SPECIAL HEALTH, SAFETY & FIRE PROTECTION REQUIREMENTS	J2-1 thru J2-2
3	SCRAP METAL DESCRIPTION	J3-1
4	CONTRACT PRICING PROPOSAL COVER SHEET (SF 1411)	J4-1
5	WEMCO SITE ACCESS TRAINING REQUIREMENTS	J5-1 thru J5-3

SECTION J, ATTACHMENT 1
DATA REPORTING REQUIREMENT

DATA NUMBER: A001

ITEM TITLE: **MEETING MINUTES AND/OR TRAVEL REPORT**

SOW PARAGRAPH REFERENCE: C.4.1

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: ASREQ

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 5 Days After Event

DATE OF SUBSEQUENT SUBMISSION: ASREQ

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

Meeting minutes shall include the following:

- Narrative summary of significant comments,findings, decisions, and direction provided at the meeting with rationale where appropriate
- Meeting Agenda
- List of data package contents
- List of attendees
- Action items with responsibilities and due dates
- List of presentation material

SECTION J, ATTACHMENT 1
DATA REPORTING REQUIREMENT

DATA NUMBER: A002

ITEM TITLE: **Waste Transportation Procedures**

SOW PARAGRAPH REFERENCE: C.10.2

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: Draft, Approved Final

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 30 Days before Shipment from Fernald

DATE OF SUBSEQUENT SUBMISSION: ASREQ

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

The Plan shall address as a minimum:

Health and Safety
Limited Quantities Waste Classification
Limited Quantities General Requirements
Site Acceptance Criteria

The Plan shall also contain the following records:

Wast Shipment Certification Form
Waste Package Survey Report
Vehicle Condition Checklist
Vehicle Radiation Monitoring Report
Palletizing Drums for Shipment
Straing Bill of Lading
Driver Instructions
Waste Profile Forms
Uniform Hazardous Waste Manifest Forms
Radioactive Waste Shipment & Disposal Manifest
Shipment Release Checklist

SECTION J, ATTACHMENT 1
DATA REPORTING REQUIREMENT

DATA NUMBER: A003

ITEM TITLE: **Removal Action Project Work Plan**

SOW PARAGRAPH REFERENCE: C.10.3

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: One Time

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: With Technical and Management Proposal

DATE OF SUBSEQUENT SUBMISSION: ASREQ

DISTRIBUTION: N/A

REMARKS: Subcontractor Format Acceptable.

The Work Plan shall include a detailed description of the planned implementation activities, a time shcedule for those actions, personnel and equipment requirements in addition to its site restoration plan.

DATA NUMBER: A004

ITEM TITLE: **Operation and Maintenance Plan**

SOW PARAGRAPH REFERENCE: C.12

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: ONE TIME

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 30 Days after Contract Award

DATE OF SUBSEQUENT SUBMISSION: ASREQ

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

SECTION J, ATTACHMENT 1
DATA REPORTING REQUIREMENT

DATA NUMBER: A005

ITEM TITLE: **Site Health and Safety Plan**

SOW PARAGRAPH REFERENCE: C.14

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: First Draft and Final. Final may require update congruous with WEMCO's Industrial Hygiene and Safety Requirements

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 15 Days After Contract Award

DATE OF SUBSEQUENT SUBMISSION: 15 Days after WEMCO approval of First Draft.

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

Subcontractor shall submit the first draft 15 days after contract award. WEMCO will review, comment and return with suggested changes 15 days after receipt of first draft. Final plan with incorporated changes to be submitted 10 days after receipt of WEMCO comments.

DATA NUMBER: A006

ITEM TITLE: **Quality Assurance Project Plan**

SOW PARAGRAPH REFERENCE: C.16

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: Draft/Final

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: With Technical and Management Proposal

DATE OF SUBSEQUENT SUBMISSION: 15 Days after receipt of WEMCO comments

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY (Final Only)

REMARKS: Subcontractor Format Acceptable. The Quality Assurance Project Plan shall be in accordance with ANSI ASME NQA-1. The plan will be updated no later than 30 days after contract award; incorporating WEMCO's comments.

SECTION J, ATTACHMENT 1
DATA REPORTING REQUIREMENT

DATA NUMBER: A007

ITEM TITLE: **Monthly Progress Report**

SOW PARAGRAPH REFERENCE: C.4.1, C.16

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: Monthly

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 5 days after Post Award Site Visit

DATE OF SUBSEQUENT SUBMISSION: 5 days after event

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

DATA NUMBER: A008

ITEM TITLE: **Final Project Report**

SOW PARAGRAPH REFERENCE: C.16

TECHNICAL OFFICE: Waste Management Programs

FREQUENCY: ONETIME

AS OF DATE: N/A

DATE OF FIRST SUBMISSION: 30 Days after completion of Project

DATE OF SUBSEQUENT SUBMISSION: N/A

DISTRIBUTION: WEMCO TECHNICAL OFFICE - 2 CYS
WEMCO CONTRACTS - 1 CY

REMARKS: Subcontractor Format Acceptable.

At the completion of the project, and upon satisfactory completion of the final inspection, the report will summarize the work accomplished. Included in this report shall be: a synopsis of the work defined in the SOW and certification that this work was performed; explanation of any modifications to work in the SOW and why these were necessary for the project; a description of the problems and success in completing the requirements of the project; a summary of total volumes of various wastes processed and disposed; and a summary progress table.
The subcontractor will supply a copy of this document to the WEMCO Office of Environmental Management for inclusion into the Administrative Record.

6046

JD-21486

Purchase Order No.: _____

Westinghouse Materials Company of Ohio

SPECIAL HEALTH, SAFETY & FIRE PROTECTION REQUIREMENTS

The following items as checked are applicable to this purchase order for work on-site by vendor. These items are in addition to the regulations contained in the Special Conditions, Form M-312.

APPLICABLE WHEN CHECKED

☑ 1. All vendor personnel, except non-working supervisory personnel, may be required to wear coveralls and safety shoes furnished by Westinghouse Materials Company of Ohio, and to follow prescribed change-out and showering procedures. All vendor personnel including non-working supervisory personnel shall wear safety helmets. The vendor shall be responsible for issuing Company-provided clothing to their employees and shall return clothing to the Company upon completion. Any loss of or damage, ordinary wear and tear expected, to such Company furnished items will be charged to the vendor. Laundering of such clothing will be by the Company.

☑ 2. Non-working vendor supervisory personnel may be required to wear smocks and shoe covers. The Company shall furnish clothing subject to the same conditions set forth in Item 1. above.

☐ 3. The vendor shall provide facilities which may be required for the storage of clothing, tools, etc., of their personnel in order to maintain the work site in a clean orderly manner as would be indicated by good housekeeping standards. The location of construction materials, tools, etc., within buildings shall be subject to the approval of the Company's representative. No construction materials, tools, etc., may be stored in such a manner as to interfere with flow of traffic, to create an exposure to buildings or equipment from fire or to present a safety hazard.

☑ 4. Attention is specifically called to "No Smoking" areas posted at various locations throughout the work site. All employees under the jurisdiction of the vendor must strictly adhere to the regulations governing these areas.

☑ 5. All vendor personnel shall wear safety glasses or other appropriate eye protection equipment as required. Goggles or safety glasses with side shields shall be worn by vendor personnel involved in drilling, chipping, or other activities which may produce flying particles or dust. Chemical protection goggles, when required will be furnished by the Company. All other goggles and welding helmets shall be furnished by the vendor.

☑ 6. Respiratory protection shall be used by vendor personnel when performing work in the presence of airborne contaminants as required to conform to the limits for airborne contaminants specified in OSHA Subpart Z.

☑ 7. Hearing protection shall be used by vendor personnel operating air hammers and by other workers whose noise level may exceed the limits specified in OSHA 1910.95, "Occupational Noise Exposure."

☑ 8. At times when it is necessary to barricade or "rope off" an area, all barricades, ropes, warning signs, etc., whether used in roadway or not, shall be in accordance with ANSI Standards D-6.1-1971 and will be furnished by the vendor.

☑ 9. The vendor shall provide approved life lines and safety belts in accordance with OSHA 1926-104 and ANSI-A10-14 for use at all times by vendor personnel engaged in securing or shifting thrustouts, inspecting or working on overhead machines supporting scaffolds or other high rigging and on steeply pitched roofs. Similarly, they shall be provided for and used by all workmen exposed to the hazard of falling, such as by window washers, riggers, or painters at work on poles or steel-frame construction more than 10 feet above solid ground or above a temporary or permanent floor or platform, or from boatswain chairs, swinging scaffolds or other unguarded locations.

This requirement shall not apply to the erection of hoists, towers, derricks, and scaffolds, nor to the erection of structural steel.

☑ 10. The use of ladders shall be in accordance with OSHA 1910-25 and 1910-26. Use of scaffolding shall be in accordance with OSHA 1926-451.

☑ 11. All insulation on pipes, ducts and other surfaces shall be presumed to contain asbestos unless marking or other evidence clearly prove the insulation to be asbestos-free. Asbestos-containing materials shall be cut, removed, bagged, and otherwise handled in accordance with the requirements contained in 29 CFR 1910-1001, 40 CFR 61, Subpart B, "National Emission Standards for Asbestos." During work involving asbestos, the work area shall be isolated and posted and workers in the isolated area shall wear suitable respiratory protection. The vendor will obtain a "Permit For Asbestos Work" from the Company's representative and must follow conditions specified in the permit.

☑ 12. The use of flammable or combustible liquids shall comply with NFPA #30, "Flammable & Combustible Liquids Code."

☑ 13. Vendor equipment shall be subject to inspection by the Company's representative prior to admission to the work site to be certain that such equipment complies with applicable safety standards. Where equipment requiring periodic testing, such as hoists, cranes, etc., are used, proof of such tests shall be provided by the vendor.

☑ 14. At the end of the month and at the close of work on this purchase order, the vendor shall submit to the Company a "Vendor's Monthly Accident Summary." This report shall include all items listed on the form to be furnished by the Company. The report must be received by the Procurement & Contracts Manager no later than the first work day of the following month. (See Exhibit A).

☑ 15. Other than first aid, as defined in OSHA reporting requirements, all injuries occurring to personnel employed by or under the control of the vendor must be reported on Form DOE EV-101, "Supplementary Record of Injury or Illness." (See Exhibit B).

☑ 16. The Company's representative shall decide if the vendor's tools and equipment must be monitored for radioactive contamination before removal from the work site.

000182

EXHIBIT A

INSTRUCTIONS: This Report must be submitted in DUPLICATE to the Plant Engineer, WMCO, on or before 4th working day of each month. Negative Report is required.

