NOTICE

All drawings located at the end of the document.

000102122

RMRS Rocky Mountain Remediation Services, L.L.C.
. . . protecting the environment
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, Colorado 80402-0464
Phone: (303) 966-7000

January 28, 1999

CORRES. CONTROL
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Originator Ltr
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DIST.	LTR	ENC
CARMEAN, C.H.		
CRAWFORD, A.C.		
DUNN, R. P.		
FINDLEY, M.E.		
FITZ, R.C.		
GUINN, L.A.		
HUGHES, F.P.		
LAW, J. E.		
MILLS, S.		
PATTERSON, J. W.		
SPROLES, W. R.		
SUTTON, S. R.		
TRICE, K.		
WHEELER, M.		
WOLF, K. Z.	x	
WOLF, C. H.	x	
HOPKINS, T.	x	x
BURKS, D.	x	x
LAWLOIS, L.	X	X
RMRS RECORDS	X	X
ADMIN RECORD	X	X
RF CORRES. CONTROL		
TRAFFIC		
PATS/T130G		

CLASSIFICATION:		
UCNI		E no longer UCNI
UNCLASSIFIED	X	
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE:

Date:

IN REPLY TO RF CC NO.: N/A

ACTION ITEM STATUS: PARTIAL/OPEN
CLOSED

LTR APPROVALS:

ORIG. & TYPIST INITIALS:

Bob Cathel, Program Manager
Environmental Systems & Stewardship
Kaiser-Hill Company, L.L.C.
Building T130C

CLOSURE DESCRIPTION DOCUMENT FOR TANK AND ANCILLARY EQUIPMENT SYSTEMS #19 AND #20 IN BUILDING 771 - TAH-005-99

Rocky Mountain Remediation Services (RMRS) plans to begin closure of Tank and Ancillary Equipment Systems #19 and #20 in Building 771 in February 1999. This system will be closed in accordance with the *RCRA Closure Plan for Interim Status Units* (July 1998) (Closure Plan). A 45-day notification was issued to the Colorado Department of Public Health and Environment (CDPHE) on November 23, 1998, in accordance with the Closure Plan and with 6 CCR 1007-3, Section 265.111.

Pursuant to the Closure Plan, a Closure Description Document is attached for submittal to CDPHE. The Closure Description Document contains a description of the system to be closed, the rationale for the selected method of closure, the types of contamination to be addressed and the schedule for closure activities.

Please transmit this Closure Description Document to CDPHE at your earliest convenience, so that closure activities may commence during February 1999. A draft letter to CDPHE is attached for your use.

If you have questions, please contact me at 303-966-7652 or Tom Baker at 303-966-4329.

Ted A Hopkins

Ted A. Hopkins
Environmental Compliance Manager

TCB:dlu

Attachments (2):
As Stated

cc w/o attachments:
K. North

Y43

Attachment 1
TAH-005-99
Page 1

DRAFT DRAFT DRAFT

99-RF-XXXXX
DOE # xxxxx

Mr. Joe Scheiffelin, Unit Leader
Colorado Department of Public Health and the Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Scheiffelin: KSN-010-99

Pursuant to the *RCRA Closure Plan for Interim Status Units* (April, 1998) (Closure Plan), Kaiser-Hill Company, L.L.C. and the United States Department of Energy, Rocky Flats Field Office (DOE, RFFO) are submitting a Closure Description Document for the closure of Tank and Ancillary Equipment Systems #19 and #20 in Building 771, which will begin in February 1999.

The Closure Description Document contains a description of the systems to be closed, the rationale for the selected method of closure, the types of contamination to be addressed and the schedule for closure activities. We request approval of the Closure Description Document within 30 days of receipt, in accordance with the Closure Plan.

If you have any questions, please contact Bob Cathel of Kaiser-Hill at 303-966-6880 or David Grosek of DOE, RFFO at 303-966-3305.

Karan S. North, Director Date
Environmental Systems & Stewardship
Kaiser-Hill Company, L.L.C.

Joseph A. Legare, Director Date
Environmental Liaison Division
U.S. Department of Energy

cc:

C. Gilbreath	-	CDPHE
D. Grosek	-	DOE, RFFO
T.C. Baker	-	RMRS
T. A. Hopkins	-	RMRS
R.M. Leitner	-	Savant Enterprises
N. C.T. Van Tyne	-	ICF Kaiser

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[redacted]

Closure Description Document for

RCRA Closure of Tank and Ancillary Equipment Systems #19

and #20 in Building 771

[redacted]

DOES NOT CONTAIN
UNCLASSIFIED CONTROLLED
NUCLEAR INFORMATION

Reviewing Official: S. L. CUNNINGHAM
Name
Date: 2/25/03
Public Release dk

U.S. Department of Energy
Rocky Flats Environmental Technology Site
EPA ID No. CO7890010526

Reviewed and Approved by:

T.C. Baker, Environmental Compliance, RMRS — 1/28/99 Date

Prepared by:

N.C.T. Van Tyne, Project Manager II, ICF Kaiser — 1/25/99 Date

Reviewing Official: J. A. NEGHERM
Name
Date: 01-25-99

[redacted]

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1.0 INTRODUCTION

1.1 Purpose and Scope

The Rocky Flats Environmental Technology Site's (RFETS) RCRA Closure Plan for Interim Status Units (Closure Plan) includes the Mixed Residue tank systems and the Idle Equipment tanks in Building 771. Decommissioning and removal of tanks and their ancillary piping and other equipment are subject to the Closure Plan and a subsequent Closure Description Document, which contains a description of the method of closure to be used. A two-step strategy will be employed: (1) wherever possible, meet the requirements for the "RCRA Stable" condition while the tanks remain in place, and (2) remove the tanks from the building at a later date.

The process piping in Building 771 has been divided into thirty-eight discrete "piping systems," with tanks and other ancillary equipment included. Thirty-five of these systems contain process piping connected to RCRA-regulated tanks. In order to prepare for building deactivation and to facilitate closure activities, each tank will be isolated by removing the process piping connected to it. Some tanks are connected to more than one process piping system. Once a tank has been isolated from **all** process piping systems to which it has been connected, it will be reported in the closure documentation as "RCRA Stable" if the requirements for the "RCRA Stable" condition, as described in the Closure Plan, have been met.

This Closure Description Document applies to Tank and Ancillary Equipment Systems #19 and #20 in Building 771, also known as Tap and Drain Solution Systems #19 and #20. It applies to the closure of tanks T-20, 24, 28 and D-456, 457, which are associated with these two systems. Closure of the tanks will be accomplished in two separate phases:

a. Phase I: Removal of the ancillary process piping connected to all of the tanks in each system, thereby physically isolating the abovementioned tanks and their associated ancillary equipment. These isolated tanks should meet the basic requirements for the "RCRA Stable" condition.

b. Phase II: Completion of RCRA closure of the tanks by removal of each isolated, "RCRA Stable" tank, along with any remaining ancillary piping or isolated ancillary equipment.

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1.2 Unit Closure Notification and Schedule

The Colorado Department of Public Health and Environment (CDPHE), Hazardous Materials and Waste Management Division, will be notified at least 45 days prior to the start of Phase I or Phase II closure activities. The identified closure activities will be conducted immediately after the 45-day notification period, and are expected to be completed within 180 days. If closure activities cannot be completed within 180 days, a request for extension will be submitted to the Division at least 30 days prior to the end of the 180 days.

Phase I activities for all systems are expected to be scheduled during the August 24, 1998 to December 30, 2001 time period. Phase II activities will be scheduled through the Rocky Flats Cleanup Agreement annual budget planning and Integrated Sitewide Baseline process.

Within 30 days after completion of Phase I or Phase II closure activities, a report will be submitted to CDPHE briefly summarizing the closure activities conducted in accordance with this Closure Description Document. The Phase I summary report shall contain the following:

- a declaration that the piping described in the submitted drawings has been removed as planned;
- descriptions of any significant deviations from this Closure Description Document;
- a copy of any newly-generated drawings;
- a summary of relevant analytical results; and
- a statement as to whether the tanks involved have met the requirements of the "RCRA Stable" condition.

The summary report for Phase II activities shall contain the following:

- details about the removal of "RCRA Stable" tanks from Building 771; and
- for mixed residue tanks with RCRA unit numbers, a statement that the unit is now clean closed.

1.3 Facility Contacts

The contacts for closure activities at RFETS are:

Lead, Regulatory Liaison Group
Rocky Flats Field Office
U.S. Department of Energy
P.O. Box 928
Golden, CO 80402-0928
(303) 966-4298

Division Manager, Environmental
Compliance and Operations
Kaiser-Hill Company, L.L.C.
P.O. Box 464
Golden, CO 80402-0464
(303) 966-9876

2.0 BUILDING 771 FACILITY DESCRIPTION

Building 771 is a two-story, reinforced concrete structure, which is partially buried in a hillside located in the north central portion of the site. Since completion of the original building in 1953, several additions have been constructed, including offices, a cafeteria, maintenance shop, loading dock, and the Annex for drum storage.

