

6657



DELIVERABLE 750C

HEALTH AND SAFETY PLAN

SOLAR PONDS WASTE PROCESSING AREAS

for

EG&G ROCKY FLATS

prepared by

HALLIBURTON NUS ENVIRONMENTAL CORPORATION

REVISION 2

JUNE 11, 1992

FOR APPROVAL SIGNATURE BY EG&G ROCKY FLATS

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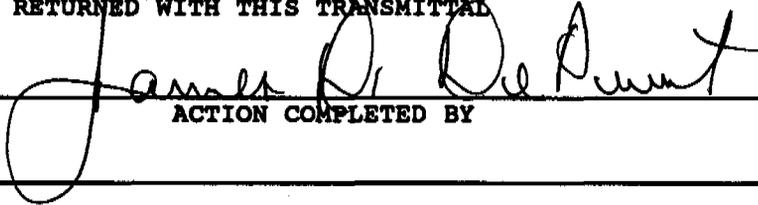
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RETURN THIS FORM TO: **Ronald H. Hill, CIH**

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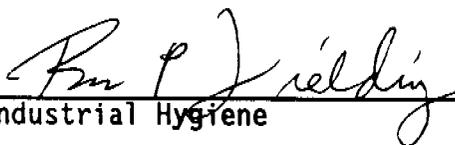
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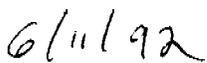
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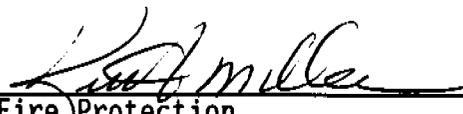
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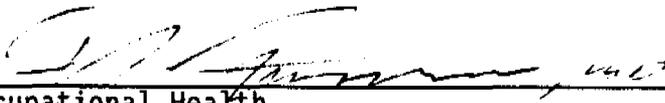
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HASP FOR SOLAR PONDS WASTE PROCESSING AREA

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## **SECTION 1.0 INTRODUCTION**

### **1.1 POLICY**

The HNUS Corporate policy is to provide a safe and healthful workplace for our employees and subcontractors and EG&G personnel associated with the project. The accomplishment of this policy requires that each operation have an overall plan and consistent proactive approach to safety and health issues. HNUS believes that most occupational injuries and illnesses can be prevented. To assist HNUS in managing recognized workplace hazards during this project, this Health and Safety Plan (HASP) has been developed. When the HASP is consistently and effectively implemented, the results will be realized by reduced injuries and illnesses at all of our operations.

The HASP was developed from effective safety and health programs already established in other Halliburton Companies, as well as practices of other leading companies who have successful safety and health programs. In addition, various applicable OSHA and EG&G safety and health regulations have been reviewed and compliance with them has been factored into this HASP.

This project may present unusual or unique safety and health hazards. In order to minimize risk, HNUS will strive to utilize accepted safety and industrial hygiene practices to anticipate, recognize, evaluate, and control or eliminate safety and health hazards. Safety and health will not be compromised due to pressure from compressed time schedules.

The following pages of this Plan will explain HNUS's HASP and will outline health and safety requirements. It is recognized that high quality and efficient operations cannot be achieved without safety and health being an integral part of standard operating procedures. Safety and health are job requirements.

### **1.2 CONTENTS OF HEALTH AND SAFETY PLAN**

Each site-specific health and safety plan will contain the following basic information: the responsibilities and authorities of all personnel involved in the program, the procedures to be followed to safely complete each work task, medical certification, OSHA training, hazard assessment, hazard communication, personnel protective equipment, monitoring, site control, and emergency response procedures.

### 1.3 BACKGROUND

The Rocky Flats Plant is involved in the production of nuclear weapons components. Within the boundaries of the Rocky Flats Plant are five (5) solar evaporation ponds (SEP's) (207C, 207B-N, 207B-C, 207B-S, and 207A), which have to be cleaned out. All waste from the ponds must be processed into an acceptable and certifiable waste form and shipped to a permanent disposal facility in accordance with an Agreement in Principle (AIP) reached between the Governor of Colorado and the Department of Energy (DOE) in June of 1989. The ponds contain a mixture of water, chemicals and sediments/sludge which have been classified as hazardous "mixed" waste. That is, the SEPs contain a mixture of radioactive materials and chemical materials.

The Solar Evaporation Ponds (SEP) site consists of the five solar evaporation ponds (207A, 207B-North, 207B-Central, 207B-South, and 207C) and the clarifier, and Building 788. This HASP will cover SEP cleanup operations conducted by Halliburton NUS Environmental Corporation.