Westinghouse Materials Company of Ohio

INDUSTRIAL, RADIOLOGICAL SAFETY & HEALTH - SAFETY & FIRE

SUBCONTRACTORS/VENDORS MONTHLY ACCIDENT SUMMARY

(PERSONAL INJURIES, FIRES, VEHICLE ACCIDENTS)

NAME OF SUBCONTRACTOR/VENDOR.	NUMBER OF MINOR INJURIES (Not involving day away from work or work restriction)		DAYS LOST.	DAYS OF RESTRICTION	
TYPE OF OPERATION:	NUMBER OF MAJOR INJURIES (Including days away from work or work restrictions)		ESTIMATED DAMAGE OR LOSS		
			GOVT.:	OTHER:	TOTAL
MONTH AND YEAR OF REPORT.	NUMBER OF VEHICLE ACCIDENTS		$	$	$
			ESTIMATED DAMAGE OR LOSS		
DATE SUBMITTED.	NUMBER OF FIRES		GOVT.	OTHER.	TOTAL.
			$	$	$
LOCATION.	TOTAL		$	$	$

Total Employees for Month		TO BE COMPLETED BY WMCO SAFETY & FIRE	
		INCIDENCE RATE (LWDC)	
Total Hours Worked for Month		SEVERITY RATE	

LOST TIME INJURIES: (Brief description of accident including date & type of accident & name of injured)

FIRES: (Brief description of fire including date & type & property damage)

VEHICLE ACCIDENT: (Brief description of accident including date & type of accident & property damage)

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NO.	DISTRIBUTION OF COPIES
1	Safety and Fire *(RECORD COPY)*
2	Engineering

SUBCONTRACTOR/VENDOR SIGNATURE

FMPC-IRS&T-294 M-528 (REV 2/20/91)

ATTACHMENT 3

RECOVERABLE METAL DESCRIPTION

In May 1987, a Radioactively Contaminated Metal Segregation Project was completed at the Fernald Environmental Management Project. The goal of the project was to segregate recoverable metal from the material in the 5,000 ton scrap metal inventory that cannot be recovered or poses additional unwanted hazards during any future recovery activities. The inventory was segregated into six distinct categories:

	High Level (tons)	Low Level (tons)
Recoverable Ferrous	238	1,793
Recoverable Nonferrous	54	125
Refuse	222	2,168
Total	514	4,086

High level refers to waste that has fixed radioactive contamination levels in excess of the 200,000 dpm alpha/probe area. Recoverable metal is generally heavy and greater than 1/4 inch thick. Refuse was characterized as non-metals, mixed metal, metal with tenacious non-metal wrapping, dielectric materials, heavily rusted thin metals, etc.

Refuse disposition is ongoing and scheduled for completion during FY-1992. The recoverable metal is stacked in four piles on the Building 69 Pad in the northeast section of the process area. The pad is asphalt and the drainage is controlled by collection in the general sump at the Recovery Plant.

CONTRACT PRICING PROPOSAL COVER SHEET

NO. JD-21486 | 3000-0118

NOTE: This form is used in contract actions if submission of cost or pricing data is required. *(See FAR 15.804-6(b))*

1. NAME AND ADDRESS OF OFFEROR *(Include Zip Code)*

3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT

6046

3B. TELEPHONE NO.

4. TYPE OF CONTRACT ACTION *(Check)*

A. NEW CONTRACT	D. LETTER CONTRACT
B. CHANGE ORDER	E. UNPRICED ORDER
C. PRICE REVISION/ REDETERMINATION	F. OTHER *(Specify)*

5. TYPE OF CONTRACT *(Check)*

☐ FFP ☐ CPFF ☐ CPIF ☐ CPAF
☐ FPI ☐ OTHER *(Specify)*

6. PROPOSED COST *(A+B=C)*

A. COST	B. PROFIT/FEE	C. TOTAL
$	$	$

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is required unless otherwise specified by the Contracting Officer. *(Continue on reverse, and then on plain paper, if necessary. Use same headings.)*

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. RE

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING *(If available)*

A. CONTRACT ADMINISTRATION OFFICE

B. AUDIT OFFICE

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? *(If "Yes," identify)*

☐ YES ☐ NO

11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? *(If "Yes," complete Item 11B)*

☐ YES ☐ NO

11B. TYPE OF FINANCING *(If on*

☐ ADVANCE PAYMENTS ☐ PROGR PAYME

☐ GUARANTEED LOANS

12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? *(If "Yes," identify item(s), customer(s) and contract number(s))*

☐ YES ☐ NO

13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED EST MATING AND ACCOUNTING PRACTICES AND PROCEDURES AN(FAR PART 31 COST PRINCIPLES? *(If "No," explain)*

☐ YES ☐ NO

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA *(Public Law 91-379 as amended and FAR PART 30)*

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? *(If "No," explain in proposal)*

☐ YES ☐ NO

B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT *(CASB DS-1 or 2)?* *(If "Yes," specify in proposal the office to which submitted and if determined to be adequate)*

☐ YES ☐ NO

C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NON-COMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

☐ YES ☐ NO

D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

☐ YES ☐ NO

This proposal is submitted in response to the RFP contract, modification, etc in Item 1 and reflects our best estimates and/or actual costs as of this dat

15. NAME AND TITLE *(Type)*

16. NAME OF FIRM

17. SIGNATURE

000185

18. DATE OF SUBMISSION

NSN 7540-01-142-9845

1411-101

J4-1

STANDARD FORM 1411 (
Prescribed by GSA

WEMCO TRAINING REQUIREMENTS

The Training listed below represents the minimum required for Site Access.
Additional training may be required by the Task-Specific Health and Safety Plan.

				Controlled Areas		Contaminated Area Airborne Radioactivity Area /Exclusion Zone (a)
	Unescorted/ Escorted Visitor (b)	Personnel Making Deliveries (Truck Drivers)	Non-Hazardous Site Worker (c)	Occasional Site Worker (d)	Site Worker (d)	General Site Worker (d)
Site Orientation Videotape	●					
Health and Safety Plan Briefing and Applicable Emergency Procedures	●					
Safety Rules Handout (M-675)		● (e)				
General Safety			●	●	●	●
Portable Fire Extinguisher			●	●	●	●
You & OSHA			●	●	●	●
Radiation Safety Training			●	●	●	●
Radiation Safety Personal Monitoring			●	●	●	●
Radiation Worker Hands-On Training						●
Nuclear Criticality Safety			●	●	●	●
Respirator Training and Fit Testing				● (f)	● (f)	●
Energy Control Procedure Awareness (g)			●	●	●	●
Laboratory Chemical Hygiene Plan			● (h)	● (h)	● (h)	● (h)
Compliance Training Program Volume I (i)			4 Hours of Day-One Only	●	●	●
Compliance Training Program Volume II (i)				● (j)	● (j)	● (j)
Field Experience				8-Hour (k)	8-Hour (k)	24-Hour (l)
8-Hour Refresher Training (m)				●	●	●

DEFINITIONS OF ALL CATEGORIES

CONTROLLED AREA

Any area where individuals may be exposed to elevated levels of radiation or areas where radioactive material may be present.

CONTAMINATED AREA

Any area, room, or enclosure where surface contamination levels exceed ten times the levels specified in attachment 1 of DOE Order 5480.11.

AIRBORNE RADIOACTIVITY AREA (ARA)

Any room, enclosure or operating area where the concentration of airborne radioactive material equals or exceeds 1/10 of the DAC specified in attachment 1 of DOE Order 5480.11.

EXCLUSION ZONE

The area where contamination does or could occur. The primary activities performed in the Exclusion Zone are:

- site characterization, such as mapping, photographing, and sampling.
- installation of wells for groundwater monitoring.
- cleanup work, such as drum movement, drum staging, and materials excavation.

NON-HAZARDOUS SITE WORKER

These employees consist mainly of clerical, budgeting, or accounting employees and the employees who work in personnel functions. These employees' responsibilities normally do not require them to go into the waste sites.

OCCASIONAL SITE WORKER

These workers are onsite occasionally for a specific limited task such as observation, water monitoring, land surveying, or geophysical surveying. They are unlikely to be exposed over permissible exposure limits.

SITE WORKER

These workers are regularly onsite and work in areas which have been monitored and fully characterized indicating that exposure are under permissible exposure limits.

GENERAL SITE WORKER

These employees are onsite for the majority of their work time. They are equipment operators, general laborers, and others involved in operations with hazardous substances. These employees could be exposed daily to hazardous substances and are involved in planned clean-up activities.

Footnotes for WEMCO TRAINING REQUIEMENTS

(a) ONLY persons who have met the training requirements for General Site Worker may enter a Contaminated Area/Airborne Radioactivity Area/Exclusion Zone.

(b) Visitors may enter controlled areas provided their escort(s) have received, at a minimum, the training required for a Site Worker.

(c) Completion of this training entitles personnel to a TLD badge, however, additional training is required for entry into Controlled Areas and Contaminated Areas/Airborne Radioactivity Areas/Exclusion Zones.

(d) Managers and Supervisors shall have the same training as their employees. In addition, Managers and Supervisors who directly oversee hazardous waste operations are required to complete the 8-hour 29 CFR 1910.120 Supervisory Training.

(e) Escort required.

(f) If required by specific job activity or Task-Specific Health and Safety Plan

(g) Formerly referred to as "Lock and Tag Procedure". Facility owners, supervisors, alternative facility owners or anyone who operates or services equipment other than computers at the FMPC must receive the 3-hour Energy Control Procedure Training.

(h) Only required by Employees who work with chemicals requiring this training. This shall be determined by Industrial Hygiene and Safety on a case-by-case basis.

(i) Compliance Training Volume I = 24-Hour RCRA Training
Compliance Training Volume II = 29 CFR 1910.120 Training

(j) Subcontractors with proof of 29 CFR 1910.120 training are required to take Site Specific training which is determined on a case-by-case basis.

(k) Complete form FMPC-IRS&T-3232, "29 CFR 1910.120 Supervised Field Experience, Occasional Workers", and return to Centralized Training (Mail Stop 31).

(l) Complete form FMPC-IRS&T-3233, "29 CFR 1910.120 Supervised Field Service, General Site Workers", and return to Centralized Training (Mail Stop 31)

(m) Employees shall take the 8-Hour Refresher Training on an annual basis (365 days) after completion of initial 40-Hour Compliance Training Program.

PART IV
SECTION K
REPRESENTATIONS, CERTIFICATIONS AND INSTRUCTIONS

Representations and Certifications (Supply/Services)

Organizational Conflict of Interest Questionaire

Parent Company Control Disclosure

Foreign Ownership, Control, or Influence Over Contractor

Certificate of Current Cost or Pricing Data

REPRESENTATIONS AND CERTIFICATIONS
(Supply/Services)

6046

AND ADDRESS OF BIDDER.

Reference:

IFB Number _____

Date of IFB _____

In negotiated procurements, "bid" and "bidder" shall be construed to mean "offer" and "offeror." Invitation For Bids shall be construed to mean Request For Proposals.

The bidder makes the following representations and certifications as part of the bid identified above. **(CHECK OR COMPLETE ALL APPLICABLE SPACES OR BLOCKS.)**

1. **SMALL AND SMALL DISADVANTAGED BUSINESS CERTIFICATION**

(a) The bidder certifies that its organization ( ) **is,** ( ) **is not,** a small business concern as defined at Section 3 of the Small Business Act (15 U.S.C. 632 and SBA's rules and regulations set forth at 13 CFR 121.3-8). If an affirmative certification is made, the bidder shall complete the certifications at paragraph (b) and (c) of this section.

(b) The bidder certifies that its organization is a small business as set forth in paragraph (a) of this section and that it ( ) **is,** ( ) **is not,** owned and controlled by socially and economically disadvantaged individuals. Such a firm is defined as one:

(1) Which is at least 51 percentum owned by one or more such individuals or, in the case of publicly owned business, at least 51 percentum of the stock is owned by such individuals.

(2) Whose management and daily business operations are controlled by one or more such individuals; and

(3) Which certifies said ownership and control is by the following: (i) United States citizens who are Black Americans, Hispanic Americans, Native Americans, Asian Pacific Americans or other specified minorities; or (ii) Any other individual found to be disadvantaged pursuant to section 8(a) of the Small Business Act (15 U.S.C. 637).

(c) The bidder certifies that it ( ) **is,** ( ) **is not,** owned and controlled by United States citizens who are Black Americans, Hispanic Americans, Native Americans, Asian Pacific Americans, or other specified minorities, or that it ( ) **is,** ( ) **is not,** owned and controlled by any other individual found to be disadvantaged pursuant to section 8 (a) of the Small Business Act (15 U.S.C 637).