Operations commenced in Building 771 in 1953. Five major types of production-related activities were conducted: Plutonium Recovery, Plutonium Special Recovery, Aqueous Recovery Technology, Plutonium Metallurgy Research and the Analytical Laboratory. These operations dealt with the recovery of plutonium from "residue" materials which were generated during fabrication, assembly and research operations in the Site's six production buildings, as well as with development of methods for recovery, purification and further processing of plutonium. The Analytical Laboratory provided analytical support to Building 771 and other site operations.

All operations, except for routine surveillances, maintenance and waste management were curtailed in 1989. At the present time, the current mission of Building 771 consists of two major activities:

a. Storage of nuclear and hazardous materials in preparation for onsite consolidation and/or offsite shipment.
b. Stabilization of plutonium solutions and other deactivation activities in preparation for decontamination and decommissioning (D&D).

The waste storage areas and tank units are used to store special nuclear materials, radioactive and mixed wastes, and residues, all of which were generated in Building 771 and in other buildings on the site.

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3.0 METHOD OF CLOSURE AND PERFORMANCE STANDARD

The tank systems described herein will be closed by the method described as "Unit Removal" in the Closure Plan for Interim Status Units, Section E, while incorporating the intermediate stage of "RCRA Stable," as described in Section F of the Closure Plan. All liquids will be drained from these tank systems, to the extent practicable, prior to the start of closure activities.

The Phase I performance standard for "RCRA Stable" shall be as follows:

a. The tanks are empty, i.e., they have been drained to the maximum extent possible using readily available means.
b. The piping sections shown in Figures 1-19 have been removed.
c. Inlets to and outlets from the tank, except for the vacuum/vent line, have been isolated and contained, or locked and tagged out.

The Phase II performance standard is removal of the "RCRA Stable" tanks and any remaining ancillary equipment from Building 771.

4.0 UNIT DESCRIPTION AND WASTE CHARACTERIZATION

Systems #19 and #20 were supply or reagent systems, delivering nitric acid solutions to numerous locations on the first floor of Building 771. In most rooms, the pipelines from each system are in close proximity. These systems are described in detail in Sections 4.1 and 4.2 below, as well as in Attachment 1 with Figures 1-12 (System #19), and Attachment 2 with Figures 13-19 (System #20). For both systems, there is a length of pipe in Corridor D that is inaccessible and will **not** be removed at this time (see Figures 8 and 17). Because of the size and complexity of Systems #19 and #20, they have been divided into subsystems to facilitate removal activities.

EPA waste code D002 (corrosivity) is assigned to the liquids and removable sludges present in this system based on process knowledge. There are no listed wastes present in these systems, also based on process knowledge. Additional samples of liquids recovered during the Tap and Drain Project may be analyzed and their results may be used to re-characterize the liquids.

Little or no radioactive contamination is currently expected inside the piping for either system, except for the piping that connects tanks T-456 and T-457 to Line 42 in Room 149. Prevention of release and minimization of work exposure will

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be addressed in the preparation of the Integrated Work Control Program (IWCP) work package, as described in Section 5.2

4.1 Tank and Ancillary Equipment System #19

System #19 delivered 0.35N nitric acid solution from tank T-24 in Room 247 on the second floor of Building 771, with drops into Rooms 114, 146, and 149. This solution was also conveyed to Room 153 from Room 114 via Corridors A and D, and to Rooms 180A and 181A via Corridor E.

A "System Descriptions and Boundaries" sheet is shown as Attachment #1 and equipment drawings are attached as Figures 1-12. The total length of piping to be removed during Phase I is estimated to be 1,675 feet, including 55 valves. Thirty-five termination points (TPs) are also indicated in Figures 1-12. All but one of the TPs are at or near flanged joints; the remaining TP is located at a tee between the 0.35N and 12N nitric acid lines, which is several feet from tanks D-609, 610. Containment at each TP will be designed and implemented to protect the room environment from release of contaminants remaining in disconnected systems. Any changes to Figures 1-12 will be submitted to CDPHE with the Phase I summary report.

Tanks T-24 and D-457 are currently included in the Idle Equipment Inventory. They will be isolated by the removal of the piping in System #19; when tank D-457 is isolated, the vent piping into Line 42 will be left in place and will be open. These tanks have the following attributes:

Tank T-24:

Tank Type:	Cylindrical
Volume:	1,050 L (empty)
Diameter:	55 inches
Height:	28 inches

Tank D-457:

Tank Type:	Pencil
Volume:	20 L
Diameter:	5.5 inches
Height:	60 inches

The remaining tanks in System #19 will be isolated during closure activities for other systems as follows:

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Tank No.	Tank Type	System
D-1401	Annular	3 (Purex)
T-22	Cylindrical	21 (12N HNO_3)
D-980	Raschig ring	26 (Fume Scrubbers)
D-609, D-610	Pencil	16 (Part V Leach)

4.2 Tank and Ancillary Equipment System #20

In this system, 7N nitric acid solution was batched in tank T-20 and transferred to tank T-28 in Room 247. From there, it was delivered to numerous drops into Rooms 114, 114A, 146 and 149. This solution was also conveyed to Room 153 from Room 114 via Corridors A and D, and to Rooms 180A and 181A via Corridor E.

A "System Descriptions and Boundaries" sheet is shown as Attachment #2 and equipment drawings are attached as Figures 13-19. The total length of piping to be removed during Phase I is estimated to be 1,760 feet. In addition to the piping, 88 valves will be removed. Forty-four termination points (TPs) have been identified. Containment at the TPs will be designed and implemented to protect the room environment from release of contaminants remaining in disconnected systems. Any changes to Figures 13-19 will be submitted to CDPHE with the Phase I summary report.

Tanks T-20, T-28 and D-456 are currently included in the Idle Equipment Inventory. They will be isolated by the removal of the piping in System #20, but the vent lines will be left in place and open. These tanks have the following attributes:

Tank T-20:

Tank Type:	Cylindrical
Volume:	780 L (empty)
Diameter:	42 inches
Height:	34 inches

Tank T-28:

Tank Type:	Cylindrical
Volume:	1,050 L (empty)
Diameter:	55 inches
Height:	28 inches

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Tank D-456:

Tank Type:	Pencil
Volume:	20 L
Diameter:	5.5 inches
Height:	60 inches

The remaining tanks in System #20 will be isolated during closure activities for other systems as follows:

Tank No.	Tank Type	System
T-23	Cylindrical	21 (12N HNO_3)
T-44	Cylindrical	2 (already isolated)
D-1401	Annular	3 (Purex)
D-1414	Annular	3 (Purex)
D-1415	Annular	3 (Purex)

5.0 SPECIFIC CLOSURE ACTIVITIES

Activities will be designed to achieve the closure performance standard, protect human health and the environment, and minimize waste generation. Specific work instructions, with engineering, health and safety, and waste management information, will be developed prior to the start of identified Phase I or Phase II closure activities. These instructions will be developed in accordance with applicable RFETS policies and procedures.

Closure activities are summarized as follows:

5.1 Establishment of Tank System Boundaries and Scope of Removal for Phase I

The boundaries for Systems #19 and #20, as described in Attachments #1 and #2, define the extent of closure activities for this closure description document. The boundaries are at or near flanged joints. Where feasible, blind flanges will be installed at flanged joints. At TPs where release of contamination and worker exposure are of concern, a relatively short pipe stub may remain beyond the joint. The length of the pipe stub is dependent on field conditions. This type of TP will be sealed and therefore contained by two layers of plastic sleeving taped to the stub.

During Phase I closure activities, all overhead piping between the joints nearest the tank outlets and those nearest the points of entry into the gloveboxes, as indicated in Figures 1-19, will be removed, and the remaining piping capped as described above. The tanks themselves and all remaining ancillary piping and equipment (e.g., pumps, heat exchangers, actuators) are expected to be removed during Phase II closure activities.

The removal of the tanks associated with Systems #19 and #20 is currently scheduled as follows:

Tank No.	Removal Date
D-1401	July, 1999
D-1414	July, 1999
D-1415	July, 1999
D-609	January, 2001
D-610	January, 2001
D-456	July, 2002
D-457	July, 2002
D-980	February, 2003
T-20	February, 2006
T-24	February, 2006
T-28	February, 2006

Systems #19 and #20 piping located inside gloveboxes will be removed when the glovebox is disassembled, to minimize worker exposure and cost. At that time, the waste will be characterized and managed accordingly. However, process piping in Line MT-4 and 42 will be disassembled inside the gloveboxes and drained, and will remain in the respective gloveboxes until disassembly and removal of the glovebox structures.

5.2 Preparation of Engineering and IWCP Work Packages (Phases I and II)

A unit-specific IWCP/engineering work package will be prepared for each system. The RFETS Health and Safety Practices Manual defines the general health and safety measures to be followed at the Site. Closure activities will be conducted in accordance with this manual, incorporating the results of job-specific industrial and nuclear safety-related evaluations and screens.

The IWCP/engineering work package will be used to control work, including preparation of equipment, specification of personal protective equipment, methods of pipe removal and size reduction, methods for containing liquids and preventing releases to the environment, and waste packaging.