The solar evaporation ponds were constructed to receive, store, and treat low-level process waste water. During the construction of Rocky Flats Plant, a clay lined solar evaporation pond was installed. The pond was designed for the impoundment of aqueous waste products discharged from the Process Waste Treatment Plant which contained high levels of chemical contaminants, such as fluoride, nitrates and various metallic ions while meeting the drinking water standards in effect at that period. As a result of changing plant operations and environmental requirements, additional evaporation ponds were constructed on the Rocky Flats Plant property. On occasions these ponds were used for the disposal of untreated waste products, such as metallic lithium, acids, plating residue; and several other waste products including treated sanitary effluent.

In 1988, the water and sludge from solar pond 207A was removed. Today the pond contains surface water run-off and sediment coming from wind blown dirt.

Since 1977, solar ponds 207B have received treated sanitary effluent, contaminated groundwater from the Interceptor Trench System, and treated water and backwash from the Reverse Osmosis facility.

Solar Pond 207C was constructed to receive aqueous process waste and is characterized as having a high pH.

These ponds are relatively shallow with depth not exceeding seven (7) feet, and therefore, significant wave action can develop under moderate wind conditions.

#### 1.4 PROCESS OPERATIONS

Operations at the SEP site include the following:

- Using a reclaim system for consolidation of 207A and 207B Ponds involving pumping water to the 207B-N Pond, and sludge to the 207B-S pond.
- Reclaiming sludge from the ponds to a conditioning tank.
- Manual removal of large objects from the empty ponds.
- Mechanical trash screening to remove trash materials from the sludge.
- Transfer of pondsludge by piping and pumps to processing equipment.
- Disinfection of pond materials to meet waste disposal criteria.
- Densification of 207A and B pond slurry fines using a dewatering filter.
- Mixing pond and materials in a cement mixer.
- Handling and conveying bulk quantities of pozzolan (cement, flyash, lime).
- Casting cemented product into half crates

#### 1.5 PROCESS DESCRIPTION

A description of the major processing equipment, and unit operations for Solar Ponds wastes solidification is included below. Since there are some differences in the processing for the 207C Pond/Clarifier, and the 207 A/B Ponds, separate processing descriptions are included for each. The layout of the processing areas is shown Figure 1.5-1. Block diagrams of the 207C/Clarifier process, and the 207 A/B process are shown respectively by Figures 1.5-2 and 1.5-3. More detailed figures showing reclaim equipment and process flow diagrams are included in Appendix D.

## **1.5.1      207C POND AND CLARIFIER PROCESSING**

### **1.5.1.1    RECLAIM**

The 207C Pond will be reclaimed using the Lefco Sludge Buster Boom Truck. This Sludge Buster system has a 79 foot reach piping boom that will be used to remove water and sludge from the 207C Pond and the clarifier. Various suction and dredge heads are available for the Sludge Buster to use to remove crystalline sludge forms. The Sludge Buster system air emissions are filtered through a HEPA & organic vapor filter system. See Appendix D.

Reclaimed slurry is pumped to a scalping screen where oversize and trash materials are removed by mechanical trash screenings. A skid underneath the scalping screen will contain any leaks or spills. Oversize reclaimed material is directed to a half-crate. The trash and oversize material in the half-crate will be handled by EG&G for later disposition. Pond side walls are flooded with water to remove residual sludge from the emptied pond. The undersize slurry is pumped through a pipeline to a holding sump, and then to Averaging Tank #1. All piping (with the exception of flexible hoses used within a contained process unit) will be double-walled.

The reclaim of the 207C pond and clarifier will not occur simultaneously. Rather, reclaim of the clarifier will occur somewhat sporadically, and be blended in small proportions with the 207C pond materials in the downstream averaging tanks #2&3.

### **1.5.1.2    DISINFECTION**

After reclaim, the 207C Pond materials will be piped from Averaging Tank #1 and disinfected in a chlorine contact chamber. Calcium hypochlorite will be used for the disinfection.

Clarifier materials will be disinfected in place within the clarifier tank before the removal of clarifier materials to the averaging tanks.

### **1.5.1.3    AVERAGING TANKS**

Several sets of averaging tanks will be used in the process. The #1 averaging tank will receive 207C Pond materials and will be used to adjust slurry density, and as a feed for the contact chlorination chamber. Brine from 207C is used to adjust total suspended solids in the #1 tank. Averaging tanks #2&3 will be