No bid may be properly considered without this certification and no award may be made without its being executed.

2. **SUBCONTRACTING PLANS** (Applicable only if the total amount bid exceeds $500,000)

(a) The following conditions prevail which determine whether he shall be required to submit a subcontracting plan for small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals:

(1) He ( ) **is** a small business as defined in accordance with 13 CFR, Part 121, of the SBA regulations;

(2) Sub-contracting possibilities ( ) **are not** offered with respect to this sub-subcontract;

(3) The subcontract is not expected to exceed $500,000 ( ).

(b) He ( ) **is not** required to submit plans for subcontracting with small and small disadvantaged businesses because he has properly executed one or more of the above representations.

3 **CONTINGENT FEE**

(a) He ( ) **has,** ( ) **has not,** employed or retained any company or person (other than a full-time bona fide employee working solely for the bidder) to solicit or secure this subcontract, and

(b) He ( ) **has,** ( ) **has not,** paid or agreed to pay any company or person (other than a full-time bona fide employee working solely for the bidder) any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this subcontract; and agrees to furnish information relating to (a) and (b) above as requested by the Contractor. (For interpretation of the representation, including the term "bona fide employee," see Code of Federal Regulations, Title 41, Subpart 1-1.5.)

4. **PREVIOUS CONTRACTS AND COMPLIANCE REPORTS** (Applicable if bid exceeds $10,000).

The bidder represents that —

(a) He ( ) **has,** ( ) **has not,** participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;

(b) He ( ) **has,** ( ) **has not,** filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

5. **AFFIRMATIVE ACTION** (Applicable if bid exceeds $10,000).

(a) He ( ) **has,** ( ) **has not,** developed an affirmative action compliance program for each of his establishments. (See 41 CFR 60-1.40 and 60-2).

(b) If such a program has not been developed the bidder will complete the following: He ( ) **does,** ( ) **does not,** employ more than 50 employees and He ( ) **has,** ( ) **has not,** been awarded a contract subject to Executive Order 11246 in the amount of $50,000 or more since July 1, 1968. If such a contract has been awarded since July 1, 1968, give the date of such a contract, but do not list contracts awarded within the last 120 days prior to the date of this representation.

6. **REGULAR DEALER-MANUFACTURER** (Applicable to supply subcontracts exceeding $10,000).

He ( ) **is a regular dealer in,** ( ) **manufacturer of,** the supplies bid upon.

7. **WOMAN-OWNED BUSINESS** (Applicable if bid exceeds $10,000).

The bidder certifies that the concern ( ) **is,** ( ) **is not,** a woman-owned business. A woman-owned business is a business which is at least 51 percent owned, controlled, and operated by a woman or women. "Controlled" is defined as exercising the power to make policy decisions. "Operated" is defined as actively involved in the day-to-day management.

For the purposes of this definition, businesses which are publicly owned, joint stock associations, and business trusts are exempted. Exempted businesses may voluntarily represent that they are, or are not, women-owned if this information is available.

8. **CLEAN AIR AND WATER**

(Applicable if the bid or offer exceeds $100,000, or the Company has determined that orders under an indefinite quantity subcontract in any year will exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857C-8 (c) (1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319 (c)), is listed by EPA, or is not otherwise exempt.)

The bidder certifies as follows:

(a) Any facility to be utilized in the performance of this proposed subcontract ( ) **has,** ( ) **has not,** been listed on the Environmental Protection Agency List of Violating Facilities.

(b) He will promptly notify the contractor, prior to award, of the receipt of any communication from the Director, Office of Federal Activities, Environmental Protection Agency, indicating that any facility which he proposes to use for the performance of the subcontract is under consideration to be listed on the EPA List of Violating Facilities.

(c) He will include substantially this certification, including this paragraph (c), in every nonexempt subcontract.

9. **BUY AMERICAN CERTIFICATE**

The bidder hereby certifies that each end product, except the end products listed below, is a domestic source end product (as defined in the clause entitled "Buy American Act"); and that components of unknown origin have been considered to have been mined, produced, or manufactured outside the United States.

Excluded end Products	Country of Origin

10. **PERCENT OF FOREIGN CONTENT** (Applicable if bid exceeds $10,000).

The bidder/subcontractor will represent (as an estimate), immediately after the award of a subcontract, the percent of foreign content of the item or service being procured expressed as a percent of the subcontract award price (accuracy within plus or minus 5 percent is acceptable).

NOTE: If the bidder is awarded a contract in excess of $10,000 as a result of this solicitation, it will be requested to identify its Principal Place of Performance and its DUNS number if one has been assigned.

11. **CERTIFICATION OF NONSEGREGATED FACILITIES** (Applicable to (1) contracts, (2) subcontracts, and (3) agreements with applicants who are themselves performing federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause.)

By the submission of this bid, the bidder, offeror, applicant or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this subcontract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of color, race, religion or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is no exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for a subcontracts during a period (i.e. quarterly, semiannually, or annually).

12. **COST ACCOUNTING STANDARDS (Applicable to negotiated procurements only)**

(a) **Exemption For Contracts of $500,000 or Less**

If this proposal is expected to result in the award of a contract of $500,000 or less, the offeror shall indicate whether th exemption to the Cost Accounting Standards clause under the provisions of 4 CFR 331.30(b) (8) is claimed. Failure to chec the box below shall mean that the resultant subcontract is subject to the Cost Accounting Standards clause or that the offer elects to comply with such clause.

☐ The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 4 CFR 331.: (b) (8) and certifies that he has received notification of final acceptance of all deliverable items on (i) all prime contracts subcontracts in excess of $500,000 which contain the Cost Accounting Standards clause, and (ii) all prime contracts subcontracts of $500,000 or less awarded after January 1, 1975, which contain the Cost Accounting Standards claus The offeror further certifies he will immediately notify the Contractor in writing in the event he is awarded any oth contract or subcontract containing the Cost Accounting Standards clause subsequent to the date of this certificate t prior to the date of any award resulting from this proposal.

(b) **Cost Accounting Standards Eligibility For Modified Contract Coverage**

If the offeror is eligible to use the modified provisions of 4 CFR Part 332, and elects to do so, he shall indicate by checking box below. Checking the box below shall mean that the resultant contract is subject to the Disclosure and Consistency of C Accounting Practices clause in lieu of the Cost Accounting Standards clause.

☐ The offeror hereby claims an exemption from the Cost Accounting Standards clause under the provisions of 4 C 331.30 (b) (2) and certifies that he is eligible for use of the Disclosure and Consistency of Cost Accounting Practi clause because (i) during his cost accounting period immediately preceding the period in which this proposal v submitted, he received less than $10 million in awards of CAS-covered national defense prime contracts a subcontracts and (ii) the sum of such awards equaled less than 10 percent of his total sales during that cost accounting per

The offeror further certifies that if his status changes prior to an award resulting from this proposal, he will adv Contractor immediately.

CAUTION: Offerors may not claim the above eligibility for modified contract coverage if this proposal is expected to result in the award of a contract of $10 million or more, or if, during their current cost accounting period, they have been awarded a single CAS-covered national defense prime contract or subcontract of $10 million or more.

(c) **Additional Cost Accounting Standards Applicable to Existing Contracts**

The offeror shall indicate below whether award of the contemplated contract would, in accordance with paragraph (a) (3) of the Cost Accounting Standards clause, require a change in his established cost accounting practices affecting existing contracts and subcontracts.

☐ **Yes** ☐ **No**

NOTE: If the offeror has checked "Yes" above, and is awarded the contemplated contract, he will be required to comply with the administration of Cost Accounting Standards clause.

(d) **Disclosure Statement - Cost Accounting Practices and Certification**

Any contract in excess of $100,000 resulting from this solicitation except (1) when the price negotiated is based on (a) establishec catalog or market prices of commercial items sold in substantial quantities to the general public, or (b) prices set by law o regulation; (2) contracts awarded to small business concerns (as defined in FAR 19.1); or (3) contracts which are otherwise exempt (see CFR 331.30 (b)), shall be subject to the requirements of the Cost Accounting Standards Board. Any offero submitting a proposal which if accepted, will result in a contract subject to the requirement of the Cost Accounting Standard Board must, as a condition of contracting, submit a Disclosure Statement as required by regulations of the Board. The Disclosur Statement must be submitted as part of the offeror's proposal under this solicitation (see (A) below) unless; (1) the offeror together with all divisions, subsidiaries, and affiliates under common control, did not receive net awards exceeding the monetar exemption for disclosure as established by the Cost Accounting Standards Board (see (B) below); (2) the offeror exceeded th monetary exemption in his cost accounting period immediately preceding the cost accounting period in which this propr submitted, but, in accordance with the regulations of the Cost Accounting Standards Board, is not yet required to Disclosure Statement (see (C) below); (3) the offeror has already submitted a Disclosure Statement disclosing the practices use in connection with the pricing of this proposal (see (D) below); or (4) postaward submission has been authorized by th Contractor. See 4 CFR 351.70 for submission of a copy of the Disclosure to the Cost Accounting Standards Board.

CAUTION: A practice disclosed in a Disclosure Statement shall not, by virture of such disclosure, be deemed to be a prope approved, or agreed-to practice for pricing proposals or accumulating and reporting contract performance cost dat

Check the appropriate box below:

☐ (A) CERTIFICATE OF CONCURRENT SUBMISSION OF DISCLOSURE STATEMENT(S). The offeror hereby certifies that has submitted, as part of his proposal under this solicitation, copies of the Disclosure Statement as follows: (i) original and o copy to the cognizant Contracting Officer (Administrative Contracting Officer (ACO)), see DOD Directory of Contra Administration Components (DOD 4105.59H); and (ii) one copy to the cognizant Contract Auditor.

DATE OF DISCLOSURE STATEMENT(S)	NAME(S) AND ADDRESS(ES) OF COGNIZANT ACO(S) WHERE FILED

The offeror further certifies that practices used in estimating costs in pricing this proposal are consistent with the cost account practices disclosed in the Disclosure Statement(s).

☐ (B) CERTIFICATE OF MONETARY EXEMPTION. The offeror hereby certifies that he, together with all divisions, subsid and affi er common control, did not receive net awards of negotiated national defense totaling more than $1 his cost accounting immediately preceding the period in which this proposal was submitted. The offeror furth that if his status chang rior to an award resulting from this proposal he will advise the Contractor immediately.

CAUTION: Offerors who submitted a Disclosure Statement under the filing requirements previously established by the Cost Accounting Standards Board may claim this exemption only if the dollar volume of CAS-covered national defense prime contract and subcontract awards in their preceding cost accounting period did not exceed the $10 million. Such offerors will continue to be responsible for maintaining the disclosure statement and following the disclosed practices on CAS-covered prime contracts and subcontracts awarded during the period in which a disclosure statement was required.

☐ (C) CERTIFICATE OF INTERIM EXEMPTION. The offeror hereby certifies that (i) he first exceeded the monetary exemption for disclosure, as defined in (B) above, in his cost accounting period immediately preceding the cost accounting period in which this proposal was submitted, and (ii) in accordance with the regulations of the Cost Accounting Standards Board (4CFR 351.40 (f)), he is not yet required to submit a Disclosure Statement. The offeror further certifies that if an award resulting from this proposal has not been made within 90 days after the end of that period, he will immediately submit a revised certificate to the Contractor, in the form specified under (A) above or (D) below, as appropriate, to verify his submission of a completed Disclosure Statement.