As Low As Reasonably Achievable (ALARA) principles will be followed regarding personnel exposures to radiation. Where necessary, radiological containment will be provided during pipe cutting activities by the use of soft-sided structures such as glovebags, sleeves and/or portable housing. Larger containments may be constructed for dismantlement and size reduction of tanks and associated equipment. Following size reduction, equipment pieces will be inspected and placed into a waste container.

5.3 General Methodology for Piping Removal during Phase I

Prior to starting Phase I activities, Systems #19 and #20 will be drained by tapping into low points and applying vacuum at each point until no additional liquid can be removed. The system should then be free of liquids. However, it is possible that residual liquids may be encountered during piping removal. The removal method employed will include provisions to contain residual liquids and/or sludges, which may contain high levels of radioactive contamination. Any resulting liquids or sludges will be characterized and treated for final disposal per waste acceptance criteria.

Solid blockages are not expected in these systems. If a blockage is encountered that cannot be cleared readily during the tap and drain process, additional taps will be installed to minimize the length of the blocked section. Blocked sections will be removed with provisions to contain trapped liquids that may be present. These sections will be size reduced in a manner that accommodates the possibility that trapped liquids may be released to containment. A drainage path will be established through any remaining blockages to ensure that all liquid can be drained from the pipe. If significant blockages are encountered during tap and drain activities, piping removal may be conducted in conjunction with those activities.

Piping removal, size reduction and packaging activities are considered to be dynamic processes, in which improvements in technology will be implemented as a result of newly available methods or lessons learned from prior piping removal operations. The piping removal steps described below may be modified in response to actual operating conditions.

Possible modifications include the manner in which the pipe sections are separated, the type of containment used as a pipe section is removed, and the type of containment used for size reduction (e.g., a hardwall glovebox, a glovebag, a containment house, or an open drum with a catch pan and air mover).

In the majority of cases, piping will be removed in the following manner:

a. Flanges will be disconnected and removal will proceed toward a vacuum source if possible.
b. The piping will be cut using a four-wheel cutter or Sawz-All™.
c. If any residual liquid or sludge is observed at either end of the removed pipe section, that section will be immediately placed in the size reduction containment, to be size reduced and inspected. The recovered residual liquid and/or sludge will be collected, then stored in an approved RCRA storage area.
d. If no residual liquid or sludge is observed at either end of the pipe section, it will be brought to the size reduction area at an appropriate time.
e. Piping sections will be size reduced, as necessary, using an approved cutting method. Pipe sections free of radioactive contamination may be size reduced over an open drum.
f. Pipe sections will be allowed to drain, in a vertical position, if required.
g. Pipe sections will be inspected visually to estimate the amount of residual solid material within the section, and to determine whether a blockage is present within the section.
h. Blockages in pipe sections will be penetrated by mechanical means to drain any trapped liquid.
i. Pipe sections will be drained of any remaining liquids or sludges, then placed into waste containers. Residual materials will be sampled and immobilized.

The contents and condition of the interior of the pipe section will dictate its disposition as waste. Three typical cases may be encountered:

- The interior surface is dry and contains no visible sign of hazardous waste holdup, so that the pipe section can be disposed as non-hazardous waste. This case is expected for all pipe sections in both System #19 and #20.
- The pipe section contains solid residual material adhering to the interior walls, which cannot be removed readily. The pipe section will be managed as hazardous or non-hazardous waste,

based on analytical results for a representative sample of the material.

- A removable blockage or mobile sludge is found, and is removed from the pipe section and sampled. EPA codes are assigned to the sludge based on process knowledge or analytical results, and the sludge is treated to meet applicable waste acceptance criteria. The pipe section will be disposed as hazardous or non-hazardous waste, after a hazardous waste determination has been made.

Each IWCP work package, which will be prepared prior to the start of closure activities, will include more specific and detailed instructions for the sequence of piping removal steps, removal and size reduction methodology, and removal of residual materials from pipe sections.

6.0 SAMPLING AND ANALYSIS

Sampling and analytical methods, and quality assurance standards, are addressed in this section.

6.1 Sampling Methods

Methods used to collect samples are authorized in 6 CCR 1007-3, Part 261, Appendix I, and the Liquid Residue Treatment Waste Characterization Plan for Process Piping Removal. Specific methods will be selected on the basis of ease with which representative samples can be collected, sampling location, sampling matrix, sample container type and size, and accessibility, as well as to maximize the value of data and minimize the number of samples needed.

Sampling of liquids is performed using the procedure entitled, Solution Bottle Handling Building 771, PRO-D02-CO-1131. The solution is mixed while in a bottle to assure homogeneity prior to sampling. Solid material sampling is performed using the procedure entitled, Laboratory Sampling Procedure, CAS-SOP-003.

6.2 Analytical Methods and Location

Analytical work will be performed in an RFETS approved laboratory. The analytical test methods for waste characterization are consistent with the approved methods in the Site RCRA Part B Permit, Part VI, Waste Analysis Plan.

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6.3 Quality Assurance

The applicable RFETS Field Operating Procedure, 5-21-000-OPS-FO, or equivalent procedure(s), will be used to ensure the integrity of representative samples and analytical data.

7.0 DISPOSITION OF CLOSURE-RELATED WASTES

Metal, combustible and liquid/sludge wastes may be generated during either Phase I or Phase II closure activities. It is assumed that the Site waste management and treatment systems will be available to receive wastes generated by these closure activities.

Tank system components and pieces which are radioactively contaminated will be managed in accordance with the requirements of the RFETS Radiological Control Manual and Health and Safety Practices Manual, and will be packaged for disposal in accordance with applicable waste acceptance criteria. All metal waste from this system is expected to be either low level waste or transuranic waste, depending on the amount of actinide present, and will be characterized in accordance with applicable regulations. Tank system components and pieces completely free of any holdup will be managed as non-hazardous waste, because there were no listed wastes in these systems. If the metal waste is determined to be hazardous debris, then an approved extraction technology may be implemented; however, hazardous debris is not expected for either System #19 or #20.

Wipes and other combustible materials that are used to clean surfaces or to immobilize free liquids will be placed into waste drums, characterized and managed in accordance with applicable regulations. Other combustible wastes, including PPE and plastic containment void of any hazardous constituents, will be managed as non-hazardous radioactive waste. All waste drums will be analyzed by non-destructive assay to categorize them and they will be stored in an appropriate onsite storage area prior to offsite disposal.

The only liquids expected to be generated during Phase I or Phase II closure activities are the residual liquid holdup in the equipment. Liquid inventory in the tanks or ancillary equipment, except for incidental amounts that may be absorbed onto wipes, may be transferred directly into tank D-544, which is the temporary storage tank for acids, or drained into 4-liter bottles. The bottles would be placed into permitted or otherwise compliant storage areas and managed in accordance with applicable regulations. The contents of the bottles may be transferred to tank

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D-544, and the entire tank contents sampled and analyzed for RCRA characteristics prior to draining. Liquid in bottles destined for the Miscellaneous Cementation treatment process or the Caustic Waste Treatment process will be sampled and analyzed for final characterization prior to transfer.

Any mobile sludge found in components during closure activities will be removed or immobilized in situ prior to packaging for disposal, in accordance with applicable waste acceptance criteria. If process knowledge is not adequate, then sampling of the sludge will be necessary to characterize it properly. System components containing solidified sludge that adheres to the interior walls will be characterized using analytical results for a representative sample of the sludge and managed in accordance with applicable regulations. The sampling protocol and number of sampling locations will be determined if solid residual material actually is encountered, and will be based on the Waste Characterization Plan.

8.0 SOIL CONTAMINATION EVALUATION AND POST CLOSURE CARE

The operating history for these tank systems (e.g., building logs, RCRA inspection logs and occurrence reports) indicates that there have been no spills or releases to the environment as a result of waste management activities in these units. Phase I and Phase II closure activities associated with these tank systems are not expected to impact the soils surrounding Building 771. Therefore, soil contamination will be evaluated as part of decommissioning and cleanup activities for the Building 771 complex under RFCA, and post-closure care activities are not necessary as part of the closure of these tank systems.

9.0 RECORDKEEPING

The following closure records will be maintained onsite during closure activities, and at a federal repository for a minimum of 30 years following the completion of closure activities:

- sampling logs, including type, numbers and date of samples;
- analytical results;
- records of actions taken to decontaminate equipment and/or structures;
- work instructions used to conduct closure activities;
- closure report for Phase I activities; and
- documentation verifying that closure activities were conducted in accordance with the approved Closure Plan and with this Closure Description Document, following completion of Phase II activities.

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10.0 AMENDMENT OF THE CLOSURE DESCRIPTION DOCUMENT

In conducting Phase I or Phase II closure activities, unexpected events that are identified during the implementation of closure activities may require an amendment to this Closure Description Document. Modifications to this Closure Description Document will be made in accordance with applicable regulations.

During the planning and development stage of Phase II closure activities, additional drawings that are developed for the removal of tanks and remaining ancillary equipment will be submitted as an addendum to this Closure Description Document. This Closure Description Document may be augmented or superceded by an approved Building 771 Decommissioning Operations Plan (DOP).