CAUTION: Offerors may not claim this exemption if they are currently required to disclose because they were awarded a CAS-covered national defense prime contract or subcontract of $10 million or more in the current cost accounting period. Further, the exemption applies only in connection with proposals submitted prior to expiration of the 90-day period following the cost accounting period in which the monetary exemption was exceeded.

☐ (D) CERTIFICATE OF PREVIOUSLY SUBMITTED DISCLOSURE STATEMENT(S). The offeror hereby certifies that the Disclosure Statement(s) were filed as follows:

Date of Disclosure Statement(s) _____

Name(s) and Address(es) of cognizant Contracting officer(s) (ACO's)) where filed:

_____

_____

The offeror further certifies that practices used in estimating costs in pricing this proposal are consistent with the cost accounting practices disclosed in the Disclosure Statement(s).

13. **TYPE OF BUSINESS ORGANIZATION**
He operates as **( ) an individual, ( ) a partnership, ( ) a non profit organization, ( ) a corporation, incorporated unde the laws of the State of** _____.

14. **CERTIFICATION AS TO PROPRIETARY DATA WHICH MAY BE WITHHELD** (Applicable to Negotiated Procurements Only).

If this procurement contemplates the delivery of technical data, the offeror certifies that he has reviewed the statement of work t be performed and the known requirements for technical data as set forth in the solicitation or contract documents furnished i connection with this RFP, and states that to the best of his knowledge:

(a) ( ) No technical data will be withheld as proprietary; or

(b) ( ) The enclosed list identifies the proprietary data which will, to the best of his knowledge, likely be used in the contract wor and withheld from delivery as proprietary under the provisions of the Rights in Technical Data clause of the proposed contra document; and

(c) ( ) The following pages of his proposal contain data claimed to be trade secrets or privileged commercial or financi information which he desires DOE to retain in confidence even after a contract is awarded to him:

_____

_____

_____

15. **DISCLOSURE STATEMENT REGARDING ORGANIZATIONAL CONFLICTS OF INTEREST** (Applicable to negotiated procurements only)

(a) Pursuant to DEAR 909.570, it is DOE policy to avoid situations which place an offeror in a position where its judgment may be cause of any present or planned interest, financial or otherwise, the offeror may have which relates to the work to be performed pursuant to this solicitation, or where the offeror's performance of such work may provide it with an unfair competitive advantage. (As used herein, "offeror" means the proposer or any of its affiliate organizations or proposed subcontractors). Therefore, by submission of this offer, the offeror certifies to the best of his knowledge and belief that he **( ) has, ( ) does not have,** an interest as described above.

(b) If such an interest exists, provide in the following space a concise statement of all relevant facts concerning said interest (financial, contractual, organizational or otherwise) relating to the work to be performed hereunder and bearing on whether the offeror has a possible conflict of interest with respect to (i) being able to render impartial, technically sound, and objective assistance or advice, or (ii) being given an unfair competive advantage.

_____

_____

_____

Signature hereunder applies to all Certifications and Representations contained on this form.

Firm: _____

By: _____

Title: _____

Date: _____

Name of Person or Organization: _____

OCI QUESTIONNAIRE

Contract/Proposal/RFP No. DE-_____

1. Will you (or your organization) be involved in the performance of any portion of proposed work?

[] No.

[] Yes. The portion of the proposed work, the proposed hours and dollar value, and the type of involvement are fully disclosed on the attached pages.

2. What is (are) the major type(s) of business conducted by you (or your organization)? Please reply on the attached pages.

3. Do you (or your organization) have any affiliates?*

[] No.

[] Yes. The name and a description of the major type(s) of business that each affiliate conducts is disclosed on the attached pages.

4. Will any of the following be involved in performing the proposed work: (a) any entities owned or represented by you (or your organization); (b) your organization's Chief Executive, any of its directors, or (c) any affiliates?*

[] No.

[] Yes. A full disclosure and discussion is given in the attached pages.

5. Are you (or your organization) an energy concern?*

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

6. Do you (or your organization) have a direct or indirect relationship (financial, organizational, contractual, or otherwise) with any business entity which could be affected in any way by the proposed work?

[] No.

Name of Person or Organization: _____

OCI QUESTIONNAIRE
(Continued)

[] Yes. List the business entity(ies) showing the nature of your relationship and how it would be affected by the proposed work.

7. What percentage of your total income for the current and preceding fiscal year resulted from arrangements with any of the entities identified in Question 6 above?

__% For the current fiscal year--lasting from __/__/__ to __/__/__.

__% For the preceding fiscal year--lasting from __/__/__ to __/__/__.

8. Do you (or your organization) currently have or have you had during the past six (6) years any arrangements (for example, contracts and cooperative agreements) awarded, administered, or funded--wholly or partly--by the Department of Energy or any other Federal Agency which relate to the proposed Statement of Work.

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

9. Do you (or your organization) have or have you ever had any contracts, agreements, special clauses, or other arrangements which prohibit you (or your organization) from proposing work to be performed in this solicitation or any portion thereof?

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

10. Do you (or your organization) have any involvement with or interest (direct or indirect) in technologies which are or may be subjects of the contract, or which may be substitutable for such technologies?

Name of Person or Organization: _____

OCI QUESTIONNAIRE
(Continued)

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

11. Could you (or your organization) in either your private or Government business pursuits utilize information acquired in the performance of the proposed work, such as:

(a) Data generated under the contract?

(b) Information concerning DOE plans and programs?

(c) Confidential and proprietary data of others?

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

12. Under the proposed work, will you (or your organization) evaluate or inspect your own services or products, or the services or products of any other entity that has a relationship (e.g., client, organizational, financial, or other) with you (or your organization). This could include evaluating and inspecting a competitor's goods and services.

[] No.

[] Yes. A full disclosure and discussion is given on the attached pages.

13. To avoid what you perceive as a possible organizational conflict of interest, do you (or your organization) propose to: exclude portions of the proposed work, employ special clauses, or take other measures?

[] No.

[] Yes. A full discussion is given on the attached pages.

[] No possibility of an organizational conflict of interest is perceived. This answer is briefly justified on the attached pages.

I hereby certify that I have the authority to represent my organization, if applicable, and that--to the best of my knowledge and belief--the facts and representations presented on the 3 pages of this questionnaire and on the ___pages of the attachment to it are accurate and complete.

Signature: _____ Date: _____

Name: _____ Organization: _____

Title: _____ _____

_____

*See definitions in this attachment.

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ATTACHMENT TO _____

The information requested by this attachment is required to comply with Executive Order 10936, dated April 24, 1961 (3CFR466).

Parent Company and Employer Identification Number. Each bidder will furnish the following information by filling the appropriate blocks:

(A) Is the bidder owned or controlled by a parent company as described below?

☐ Yes ☐ No

(For the purpose of this bid, a parent company is a company which either owns or controls the activities and basic business policies of the bidder. To own another company means the parent company must own at least a majority (more than 50%) of the voting rights in that company. To control another company, such ownership is not required; if another company is able to formulate, determine, or veto basic business policy decisions of the bidder, such other company is considered the parent company of the bidder. This control may be exercised through the use of dominant minority voting rights, use of proxy voting, contractual arrangements, or otherwise.)

(B) If the answer to (A) above is "Yes," bidder shall insert in the space below the name and main office address of the parent company.

_____
(NAME)

_____
(ADDRESS)

(C) Bidder shall insert in the applicable space below, if he has no parent company, his own employer's identification number (E.I. No.) (Federal Social Security number used on employer's quarterly Federal Tax Return, U.S. Treasury Department Form 941), or, if he has a parent company, the E.I. No. of his parent company.

BIDDER'S E.I. NO.: _____

PARENT COMPANY'S E.I. NO.: _____

_____
(NAME OF BIDDER)

_____
(ADDRESS OF BIDDER)

By: _____

Title: _____

CERTIFICATION

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FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE OVER CONTRACTOR

(a) For purposes of this provision, a foreign interest is defined as any of the following:

(1) A foreign government or foreign government agency;

(2) Any form of business enterprise organized under the laws of any country other than the United States or its possessions;

(3) Any form of business enterprise organized or incorporated under the laws of the U.S. or a State or other jurisdiction with the U.S., which is owned, controlled, or influenced by a foreign government, agency, firm, corporation, or person, or;

(4) Any natural person who is not a U.S. citizen.

(b) Foreign ownership, control, or influence (FOCI) means the situation where the degree of ownership, control, or influence over a contractor by a foreign interest is such that a reasonable basis exists for concluding that compromise of classified information or a significant quantity of special nuclear material as defined in 10 CFR Part 710 may result.

(c) If the offeror/bidder has not previously submitted responses to the following questions to DOE as part of the facility security clearance process, then it shall answer the following questions. Answer each question in either the "yes" or "no" column. If the answer is yes, furnish in detail on a separate sheet of paper all the information requested in parentheses. Copies of information which responds to these questions and which was submitted to other government agencies may be submitted as responses to these questions if the earlier responses are accurate, complete, and current.

QUESTIONS	YES	NO
1. **Does a foreign interest own or have beneficial ownership in 5% or more of your organizations securities?** *(Identify the percentage of any class of shares or other securities issued which are owned by foreign interests, listed by country. If you answer "Yes" and have received from an investor a copy of Schedule 13D and/or Schedule 13G filed by the investors with the Securities and Exchange Commission, you are to attach a copy of Schedule 13D and/or Schedule 13G.)*		
2. **Does your organization own 10% or more of any foreign interest?** *(Furnish the name of the foreign interest, address by country, and the percentage owned. Include name and title of officials of your organization who occupy positions with the foreign interest, if any.)*		
3. **Do any foreign interests have management positions such as directors, officers, or executive personnel in your organization?** *(Furnish full information concerning the identity of the foreign interest and the position he/she holds in your organization.)*		
4. **Does any foreign interest control or influence, or is any foreign interest in a position to control or influence the election, appointment or tenure of any of your directors, officers, or executive personnel?** *(Identify the foreign interest(s) and furnish full details concerning the control or influence.)*		
5. **Does your organization have any contracts, binding agreements, understandings, or arrangements with a foreign interest(s) that cumulatively represent 10% or more of your organization's gross income?** *(Furnish the name of the foreign interest, country, nature of agreement or involvement. Agreements include licensing, sales, patent exchange, trade secrets, agency, cartel, partnership, joint venture, proxy, etc. Give overall percentage by country as related to total income and type of services or products in general terms. If you answer "Yes" and have received from the foreign interest a copy of Schedule 13D and/or Schedule 13G filed by the foreign interest with the Securities and Exchange Commission, you are to attach a copy of Schedule 13D and/or Schedule 13G.)*		
6. **Is your organization indebted to foreign interests?** *(Furnish the amount of indebtedness as related to the current assets of the organization and identify the creditor. Include specifics as to the type of indebtedness and what, if any, collateral, including voting stock, has been furnished or pledged. If any debentures are convertible, specifics about the indebtedness, collateral, if any, and what will be received after conversion, are to be furnished.)*		
7. **Does your organization derive any income from Communist countries included in country groups P, Q, W, Y, and Z in Supplement No. 1 to CFR Part 370?** *(Discuss in detail any income derived from Communist countries, including percentage from each such country as related to total income, and the type of services or products involved.)*		
8. **Is 5% or more of any class of your organization's securities held in "nominee shares," in "street names," or in some other method which does not disclose beneficial owner of equitable title?** *(Identify each foreign institutional investor holding 5 percent or more of the voting stock. Identification should include the name and address of the investor and percentage of stock held. State whether the investor has attempted to, or has, exerted any management control or influence over the appointment of directors, officers, or other key management control or influence over the appointment of directors, officers, or other key management personnel, and whether such investors have attempted to influence the policies of the corporation. If you have received from the investor a copy of the Schedule 13D and/or Schedule 13G filed by the investor with the Securities and Exchange Commission, you are to attach a copy of Schedule 13D and/or Schedule 13G.)*		
9. **Does your organization have interlocking directors with foreign interests?** *(Include indentifying data on all such directors. If they have a security clearance, so state. Also indicate the name and address of all other corporations with which they serve in any capacity.)*		
10. **Are there citizens of foreign countries employed by, or who may visit, your offices or facilities in a capacity which may permit them to have access to classified information or a significant quantity of special nuclear materal?** *(Provide complete information by identifying the individuals and the country of which they are citizens.)*		
11. **Does your organization have foreign involvement not otherwise covered in your answers to the above questions?** *(Describe the foreign involvement in detail, including why the involvement would not be reportable in the preceding questions.)*		

NOTE: In the event any of the above questions are answered "YES," a determination from the DOE Contracting Officer will be required prior to award.

CERTIFICATION

☐ The offeror/bidder certifies that the entries made above are accurate, complete, and current to the best of my knowledge and belief and are made in good faith.

☐ The offeror/bidder certifies that the information requested above has previously been submitted to DOE as required for a facility security clearance and that the previously submitted information is accurate, complete, and current.

Date Certified _____

By: _____

Offeror/Bidder: _____

Title: _____

Address: _____

Signature and Date: _____

(Continued on Reverse)

CERTIFICATION
(CONTINUED)

FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE OVER CONTRACTOR

(d) Prior to award of a contract under this solicitation, the DOE must determine that award of the contract to the offeror/bidder will not pose an undue risk to the common defense and security as a result of its access to classified information or a significant quantity of special nuclear material in the performance of contract. In making the determination, the Contracting Officer may consider a voting trust or other arrangements proposed by the offeror/bidder to mitiga avoid FOCI. The Contracting Officer may require the offeror/bidder to submit such additional information as deemed pertinent to this determination.

(e) The offeror/bidder shall require any subcontractors having access to classified information or a significant quantity of special nuclear material to submit the certifications in (c) above directly to the Buyer.

(f) Information submitted by the offeror/bidder in response to the questions in (c) above is to used solely for purposes of evaluating foreign ownership, control, or influence and shall be treated by WMCO/DOE, to the extent permitted by law, as business or financial information submitted in confidence.

FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE OVER CONTRACTOR

(a) For purposes of this provision, a foreign interest is defined as any of the following:

(1) A foreign government or foreign government agency;

(2) Any form of business enterprise organized under the laws of any country other than the United States or its possessions;

(3) Any form of business enterprise organized or incorporated under the laws of the U.S., or a State or other jurisdiction with the U.S., which is owned, controlled, or influenced by a foreign government, agency, firm, corporation, or person;

(b) Foreign ownership, control, or influence (FOCI) means the situation where the degree of ownership, control, or influence over a Contractor by a foreign interest is such that a reasonable basis exists for concluding that compromise of classified information or special nuclear material as defined in 10 CFR Part 710 may result.

(c) For purposes of this clause, subcontractor means any subcontractor at any tier and the term Contracting Officer shall mean DOE Contracting Officer. When this clause is included in a subcontract, the term "Contractor" shall mean subcontractor and the term "contract" shall mean subcontract. The term "Buyer" shall mean WMCO Procurement.

(d) The Contractor shall immediately provide the Buyer written notice of any changes in the extent and nature of FOCI over the Contractor which would affect the answers to the questions presented in DEAR 952.204-73. Further, notice of changes in ownership or control which are required to be reported to the Securities and Exchange Commission, the Federal Trade Commission, or the Department of Justice shall also be furnished concurrently to the Buyer.

(e) In those cases where a Contractor has changes involving FOCI, the DOE must determine whether the changes will pose an undue risk to the common defense and security. In making this determination, the Contracting Officer shall consider proposals made by the Contractor to avoid or mitigate foreign influences.

(f) If the Contracting Officer at any time determines that the Contractor is, or is potentially, subject to FOCI, the Contractor shall comply with such instructions as the Contracting Officer shall provide in writing to safeguard any classified information or significant quantity of special nuclear material.

(g) The Contractor agrees to insert terms that conform substantially to the language of this clause including this paragraph (g) in all subcontracts under this contract that are expected to require access to classified information or special nuclear material. Additionally, the Contractor shall require such subcontractors to submit a completed certification required in DEAR 952.204-73 prior to award of a subcontract. Information to be provided by a subcontractor pursuant to this clause may be submitted directly to the Buyer.

(h) Information submitted by the Contractor or any affected subcontractor as required pursuant to this clause shall be treated by WMCO/DOE to the extent permitted by law, as business or financial information submitted in confidence to be used solely for purposes of evaluating FOCI.

(i) The requirements of this clause are in addition to the requirement that a Contra obtain and retain the security clearances required by the contract. This clause shall not operate as a limitation on WMCO/DOE's rights, including its rights to terminate this contract.

(j) The Buyer may terminate this contract for default either if the Contractor fails to meet obligations imposed by this clause, e.g., provide the information required by this clause, comply with the Buyer's instructions about safeguarding classified information, or make this clause applicable to subcontractors, or if, in the Buyer's judgment, the Contractor creates an FOCI situation in order to avoid performance or a termination for default.

The Buyer may terminate this contract for convenience if the Contractor becomes subject to FOCI and for reasons other than avoidance of performance of the contract, cannot, or chooses not to, avoid or mitigate the FOCI problem.

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CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that, to the best of my knowledge and belief, the cost or pricing data (as defined in Section 15.801 of the Federal Acquisition Regulation (FAR) and required under FAR Subsection 15.804-2) submitted, either actually or by specific identification in writing to Westinghouse Materials Company of Ohio (WMCO) in support of *_____

_____

are accurate, complete, and current as of **_____.

This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between the Offeror and WMCO that are part of the proposal.

FIRM _____

NAME _____

TITLE _____

DATE OF EXECUTION *** _____

* Identify the proposal, quotation, request for price adjustment, or other submission involved, giving the appropriate identifying number. (e.g., RFP No.).

** Insert the day, month, and year when price negotiations were concluded and price agreements were reached.

*** Insert the day, month, and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed to.

PART IV
SECTION L
INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

L.1 GENERAL

The Offeror's proposal for the Westinghouse Environmental Management Company of Ohio (WEMCO) Request for Proposal to **Process and Dispose of Non-RCRA Scrap Metal** shall be prepared in accordance with the information provided below. Specific responses to WEMCO's requirements are necessary to enable WEMCO to evaluate the offeror's understanding of, and capability to accomplish, the stated objectives. Throughout its proposals, the offeror shall provide sufficient detail to substantiate the validity of all stated claims, comments or positions. All proposed concepts must be shown to be technically feasible and achievable within the allotted limitations, and all performance and schedule (if any) requirements must be shown to be realistic. In order that the technical evaluation be accomplished strictly on the merit of documentation submitted, dollar costs shall be submitted in accordance with instructions herein, and non-conformance with the specified content may be cause for rejection of the proposal. Offeror's proposal shall be valid for 180 calendar days from the hour and date set for receipt of proposals. **PROPOSALS OFFERING LESS THAN 180 CALENDAR DAYS MAY BE REJECTED.** Offeror's response shall correspond to the requirements of this request for proposal, unless otherwise specified in writing by WEMCO.

L.2 FORMAL COMMUNICATIONS

This is a competitive solicitation. As such, formal communications such as Requests for Clarification and/or information concerning this solicitation shall be submitted in writing to the address below:

Westinghouse Environmental Management Company of Ohio, Inc.
Attn: Mr. John L. Davis, III, Contract Administrator
Contracts
P. O. Box 398704
Cincinnati, OH 45239-8704

NO INFORMATION CONCERNING THIS SOLICITATION OR REQUESTS FOR CLARIFICATION WILL BE PROVIDED IN RESPONSE TO TELEPHONE CALLS.

All such inquiries must be submitted in writing to the above address. Written inquiries will be answered in writing and provided to all potential offerors. However, because of mailing time, no such written inquiries will be answered when requests are received within seven calendar days of the due date of offers as specified in this solicitation.

PART IV
SECTION L
INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

THERE WILL BE NO COMMUNICATIONS WITH OFFERORS AFTER THE TIME AND DATE SPECIFIED IN THE CONTRACT ADMINISTRATOR'S REQUEST FOR "BEST AND FINAL" OFFERS.

L.3 PRE-PROPOSAL CONFERENCE

A pre-proposal conference will be held on November 22, 1991, at 10:00 A.M., Cincinnati, Ohio time, at "The Plantation" Conference Center, Harrison, Ohio, appproximately 15 miles from the FEMP. The purpose of the pre-proposal conference is to clarify any questions the prospective offer may have regarding the solicitation.

Offeror shall also include any question(s) regarding the solicitation. The format of the questions shall follow the sequential numbering of this solicitation's sections and paragraphs and shall state the major paragraph heading. For example:

REFERENCE: Section C, paragraph C.6, ENVIRONMENTAL REQUIREMENTS

. (question)

REFERENCE: Section H, paragraph H.7, REQUIRED INSURANCE

Questions in a format other than that which is described above will be disregarded. Questions will not be received after December 2, 1991.

L.4 SOLICITATION AMENDMENTS

WEMCO reserves the right to update this RFP by amendment(s) up to the award date. Amendments may be in the areas such as statement of work, specifications, inventory lists and/or terms and conditions. Amendments will be sent to only those offerors who submit a proposal.

L.5 ACKNOWLEDGEMENT OF AMENDMENTS

If this Request for Proposal is amended, you must acknowledge receipt of all amendments (by number and date) in your proposal transmittal letter.

L.6 CLASSIFIED MATERIAL

Classified material shall not be included in your proposal; nor will any form of classified material be accepted by WEMCO for this proposal.

L.7 DEFINITIONS

As used throughout this Request for Proposal and all enclosures and attachments, the terms "Offeror," "Proposer," "Bidder," "Seller,"

"Subcontractor," and "Contractor" shall mean the firm/individual submitting a proposal pursuant to this Request for Proposal. The terms "Subcontract" and/or "Contract" shall mean the document entered into by the successful proposer and WEMCO.

L.8 SOURCE SELECTION EVALUATION TEAM

Proposal evaluation will be in accordance with WEMCO's formal source selection procedures. Proposals will be evaluated by a source Selection Evaluation Team focusing on Management, Technical and Price Areas. These areas will be evaluated to provide the information necessary for the Source Selection Authority (SSA) to select the Subcontractor for the Processing and Disposal of Scrap Metal.

L.9 ORAL PRESENTATIONS

Oral presentations may be required from any or all of the offerors determined to be in the competitive range. Oral discussions will be held at the offeror's facility. Offeror's will be notified of the time and place for such presentation.

L.10 SUBCONTRACT AWARD

Award may be made without discussion of proposals received. Proposals should therefore be submitted initially on the most favorable technical and price standpoint. Award of the subcontract resulting from this solicitation will be made to the offeror whose proposal is judged to represent the greatest value to WEMCO and the Government in terms of technical capability and lowest total price. WEMCO reserves the right to determine that a proposal is technically unacceptable and incapable of being made acceptable without major revision or change. Such proposals will be rejected without reviewing cost factors.