11.0 REFERENCES

1. Code of Colorado Regulations, Vol. 6, No. 1007-3, Part 265, Subpart G, Sections 265.110 through 265.120.
2. Rocky Flats Environmental Technology Site RCRA Permit, Part X: Closure Plan, effective 5/10/98.
3. Rocky Flats Environmental Technology Site Closure Plan for Interim Status Units, effective 7/98.
4. Rocky Flats Environmental Technology Site 1997 Hazardous Waste Tank Systems Management Plan, effective 2/13/98.
5. Backlog Waste Reassessment Baseline Book, an RFETS Level 1 Manual, effective 2/17/98.
6. Building 771 Basis for Operation (BFO), 98-RF-00947, effective 2/27/98.
7. Building 771 Liquids Process Piping Removal Waste Characterization Plan, Rev. 0, 12/3/98.

Attachment #1 : System Description and Boundaries for System #19

SYSTEM NUMBER	NAME	ENGINEER	REVISION DATE
19	0.35N NITRIC ACID (HNO_3)	GREG VINCENT	01/13/99

A. START POINT	Room 247, Tank T-22
B. END POINT	Rooms 114, 146, 149, 153, 180A, 181A, and Corridor E
C. CHEMICAL COMPOSITION	0.35N Nitric Acid
D. RAD/ACTINIDE CONTAMINATION	$< 10^{-3}$ g/l Pu/U
E. ESTIMATED SYSTEM MAX VOLUME	233 Liters
F. TANKS INVOLVED	Room 114; D-609 and 610 Room 149; D-457 and 980 Room 181A; D-1401 Room 247; T-22, T-24
G. GLOVEBOXES INVOLVED	Room 114; Lines 1 (North), 3, 5, 11, 13, and 15 Room 146; Lines MT-2, 3, 4, and 7 Room 149; Lines 29, 42, and 43D Room 153; Line 153B Room 180A; Lines A-10 and 32 Room 181A; Line SR-14 Room 247; Chemical Hood
H. OTHER COMPONENTS	0.35N HNO_3 Transfer Pump (under Line 42)
I. SYSTEM INTERFACES	Room 114; 0.35N HNO_3 is hard piped to the common fill line for Tanks D-609 and 610 at Line 5. Room 146; 0.35N HNO_3 enters MT-4 and is attached to a manifold that connects other reagent and process lines together. Isolation from this manifold is necessary. Room 149; 0.35N HNO_3 is hard piped to Tank D-457, and from D-457 into Lines 42and 43D. Tank D-457, the 0.35N nitric acid pump and associated piping to Lines 42 and 43D are contaminated. Room 181A; 0.35N HNO_3 is hard piped to Tank D-1401. Remove the check valve at D-1401 and install hose connection.
J. CHEMICAL COMPATIBILITY AT INTERFACE(S)	0.35N HNO_3 is a low normality acid that is compatible with all processes, including tributyl phosphate (TBP)/dodecane. NOTE: Nitric acid should not be mixed with potassium hydroxide (KOH), Freon or hydrogen peroxide (H_2O_2).

Attachment #1 : System Description and Boundaries for System #19 , cont.

K. NARRATIVE DESCRIPTION

0.35N nitric acid general uses were adjusting the normality of plutonium nitrate solutions, eluting ion exchange resins, glovebox cleaning solution, and a reagent for calibrating tanks.

There is approximately 1675 liner feet of primarily ½, ¾ and 1-inch diameter piping involved in this system.

NOTE: All drawings referenced in this description are SK-TOO98122 series unless stated otherwise.

Tank T-24 was batched by metering a volume of 12N nitric acid from tank T-22 and filling the remainder of T-24 with water. Tank T-24 would be mixed, sampled, and ready for use in the first floor processes. 0.35N HNO_3 was distributed from T-24 in Room 247 to Room 146 through the northeast pipe chase, and to Room 149 through the two northwest pipe chases. (Drawing 01)

The northeast pipe drops into Room 146, with a north and south branch. The north branch feeds Lines MT-2 (two drops), MT-3 (3 drops), MT-4 (two drops), and MT-7 (two Tygon hose connections). (Drawing 02)

The south branch continues through Room 146 into 146A, through Room 146A into Corridor E, and from Corridor E into Room 181A. The south branch terminates at Glovebox SR-14 and Tank D-1401. (Drawing 02, 03 & 04)

There are two penetrations (east and west) from the northwest pipe chase in Room 247 into Room 149.

The west drop of the northwest pipe chase from Room 247 to Room 149 travels north directly into Room 114, and splits into two branches. The north branch attaches to Tanks D-609 and 610 at Line 5, proceeds to Lines 13 and 14, continues to Line 11, and terminates at Line 15. (Drawings 05 & 06)

The west branch proceeds west, and branches to Line 5, and branches again at Line 1 (two drops). The 0.35N nitric line continues west out of Room 114 through Corridor A into Corridor D, proceeds west down Corridor D to Room 153, and terminates in Room 153 at Line 153B. (Drawings 05, 07, and 08)

The east drop from the northwest pipe chase from Room 247 to Room 149 travels south into Room 148, turns back to the west back into Room 149 and then north to line 42. This branch contains the Tank D-457, the 0.35 nitric acid transfer pump, and pump discharge piping to Lines 42 and 43D. There are two blanked pipe sections in Room 149 and one that extends from Room 148 back into Room 149. (Drawings 09 & 10)

The north pipe extends from Line 42 and terminates in Line 29. The north line from Line 43D continues and terminates at Tank D-980. (Drawings 10 & 11)

The 0.35N nitric line to Line 42 Ts back to the south, and enters Corridor E, travels east through Corridor E to room 180A, extends north, and terminates in Gloveboxes A-10 and A-32. (Drawings 10 & 12)

20

Attachment #1 : System Description and Boundaries for System #19, cont.

K. NARRATIVE DESCRIPTION (continued)

Piping removal should start from the drain line at Tank T-22 in Room 247, into Tank T-24. Them remove the drain line piping from T-24 to the first floor.

The remainder of piping removal should then follow the subsystem method as described below.

Room 247, Subsystem 1

LO/TO mixer
Remove funnel
Tank T-22 drain line to T-24
Drain line piping from T-24 the individual Subsystems

Rooms 146 & 181A and Corridor E, Subsystem 2

Gravity drain T-24 drain line piping to MT-7 (There is only one glovebox exhaust filter, and currently Ejector pump operations require a minimum of two exhaust filters in each glovebox)
T-24 drain line piping to Gloveboxes MT-2, 3, and 4
T-24 drain to Tank D-1401
T-24 drain to Glovebox SR-14

Room 114, Subsystem 3

Tank T-24 to Line 15, and D-609 and 610
T-24 to Old Line 14 and 13
T-24 to Line 5

Room 114 and 153 and Corridor D, Subsystem 4

Tank T-24 to Line 1 North (2 locations)
T-24 to Room 153, Line 153B

Room 149, Subsystem 5

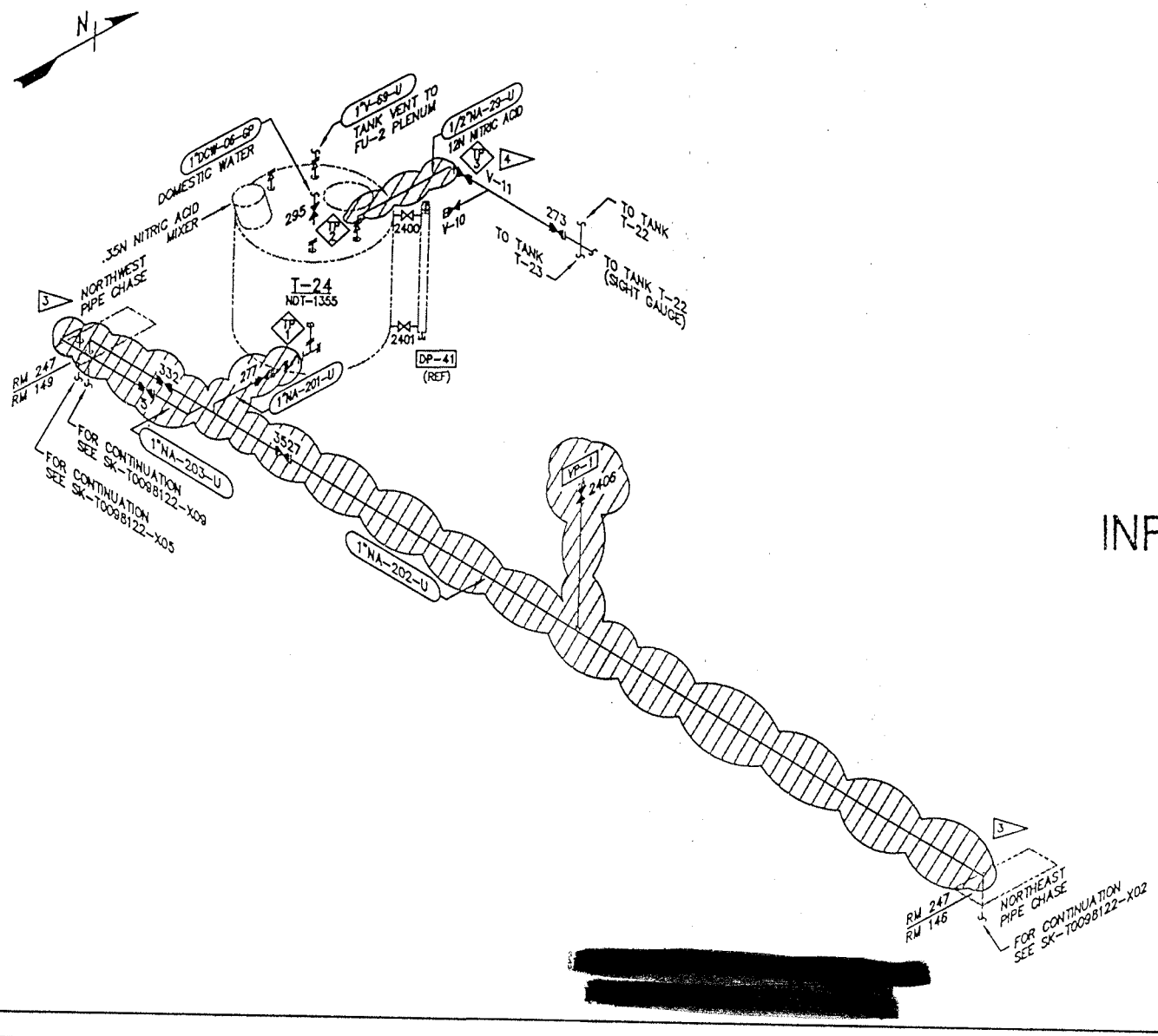
Tank T-24 to the Tank D-457 fill, then drain to pump, and pump to Lines 42 and 43D (LO/TO the electrical to the .35N nitric acid pump below Line 42)