L.11 PRE-AWARD SITE VISIT

After receipt of the recommendations of the Source Evaluation Board (SEB), Source Selection Authority (SSA) may order a pre-award survey to be conducted to evaluate one or more offeror's Quality Assurance program applicable to the analytical or other services proposed to be performed Such evaluation may include but will not necessarily be limited to an inspection of an offeror's special process controls, management control systems (financial and schedule) and, if applicable, material storage and handling procedures. In addition, because Government property may be furnished, an offeror's property control system may also be evaluated. Those offeror(s) selected for a pre-award survey will be notified in writing. The conduct of a pre-award survey does not constitute a commitment by WEMCO to award a subcontract.

PART IV
SECTION L
INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

L.12 PRE-AWARD EQUAL OPPORTUNITY COMPLIANCE REVIEWS

Where the bid (or offer) of the apparent low-responsible bidder (or offeror) is in the amount of $1 million or more, the bidder (or offeror) and its known subcontractors that will be awarded subcontracts of $1 million or more will be subject to full, pre-award equal opportunity compliance reviews before award for the purpose of determining whether the offeror and its subcontractors are able to comply with the provisions of the equal opportunity clause.

L.13 SUBMISSION OF PROPOSALS

Proposal Due Date: Proposal must be received on or before December 20, 1991, at 3:00 P.M., Cincinnati, Ohio time. The original proposals must be signed by a representative of the offeror authorized to legally bind the company . Envelopes containing proposals should be marked "Technical/Management", or "Cost" along with the RFP number : JD-21479 clearly identified on each outer cover in the lower right hand corner. COST PROPOSALS SHALL BE WRAPPED IN A SEPARATE COVER.

Proposals to be transmitted via regular mail should be addressed as follows:

Westinghouse Environmental Management Company of Ohio, Inc.
P. O. Box 398704
Cincinnati, OH 45239-8704
Attn: J. L. Davis, III, Contract Administrator
Contracts

Proposals to be transmitted via overnight delivery service or hand carried should be addressed as follows:

Westinghouse Environmental Management Company of Ohio, Inc.
7400 Willey Road
Fernald, OH 45030
Attn: J. L. Davis, III, Contracts Administrator
Contracts

L.14 LATE PROPOSALS, MODIFICATIONS, OF PROPOSALS, AND WITHDRAWAL OF PROPOSALS

The following conditions will apply to late proposals, modifications of proposals, and withdrawal of proposals:

(a) Any proposal received at the office designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it -

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g. an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail or, if authorized by the solicitation, was sent by telegram or via facsimile and it is determined by WEMCO that the late receipt was due solely to mishandling by WEMCO after receipt at the WEMCO installation.

(3) Was sent by U. S. Postal Service Express Mail Next Day Service-Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and the WEMCO holidays; or

(4) Is the only proposal received.

(b) Any modification of a proposal or quotation, except a modification resulting from WEMCO's request for "Best and Final" offer, is subject to the same conditions as in subparagraphs a (1), (2), (3, and (4) above.

(c) A modification resulting from a WEMCO request for "Best and Final" offer received after the time and date specified in the request will not be considered unless received before award and the late receipt is due solely to mishandling by WEMCO after receipt at the WEMCO installation.

(d) The only acceptable evidence to establish the date of mailing of a late proposal or modification sent either by U. S. Postal Service registered or certified mail is the U. S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U. S. or Canadian Postal Service. Both postmarks must show a legible date or the proposal, quotation, or modification shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U. S. or Canadian Postal Service on the date of mailing. Therefore, offerors or quoters should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and the envelope or wrapper.

(e) The only acceptable evidence to establish the time of receipt at the WEMCO installation is the time/date stamp of that installation on the proposal wrapper or other documentary evidence of receipt maintained by the installation.

(f) The only acceptable evidence to establish the date of mailing of a late offer, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U. S. Postal Service. "Postmark" has the same meaning as defined in paragraph (iv.) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, offers or quoters should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and the envelope or wrapper.

(g) Notwithstanding paragraph (f) above, a late modification of an otherwise successful proposal, that makes its terms more favorable to the WEMCO, will be considered at any time it is received before award and may be accepted.

(h) Proposals may be withdrawn by written notice or telegram (including mailgram) received at any time before award. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision entitled "Facsimile Proposals." Proposals may be withdrawn in person by an offeror or an authorized representative, if the representative's identity is made known and the representative signs a receipt for the proposal before award.

L.15 TREATMENT OF PROPOSAL INFORMATION

(a) Your proposal may include technical data and other data, including trade secrets and/or privileged or confidential commercial or financial information, that you do not want disclosed to the public or used by the WEMCO or the Government for any purpose other than proposal evaluation. To protect such data, <u>you must specifically identify each page, including each line or paragraph thereof</u>, containing the data to be protected and mark the cover sheet of the proposal with the notice stated in subparagraph (c) below.

(b) "Proprietary Data" is defined in DOE Acquisition Regulation 927.401 as technical data which embody trade secrets developed at

private expense, such as design procedures or techniques, chemical composition of materials, or manufacturing methods, processes, or treatments, including minor modifications thereof, provided that such data: (1) are not generally known or available under other sources without obligation concerning their confidentiality; (2) have not been made available by the owner to others without obligation concerning their confidentiality; and (3) are not already available to the Government without obligation concerning their confidentiality. A proposer who receives a subcontract award shall mark the data identified as proprietary by specifying the appropriate proposal page numbers to be inserted in the Rights to Proposal Data clause below. Subject to the concurrence of the WEMCO, information unrelated to the subject may be deleted from the proposal by the Seller. The responsibility, however, of identifying technical data as proprietary or deleting it as unrelated rests with the prospective subcontractor.

(c) The following clause shall be included in any subcontract based on a proposal. This clause is intended to apply only to technical data and not to other data, such as privileged or confidential commercial or financial information.

RIGHTS TO PROPOSAL DATA (Apr 1984)

Except for technical data contained in page(s) _____ of the Seller's proposal dated _____, which are asserted by the Seller as being proprietary data, it is agreed that as a condition of the award of this subcontract, and notwithstanding the provisions of any notice appearing on the proposal, the WEMCO and the Government shall have the right to use, duplicate, and disclose and have others do so for any purpose whatsoever, the technical data contained in the proposal upon which this contract is being based.

L.16 ORGANIZATIONAL CONFLICT OF INTEREST (OCI)

Award of the subcontract will be subject to the OCI clearance of the selected offeror and lower-tier Subcontractors, if any. All offerors and lower-tier Subcontractors, if any, are required to submit the OCI information as follows:

It is WEMCO's and the DOE's policy to avoid situations which place an offeror in a position where its judgment may be biased because of any past, present, or currently planned interest, financial or otherwise, the offeror may have which relates to the work to be performed pursuant to this solicitation or where the offeror's performance of such work may provide it with an unfair competitive advantage. (As used herein,

"offeror" means the proposer or any of its affiliates or proposed consultants or subcontractors of any tier.) Therefor:

(a) The offeror shall provide a statement which describes in a concise manner all relevant facts concerning any past, present or currently planned interest (financial, contractual, organizational, or otherwise) relating to the work to be performed hereunder and bearing on whether the offeror has a possible organizational conflict of interest with respect to (1) being able to render impartial, technically sound, and objective assistance or advice, or (2) being given an unfair competitive advantage. The offeror may also provide relevant facts that show how its organizational structure and/or management systems limit its knowledge of possible organizational conflicts of interest relating to other divisions or sections of the organization and how that structure or system would avoid or mitigate such organizational conflict.

(b) In the absence of any relevant interests referred to above, the offeror shall submit a statement certifying that to its best knowledge and belief no such facts exist relevant to possible organizational conflicts of interest.

(c) WEMCO/DOE will review the statement submitted and may require additional relevant information from the offeror. All such information, and any other relevant information known to the WEMCO or DOE, will be used to determine whether an award to the offeror may create an organizational conflict of interest. If such organizational conflict of interest is found to exist, WEMCO or DOE may (1) impose appropriate conditions which avoid such conflict, (2) disqualify the offeror, or (3) determine that it is otherwise in the best interest of WEMCO and the United States to subcontract with the offeror by including appropriate conditions mitigating such conflict in the subcontract.

L.17 EVALUATION OF OPTIONS (IF APPLICABLE)

WEMCO will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate WEMCO to exercise the option(s).

WEMCO may reject an offer as non-responsive if it is materially unbalanced as to prices for the basic requirement and the option quantities. An offer is unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

PART IV
SECTION L
INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

L.18 DISCLAIMER

This RFP does not obligate WEMCO to pay any cost incurred in the preparation and submission of this proposal, nor to enter into a subcontract or any other arrangement with the offeror.

L.19 OPENING OF PROPOSALS

There will be no public opening of the proposals. Offerors will be advised as soon as possible after source selection has been made and the consent of DOE/ORO has been received.

PROPOSALS OFFERING LESS THAN 180 CALENDAR DAYS FROM THE HOUR AND DATE SET FOR RECEIPT OF PROPOSALS MAY BE REJECTED.

L.20 FOREIGN OWNERSHIP, CONTROL, OR INFLUENCE (FOCI) DETERMINATION.

Offeror shall complete the Foreign Ownership, Control, of Influence Over Contractor Questionnaire/Certification in Section K of this RFP. Should the offeror be notified by WEMCO that it is the apparent awardee of this solicitation, the successful offeror will be required to comply with DOE Order 5634.1A, February 3, 1988. At minimum, the following information shall be submitted as directed by WEMCO: The company's annual report and SEC Schedules 10K, 10Q, 13D and 13Q, for all portions of its financial "year" up to the most recent quarter, even if the offeror answered "No" to all eleven FOCI questions. If the offeror's company does not prepare any of these documents/forms, it will submit the company's financial report/statement.

L.21 PROPOSAL FORMAT AND CONTENTS

(a) Proposal shall include all data and information required by this solicitation. Only one technical proposal from each offeror shall be considered. The offeror's technical proposal and any subsequent negotiated changes thereto shall be incorporated in any resultant subcontract and the commitments made therein shall be binding upon that offeror. In cases of any conflict or ambiguity between the offeror's technical proposal (including amendments) and WEMCO's specifications, WEMCO's specification shall govern.

(b) The Offeror's proposal for the requirement shall be clear, coherent, legible and prepared in sufficient detail for effective evaluation by WEMCO. Elaborate documentation, expensive binding, detailed art work, or other embellishments are unnecessary. The proposal shall be submitted in accordance with these instructions. The intent of the proposal shall be to provide sufficient data to support a

decision to select a qualified subcontractor and to award the subcontract.

(c) Volumes and Copies. In presenting material in the required volumes below, the offeror is advised that **the quality of information is significantly more important than quantity.** Each section within a volume shall start on a new page. Tabbed dividers are desirable. The proposal shall contain all pertinent information in sufficient detail to permit thorough evaluation. Information requested in the paragraphs below shall be provided in the volumes indicated. If the required information is not located in the proper section, the information will be assumed to be omitted.

Volume Number		Copies
I -	Management & Technical Proposal	7
II -	Cost/Price Proposal	5

The Management and Technical proposal is limited to 300 double-spaced pages excluding past experience. Past experience is limited to 15 double-spaced pages. There is no page limitation for the Cost/Price Proposal.

If information required for proposal evaluation is not found in the section designated for its presentation, it will be assumed to have been omitted from the proposal.

Cost and Pricing. The costs proposed for accomplishing the program shall be confined entirely to Volume II. The cost proposal shall consist of the offeror's cost to accomplish the work as defined in the Statement of Work under a Firm-Fixed-Price Contract.

(d) Binding and Labeling. Each volume of the proposal shall be separately bound in three-ring binders so as to facilitate subsequent changes provided to WEMCO during the negotiation process. A cover sheet shall be on the front cover and the spine of each binder shall be affixed to each volume, clearly marked as to volume number, copy number, and the offeror's name. Indicate which specific pages and paragraphs contain proprietary information. WEMCO will treat unidentified pages or paragraphs as non-proprietary information.