Room 180A and Corridor E, Subsystem 6

T-24 to Tank D-980, then Line 29
T-24 through Room 149 and Corridor E to Room 180A to Line A-10 and A-32

[redacted]

Figure 1: System #19– Tank T-24 to Northwest and Northeast Pipe Chases



NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED WITH "HV" UNLESS OTHERWISE NOTED.
2. FOR TERMINATION POINT DETAILS, SEE SK-T0098122-X13.
3. PATCH THE FLOOR PENETRATION PLATE WITH A FIBERGLASS REPAIR PATCH. USE McMASTER-CARR NO. 7464SA77 OR EQUAL.
4. FIELD FABRICATE AND INSTALL A TEMPORARY PIPE SUPPORT NEAR VALVE V-11 (FIELD LOCATE).

LEGEND

TP 3 — TERMINATION POINT

DP-3 — DRAIN POINT

VP-1 — VENT POINT

INFORMATION ONLY

APPROVED FOR USE
T0098122

G. R. VINCENT — ROOM DRAIN ENGINEER
NAME — TITLE

SIGNATURE — DATE

DRAWN: VINCENT	DATE: 12/17/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY: 771		GOLDEN, COLORADO	
ROOM/AREA: 247		PROCESS PIPING REMOVAL	
GRID COORD/COL NO.		.35N NITRIC ACID – ROOM 247	
SCALE: NONE		SIZE: B	DRAWING NUMBER: SK-T0098122-X01
CAD FILE: X247			SHEET: OF

[redacted]

[redacted]

Figure 2: System #19 – Northwest Pipe Chase (Room 146) to Gloveboxes MT-2, 3, 4 and 7 and Room 146A