(e) Page size, Typing and Spacing. Page size shall be 8-1/2" by 11" (standard size) white bond paper. The proposal page shall be in clear, legible, print with double-spaced lines; pagination shall be in numerical sequence. Photo reduction of material other than graphs and drawings is not desired. Whenever practical, enclosed headings, subheadings, titles, sequence of material and a number identification

system shall be used. Each volume shall contain a glossary of abbreviations used, with an explanation of each. Fold-out pages may be included in the proposal, but their width shall not exceed four regular (8 1/2 x 11 inches) pages. When included, fold-out pages shall be limited to charts, graphs, etc., and shall fold entirely within the page size of the three-ring binder.

(f) Indexing. The proposal shall contain a master Table of Contents for the total proposal in Volume I. This shall identify major groupings of information as indicated by the Evaluation Criteria and their location. Each Volume and section shall contain a detailed Table of Contents to delineated the subparagraphs contained therein.

(g) **Price and management/technical proposals will be submitted separately and clearly labeled "Price Proposal" and "Management/Technical Proposal."**

L.22 VOLUME I, TECHNICAL/MANAGEMENT PROPOSAL

(a) Technical Capabilities

The technical volume should be specific, detailed, and complete to demonstrate clearly and fully that the prospective offeror has a thorough understanding of the requirements. The technical volume must enable WEMCO engineering personnel to make a thorough evaluation and arrive at a sound determination as to whether or not the proposal meets the requirements of the Statement of Work. The proposal shall include interface descriptions sufficient to describe the offeror's approach and to illustrate clearly the manner in which the offeror shall conduct the work. Phrases such as "standard procedures will be employed" or "well known techniques will be used" are insufficient. The technical volume must be sufficient to show how the offeror proposes to comply with WEMCO requirements, and it must include a full explanation of the techniques and procedures proposed to be followed. Each section of the technical proposal shall have a one-to-one correspondence to the appropriate paragraph numbers contained in the Statement of Work.

Item 1 - Compliance with Applicable or Relevant and Appropriate Requirements (ARARs).

The offeror shall supply a detailed description of the methodology to be followed in meeting the requirements of the work in relation to ARARs.

Item 2 - Overall Protection of Human Health and Environment

The offeror shall address and assess the overall short-term risk to the surrounding community, to workers performing removal actions, and the

environment. Also included shall be all health and safety measures to be taken, and a discussion of chemical quality management procedures to be followed (if applicable).

Item 3 - Reduction of Volume, Mobility, or Radiological Toxicity through Processing

At minimum, offeror's detailed description of the technical approach to meet the requirements of the Statement of Work must address: reduction of volume, mobility or radiological toxicity through processing; the degree of expected waste reduction in volume, uranium mobility, mobility resistance via containment and the degree to which the proposed treatment is irreversible, i.e., the ability to retain mobility reduction.

Item 4 - Implementation Feasibility

The offeror shall address how they expect to supply and implement the various technologies required by Section C, Statement of Work. At a minimum, give a detailed description of the technologies the offeror is capable of providing and which technologies will be required of its subcontractors. Offeror shall identify all potential technical risk areas and proposed methods for overcoming each identified risk. The offeror's assessment of existing and potential technical risk shall be presented in terms of the availability of resources such as materials, personnel, facilities, licenses and permits, compliance with ARARs, project implementation, and achievement of all of the performance requirements specified in the contract Statement of Work. If offered, the offeror shall address, in detail, any beneficial reuse of the scrap metals.

(b) Past Experience

Offeror shall provide a self-appraisal of its performance on prior contracts, preferably in the areas of need as outlined in the enclosed statement of work. Such contracts selected for self-assessment, must, as nearly as possible be within the same plant(s) and/or division(s) as proposed to perform the work described in this solicitation. These contracts shall include those both successfully and unsuccessfully completed with respect to meeting cost, schedule, and technical performance requirements, unless the offeror certifies that it has not experienced both scenarios. The synopsis for each contract selected must be prepared in the following format:

1. Contract number and Type

2. Program Title

3. Brief Description of the program

4. Activity associated with the award of the contract, including the address and telephone number of the prime agency's contracting personnel and your company's Program/Project Manager.

5. Contract value (1) at time of award and (2) at the present time or at close-out (as appropriate)

6. Brief history of performance to include sufficient information which shall enable WEMCO to track both contract changes and variances in performance in the areas of technical performance, schedule and cost

7. Self-assessment narrative which shall provide specific details as to why the contract was, or was not successful.

Offerors shall provide a full explanation of all exceptions taken to the SOW, specifications, data requirements, or task order, if any, by paragraph or exhibit line item number at the beginning of each section, as appropriate. If no exceptions are taken, the offeror shall so state.

(b) Area: Management

The offeror, through the implementation of its Management Plans, shall demonstrate that it will have control of all work in compliance with the SOW. Management Plans shall include descriptions identifying how the effort(s) will be managed and performed to meet the subcontract requirements.

The offeror's project management approach should demonstrate that the visibility of the offeror's progress will be sufficient to indicate reliably the results being obtained. Such data must portray: work progress; related costs, schedule and technical accomplishment; be valid, timely and auditable; and supply WEMCO evaluators with a practical level of summarization. The offer shall also address:

a. a summary schedule of work effort

b. the system to be used to control costs and schedules

c. how cost data will be reliable and reported to WEMCO and how the performance schedule will be reported to WEMCO.

d. how the offeror plans to comply with the review requirements

e. the cost/schedule impact(s) of any proposed alternative(s). Note: the offeror must discuss cost itself only in the cost volume of its proposal.

Item 1. Health and Safety

The offeror shall discuss its Corporate Safety and Health Program as required by OSHA Standard 29 CFR 1910.120. The offeror shall also discuss capabilities to operate under various levels of personal protection, at a minimum levels B and C.

Item 2. Quality Control

The offeror shall submit a brief outline discussion of the firm's Corporate Quality Control Program, including procedures to be employed to address the overall project quality element. At minimum, offeror shall describe its plans for establishing and maintaining control methods, audits, inspection and test methods throughout the work performance to meet their QA requirements. Included in the discussion shall be a description of how the offeror will assure that accurate QA documentation will be provided to WEMCO.

Item 3. Program Management

The offeror shall describe how its costs and performance schedules will be internally managed and to what extent it will be integrated into the program management system in identifying and resolving various cost/schedule requirements. Offeror shall describe the managerial process in identification of schedule slippage and how these will be addressed through redistribution of resources, personnel, etc. Included in this section shall be discussions as to how and when these matters would be reported to the WEMCO Contract Administrator.

Item 4. Organizational Structure and Qualifications of Staff

The proposal shall clearly demonstrate the offeror's overall technical competence to successfully completed the specified requirements of the SOW by delineating the categories of skills of Technical and administrative personnel to be assigned to this contract, and their experience levels, including experience on similar contracts.

The offeror shall describe its project management organization proposed for this subcontract effort. The description should include, but is not necessarily limited to, the areas indicated below:

a. A proposed organization chart identifying task leaders, key personnel and functions, and which facility each task

leader/key person will be assigned to, if more than one facility is needed for the work.

b. A discussion of how the proposed organizations supports effective management at multiple sites, if applicable.

c. A discussion of how the proposed organization shall be coordinated with offeror's current organization.

d. A discussion of the allocation of the offeror's internal resources and identification of resource commitment positions including personal and real property assets.

e. A discussion of the limitations, if any, of the project manager's authority, including a discussion of other duties that may be assigned during the work effort.

The personnel section shall also include a resume for each of the key personnel named on the project organization charts. The offerors present staff shall include, as a minimum, personnel fully qualified to carry-out the work.

Item 5. Corporate Financial Soundness.

The offeror shall also include within the Management Plan the various financial data displaying the companies soundness and ability to meet the requirements of the subcontract. At minimum, this information shall address the offerors available lines of credit, current amount of existing contracts, and a summary of annual business volume over the last 5 years.

Item 6. Subcontract Administration

Offeror shall give a brief description of the plan for administering and managing subcontracts and explain how these activities will be integrated and coordinated with other removal activities including those performed by WEMCO.

L.23 VOLUME II - COST / PRICE PROPOSAL

The requirements of WEMCO's prime contract necessitate that your proposal be prepared and be fully supported by detail cost data in accordance with Public Law 87-653 "Truth in Negotiations Act". Failure to provide cost and pricing information in support of your proposal as set forth herein may be sufficient cause to reject your proposal.

In the event that any cost data and/or supporting information described herein is deemed to be proprietary, and/or not available to WEMCO, provide the location of pertinent cost work papers and financial records available for assist audit by the government.

L.24 ELEMENTS OF COST

The offeror shall list the following elements of cost in the following format. Deviations from this format will be unacceptable.

A. MATERIAL ACQUSITIONS:

(1) Purchased Parts
(2) Subcontracted Items
(3) Other materials

B. LABOR SKILLS:

(1) Technical & Managerial
  (a) Scientific
  (b) Project Management/Administration
  (c) Engineering
(2) Manufacturing
(3) Technical and Administrative Support Services

C. OVERHEAD:

(1) Technical and Managerial
(2) Manufacturing
(3) Support Services

D. OTHER DIRECT COSTS

E. G & A EXPENSE

F. BENEFICIAL REUSE OF SCRAP METAL (APPLICABLE ONLY IF PROPOSED). Mathematically show the cost impact reuse has on certified cost.

L.25 SUBMISSION OF CERTIFIED COST OR PRICING DATA

(a) Offerors are not required to submit certified cost or pricing data as this acquisition is expected to be awarded based on adequate price competition. After receipt of proposals, the Contract Administrator may determine that adequate price competition does not exist and that certified cost or pricing data is required.

(b) If it is determined that adequate price competition does not exist, the offeror shall provide current, complete and accurate cost or pricing data on a revised Standard Form 1411 in accordance with FAR 15.804-6, unless a waiver is claimed in accordance with FAR 15.804-3. This data shall be provided within 5 days after request. The contractor may request an extension, but any extension must be agreed to in writing by the Contract Administrator.

L.26 CONTRACT PRICING PROPOSAL COVER SHEET (SF 1411) AND CERTIFICATE OF CURRENT COST OR PRICING DATA

Your contract pricing proposal cover sheet and your Certificate of Current Cost or Pricing Data must be signed by an individual who can legally bind the company. Individual Standard Forms 1411 shall be submitted for each procurement summary total.

L.27 INTERDIVISIONAL WORK AUTHORIZATIONS (IDWA)

Interdivisional Work Authorization (IDWA) at Cost, i.e., work to be performed by subsidiaries or divisions of your company should clearly identified in your proposal and all the work and related estimated cost for each separate IDWA. If the interdivisional work exceeds $100,000, a completed Standard Form 1411 is required. Where your proposed price includes an IDWA, a single G&A and profit (or fee) shall be applied to the IDWA cost.

L.28 OTHER COST/PRICE REQUIREMENTS

(a) Cooperative Financial Arrangements and Letter of Commitment. Offeror should describe the proposed cooperative financial arrangement or agreements among the team participants, if any. Proposals should include letters of commitment for those participants (if any) who are not a part of or affiliated with the proposing organization.

(b) Representations and Certifications. The offeror shall complete, sign, and submit (as part of the Cost Proposal) the "Representations and Certifications" contained in this RFP.

(c) Past Socio-Economic Subcontract Program Performance. Past Performance in Subcontracting with Small/Disadvantaged Business. The offeror shall submit historical data on its performance in utilizing small/disadvantaged businesses as subcontractors.