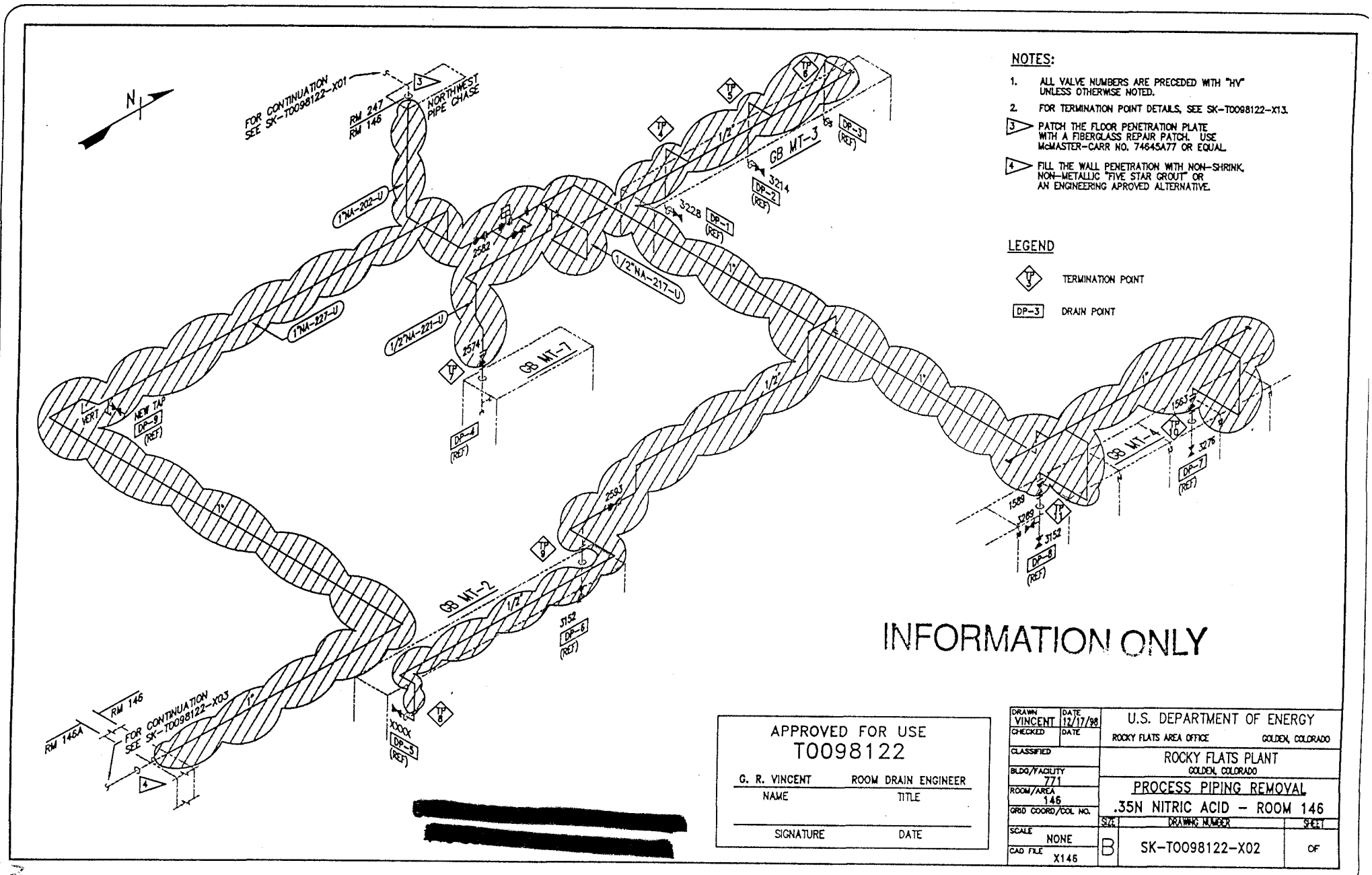


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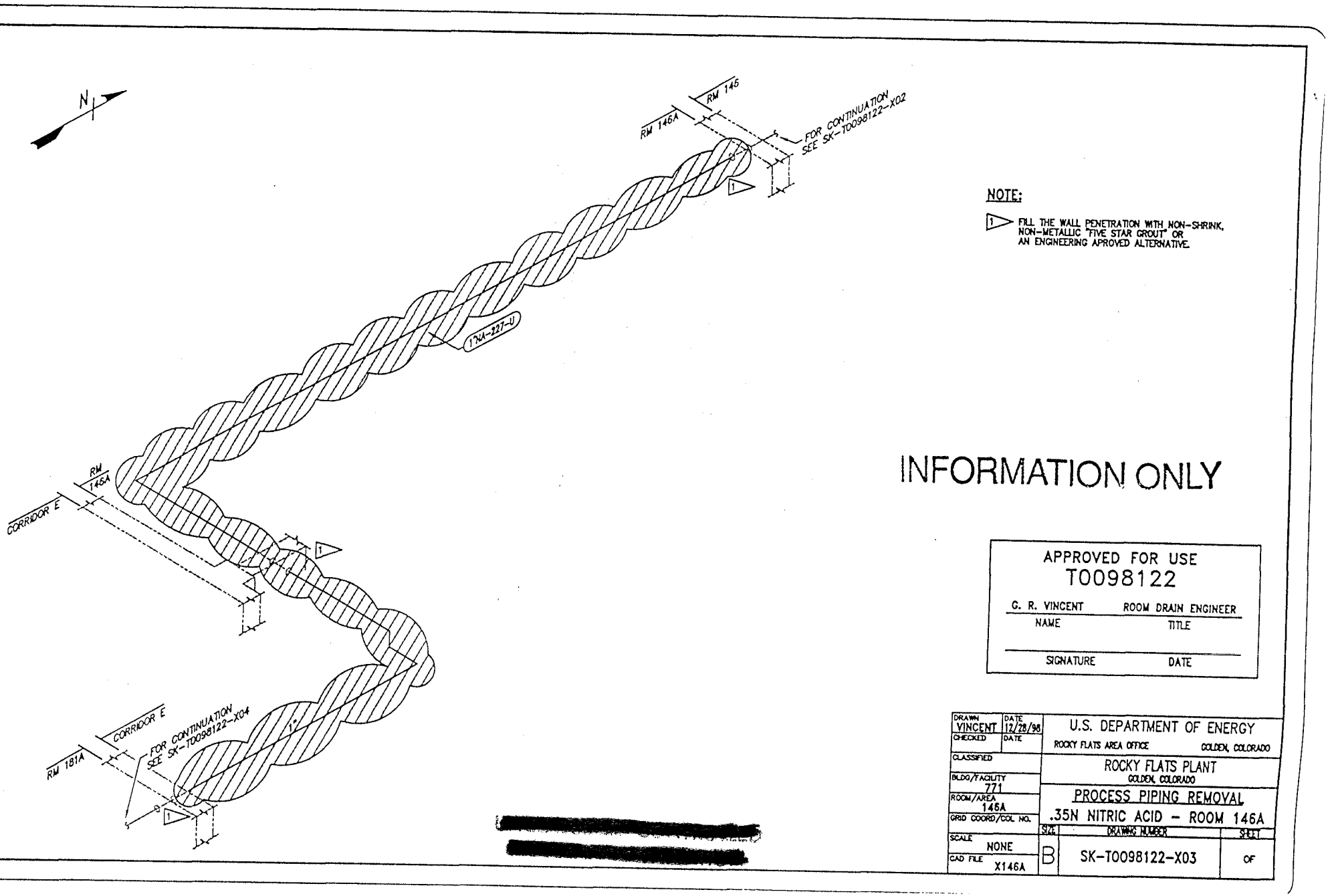
Figure 3: System # 19– Room 146A to Room 181A



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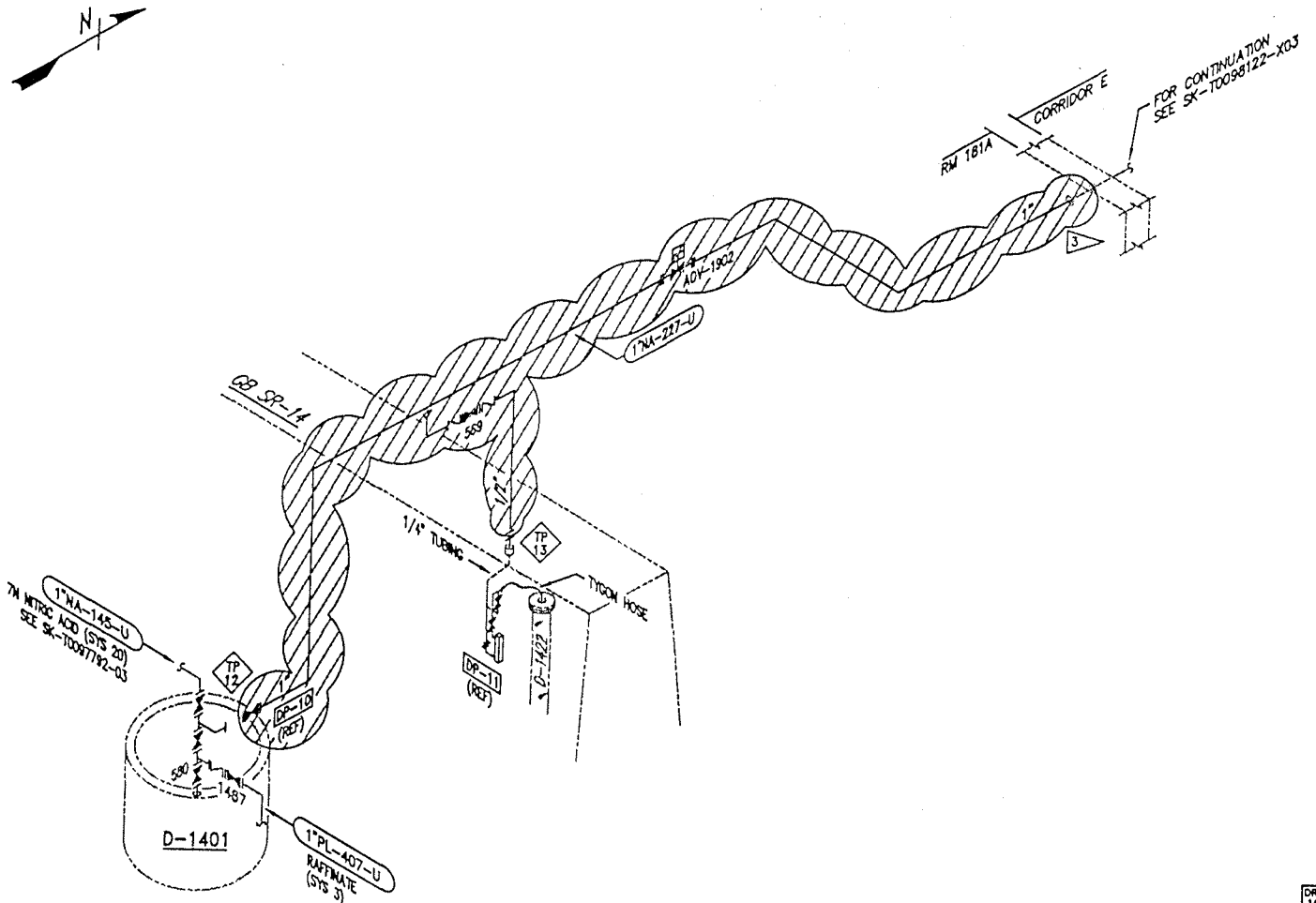
[redacted]

Figure 4: System #19 – Room 181A: Glovebox SR-14 and Tank D-1401



NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED WITH "HV" UNLESS OTHERWISE NOTED.
2. FOR TERMINATION POINT DETAILS, SEE SK-T0098122-X13.
3. FILL THE WALL PENETRATION WITH NON-SHRINK, NON-METALLIC "FIVE STAR GROUT" OR AN ENGINEERING APPROVED ALTERNATIVE.

LEGEND

TP 3 — TERMINATION POINT

DP-3 — DRAIN POINT

APPROVED FOR USE
T0098122

G. R. VINCENT — ROOM DRAIN ENGINEER
NAME — TITLE

SIGNATURE — DATE

INFORMATION ONLY

[redacted]

DRAWN: VINCENT	DATE: 12/29/98	U.S. DEPARTMENT OF ENERGY
CHECKED	DATE	ROCKY FLATS AREA OFFICE — GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT, GOLDEN, COLORADO
BLDG/FACILITY: 771		PROCESS PIPING REMOVAL
ROOM/AREA: 181A		.35N NITRIC ACID – ROOM 181A
GRID COORD/COL NO.		SIZE: B — DRAWING NUMBER: SK-T0098122-X04 — SHEET: OF
SCALE: NONE		
CAD FILE: X181A		

25

[redacted]

Figure 5: System #19 – Northwest Pipe Chase (Room 149) to Room 114, Lines 5, 13 and 14 (old)

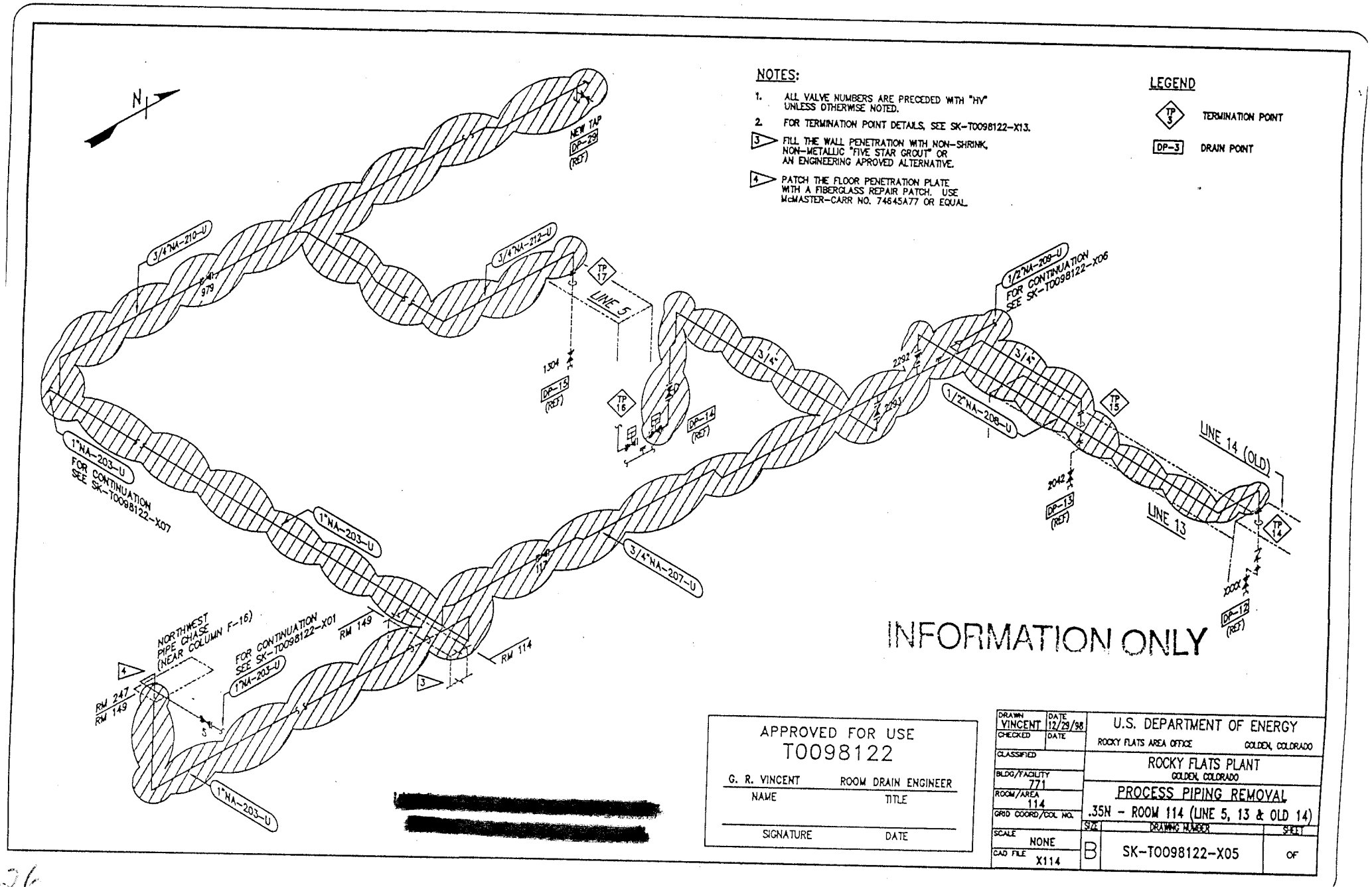


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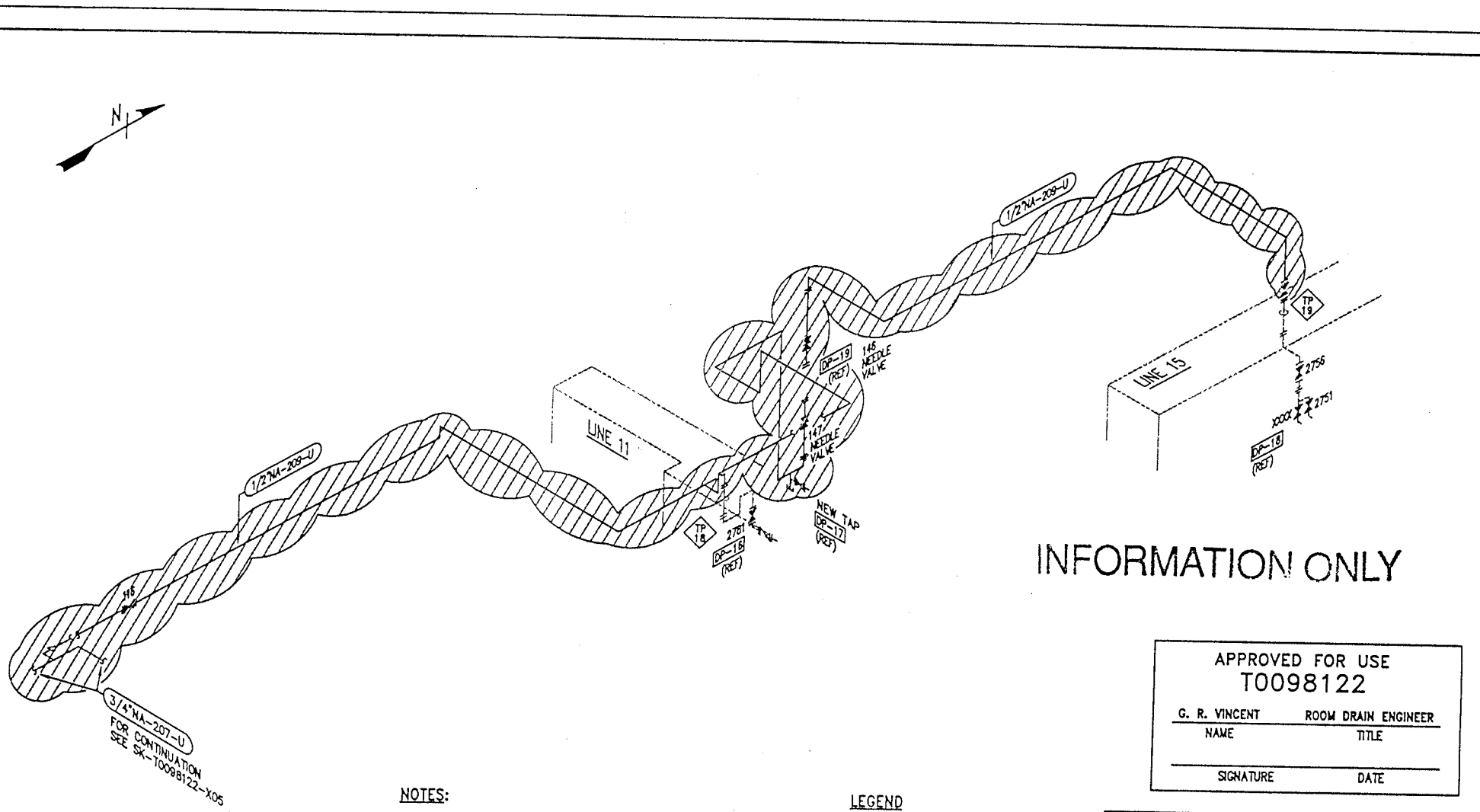
Figure 6: System #19– Room 114, Lines 11 and 15



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27

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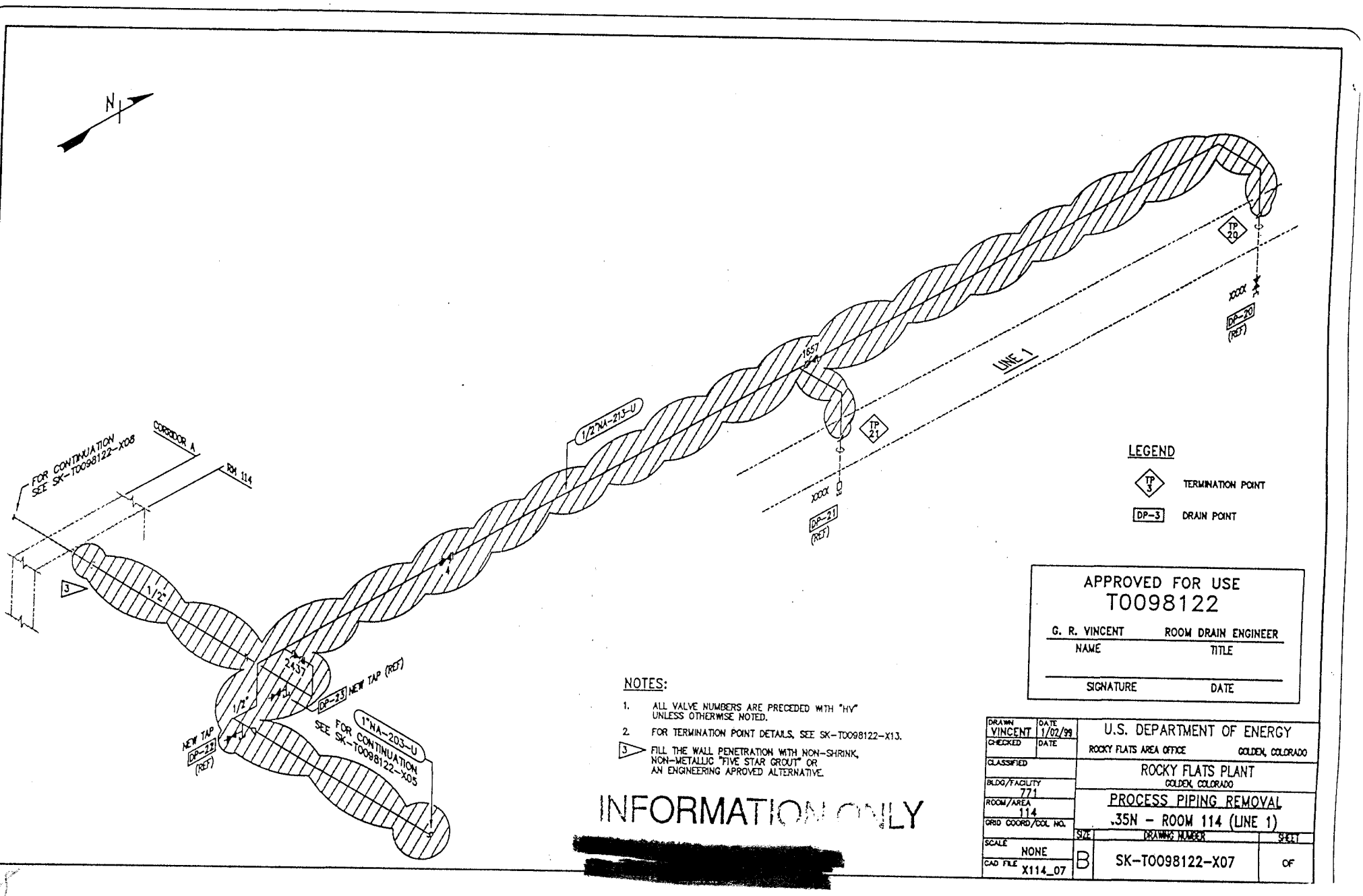
Figure 7: System #19 – Room 114 to Line 1 and Corridor A