L.29 SUBCONTRACT PLAN

In order to afford the maximum practicable opportunity for small and small disadvantaged business concerns to participate, WEMCO has determined that this acquisition necessitates negotiating subcontracting plans with all offerors eligible for award. Offerors who are not small business concerns and whose performance will present subcontracting opportunities must therefore so indicate in their initial proposals. Subcontracting plans will be negotiated concurrently with technical and cost proposals. The negotiated subcontracting plans, as required by FAR 19.704, shall include the following elements:

(a) Goals - Percentage of total dollars to be subcontracted must be stated. In addition, total dollars to be subcontracted to small business and small disadvantaged business must be stated separately, as percentages of the total dollars to be subcontracted.

(b) The name and duties of the subcontracting plan administrator.

(c) A description of efforts the offeror will take to assure that equitable opportunities are provided small and disadvantaged business concerns in competing for subcontracts. These outreach activities should include the efforts the offeror will make both to seek out small and small disadvantaged business participation and to provide them the opportunity to compete for subcontracts.

(d) Assurances that the offeror will "flow-down" the Utilization of Small Business Concerns and Small Disadvantaged Business Concerns" clause in any lower-tier subcontract.

(e) Assurances that the offeror will submit periodic reports and cooperate with studies or surveys as may be required by WEMCO or DOE.

(f) A description of the types of records and procedures the offeror will use to show they are complying with the negotiated subcontracting plan.

L.30 FACILITIES CAPITAL COST OF MONEY

Facilities capital cost of money (see FAR 15.904) will be allowable cost under the contemplated contract, but only if the offeror specifically identifies or proposes it in the cost proposal. If the offeror does not specifically identify or propose facilities capital cost of money and does not elect to claim this cost, the contract will be subject to the Waiver of Facilities Capital Cost of Money clause in FAR 52.215-31.

Offerors shall include one of the two statements below as a part of their business proposal.

"Facilities capital cost of money is proposed as an allowable cost and is specifically identified in the cost proposal". (If facilities capital cost of money is proposed, form CASB-CMF must be completed and submitted as part of your business proposal. See FAR 31.205-10.)

OR

"Facilities capital cost of money is not proposed as an allowable cost."

L.31 PROPRIETARY RIGHTS

WEMCO's proprietary rights are involved in the information disclosed and requested herein. The offeror, by completing and returning the notice of intent to propose, agrees that neither this document nor the information disclosed herein, nor any part thereof, shall be reproduced or transferred to other documents, or used or disclosed to others for an other purpose other than for purposes of this proposal, except as specifically authorized in writing by WEMCO.

L.32 RESTRICTIVE NOTICE FOR DOCUMENTS; FOREIGN NATIONALS

This document may include information that is proprietary to WEMCO and may include technical data which was developed in the United States of America. The recipient/user of this document is responsible for complying with the United States Department of State International Traffic in Arms regulations, 22 CFR Parts 121-128, 129 (Reserved), 130, and the United States Department of Commerce Export Administration Regulations, 15 CFR Parts 368-399, and any other United States Government laws or regulations applicable to the export or disclosure of such data and information, or of any products resulting from the use thereof, to nationals foreign to the United States whether within or without the United States.

L.33 PARENT OR AFFILIATES OF WEMCO

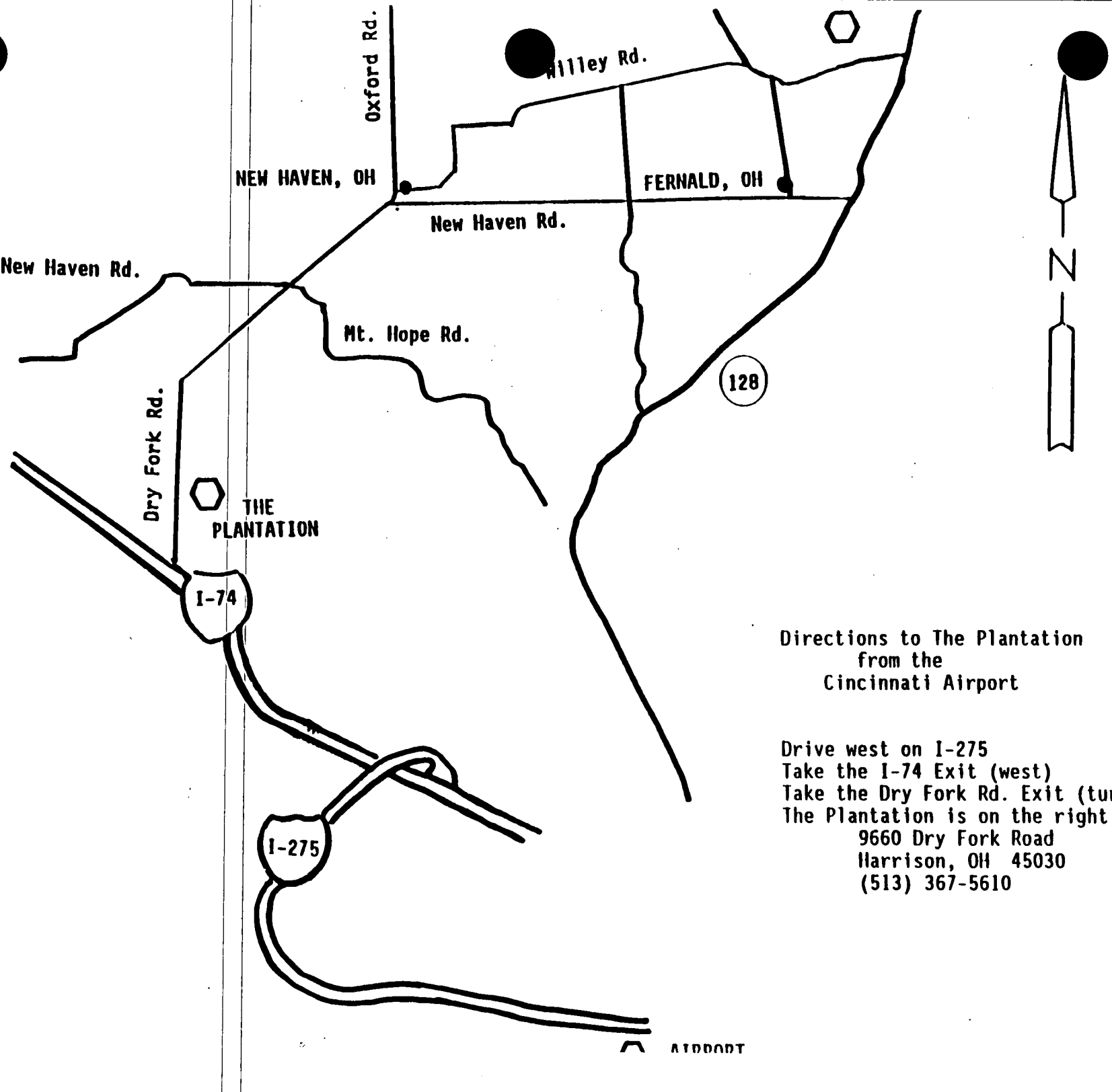
Offerors are cautioned that if your company is the Parent, a Division, an Affiliate, or other Westinghouse controlled source, your proposals shall be sent directly to:

U. S. Department of Energy
Fernald Environmental Management Project Site Office
7400 Willey Road
Fernald, Ohio 45030
Attn: Mr. William I. Winn, Administrative Officer

PART IV
SECTION L
INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

Your Cost Volume SHALL BE SEPARATELY SEALED from the Technical/Management proposal and shall be clearly marked "COST PROPOSAL" along with the Solicitation Number JD-21486.

Any propsal sent directly to WEMCO by the parent or an affiliate will be disqualified from any further consideration.



Directions to The Plantation
from the
Cincinnati Airport

Drive west on I-275
Take the I-74 Exit (west)
Take the Dry Fork Rd. Exit (turn right)
The Plantation is on the right at
9660 Dry Fork Road
Harrison, OH 45030
(513) 367-5610

6046

000224

PART IV
SECTION M
EVALUATION FACTORS FOR AWARD

M.1 INTRODUCTION

The evaluation of proposals will be conducted by a Source Evaluation Board (SEB) who will make its recommendation to a Source Selection Authority (SSA). The evaluation of proposals and the selection of sources for subcontract award will be in accordance with the criteria set forth in this section. Evaluation and selection will be based on offers which show the greatest likelihood for achievement of the program objectives stated in Section C, Statement of Work in the areas of technical merit, management and price.

M.2 TECHNICAL AND MANAGEMENT EVALUATION CRITERIA

Factors to be evaluated in the Technical and Management Proposal and the corresponding percentages of the total Technical and Management score are set forth below in descending order of importance.

Area: Technical - 60%

a. Technical Capabilities

1. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
2. Overall Protection of Human Health and Environment
3. Reduction of Volume, Mobility, or Radiological Toxicity Through Treatment
4. Implementation Feasibility

b. Compliance with requirement(s)

3. Past experience

Area: Management - 10%

1. Health and Safety
2. Quality Control
3. Program Management
4. Organization Structure and Qualifications of Staff
5. Corporate Financial Soundness
f. Subcontract Administration

Area: Price

Price represents 30% of the overall evaluation. Total price will be evaluated and scored in determining the lowest responsive, responsible offeror.

PART IV
SECTION M
EVALUATION FACTORS FOR AWARD

M.3 EVALUATION OF OPTIONS (IF APPLICABLE)

WEMCO will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate WEMCO to exercise the option(s).

M.4 BEST AND FINAL OFFERS

(a) Offerors are cautioned to review carefully all terms and conditions and specifications of this solicitation prior to submission of its proposal. This acquisition may be awarded without discussion of proposals received. Offerors should be aware that a complete understanding as to pricing, technical, and all other terms and conditions of the proposed subcontract should exist between the offeror and WEMCO at the conclusion of discussions/negotiations. Best and Final Offers may be requested upon the completion of negotiations. Any revisions or nonconcurrence to negotiated contract terms and conditions submitted in the "Best and Final" offer will not be subject to further discussion or negotiation.

(b) This provision is not intended to restrict the offeror's opportunity to revise figures, e.g., prices discounts, percentage rates, etc. It is intended to preclude any misunderstanding by WEMCO which could result if new or revised terms and conditions are submitted in the "Best and Final" offer that have not been fully disclosed, discussed, and understood during negotiations. Any changes made in the "Best and Final" offer must be substantiated and must be able to be traced back to the original proposal.

M.5 BASIS FOR AWARD

Award of a subcontract may be based upon initial proposals submitted without discussion of their merits. Selection will be made on the basis of an integrated assessment of each offeror's proposal received in response to this solicitation, on the terms and conditions agreed upon during negotiations, and on WEMCO's review of each offeror's capability and capacity. Technical and Mangement proposals represents 70% of the overall total score while price represents 30% of the overall total score.

While this evaluation will strive for the maximum objectivity, subjective judgement on the part of WEMCO evaluators is implicit throughout the entire process. Throughout the evaluation, WEMCO will consider "correction potential" when a deficiency is identified. Proposals unrealistic in terms of technical content will be deemed reflective of an inherent lack of technical competence, or indicative of

PART IV
SECTION M
EVALUATION FACTORS FOR AWARD

a failure to comprehend the complexity and risks of the subcontract requirements, and may be grounds for rejection of the proposal.

The SSA will make a determination of the overall value of each proposal, judged against the source selection evaluation criteria in M.2, above, and responsiveness to WEMCO's business, contractual and technical requirements.