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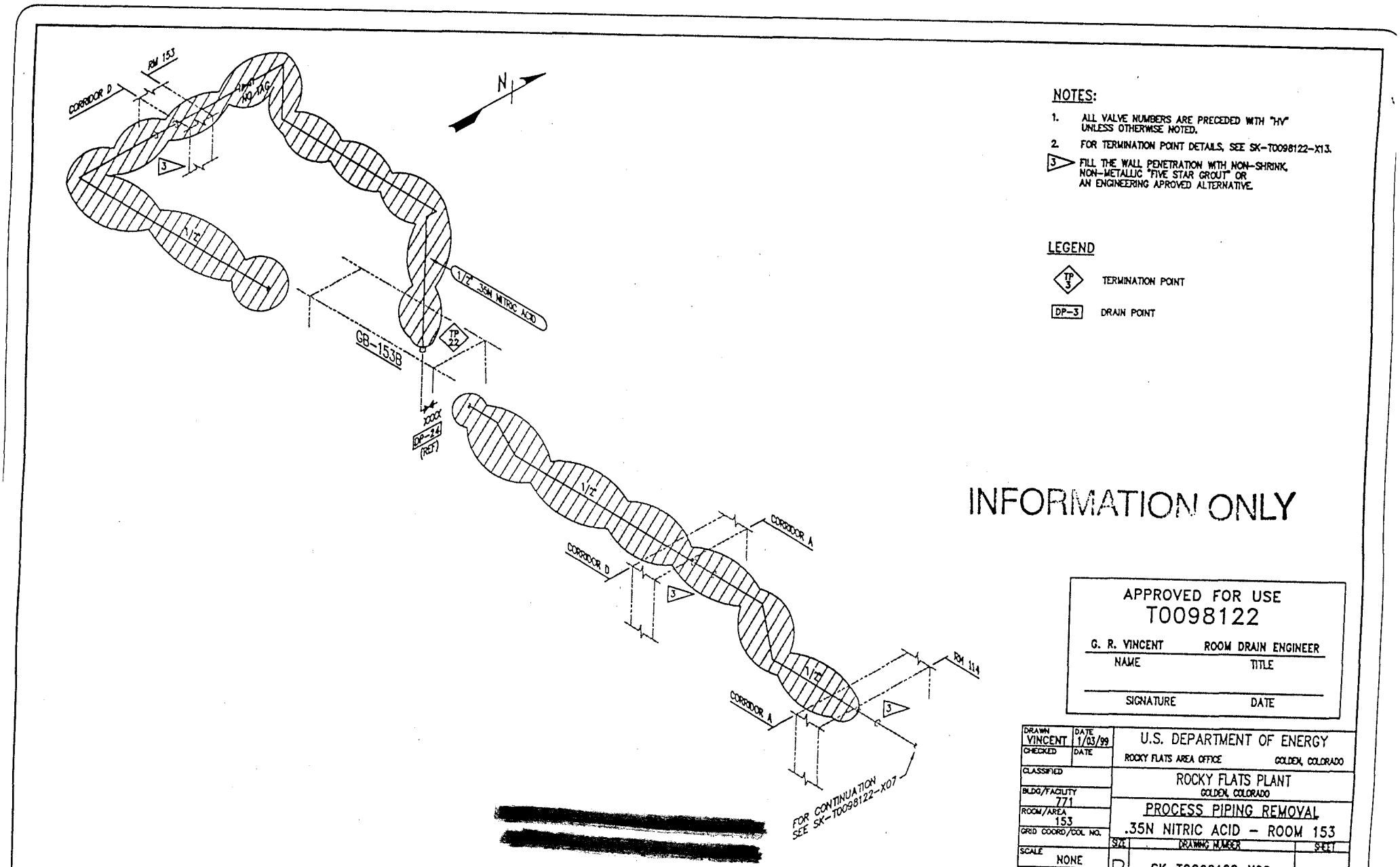
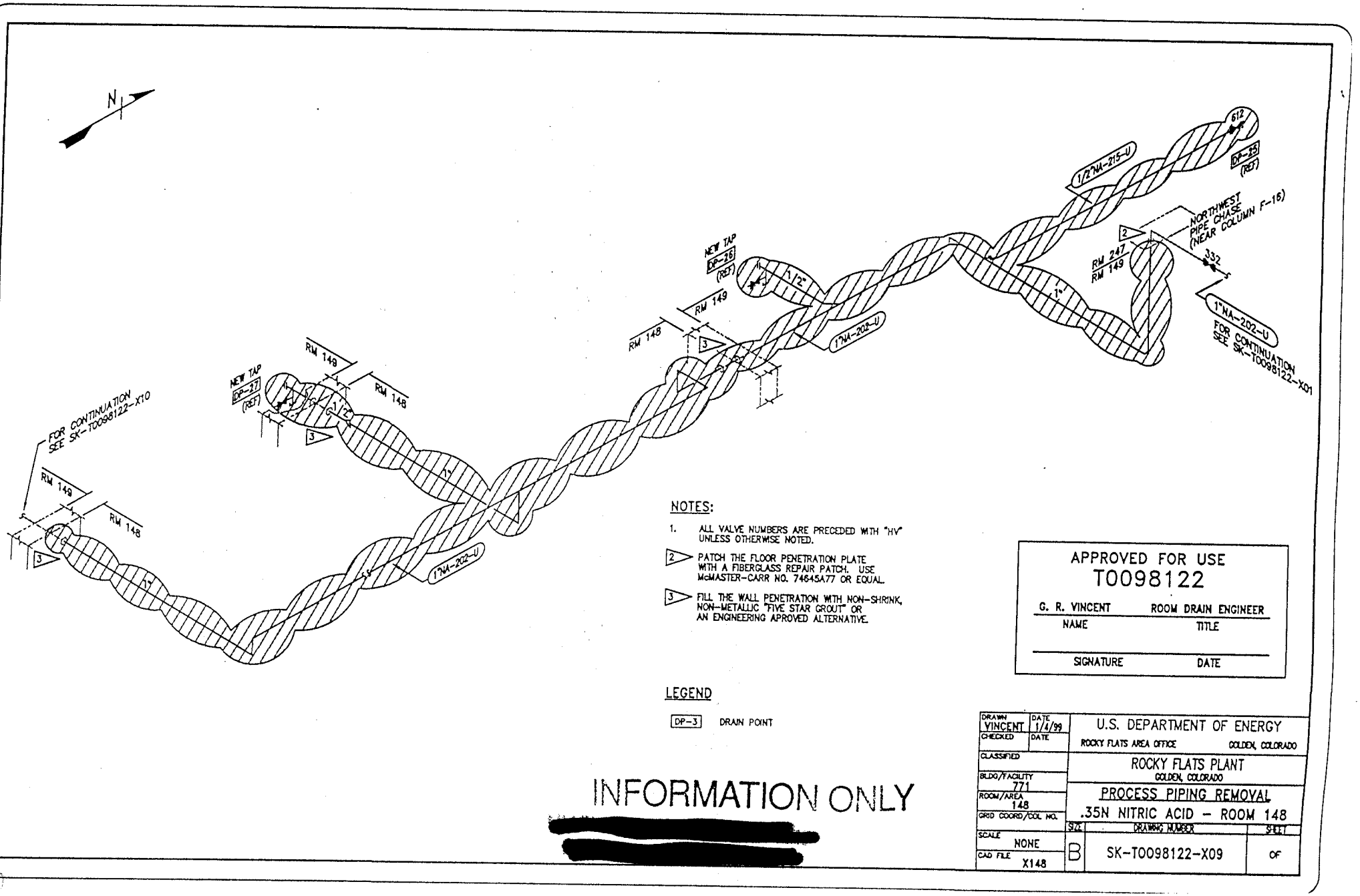
[redacted]

Figure 8: System # 19– Corridor A to Corridor D and Room 153



[redacted]

Figure 9: Systems #19 – Northwest Pipe Chase (Room 149) Through Room 148 and Back to Room 149



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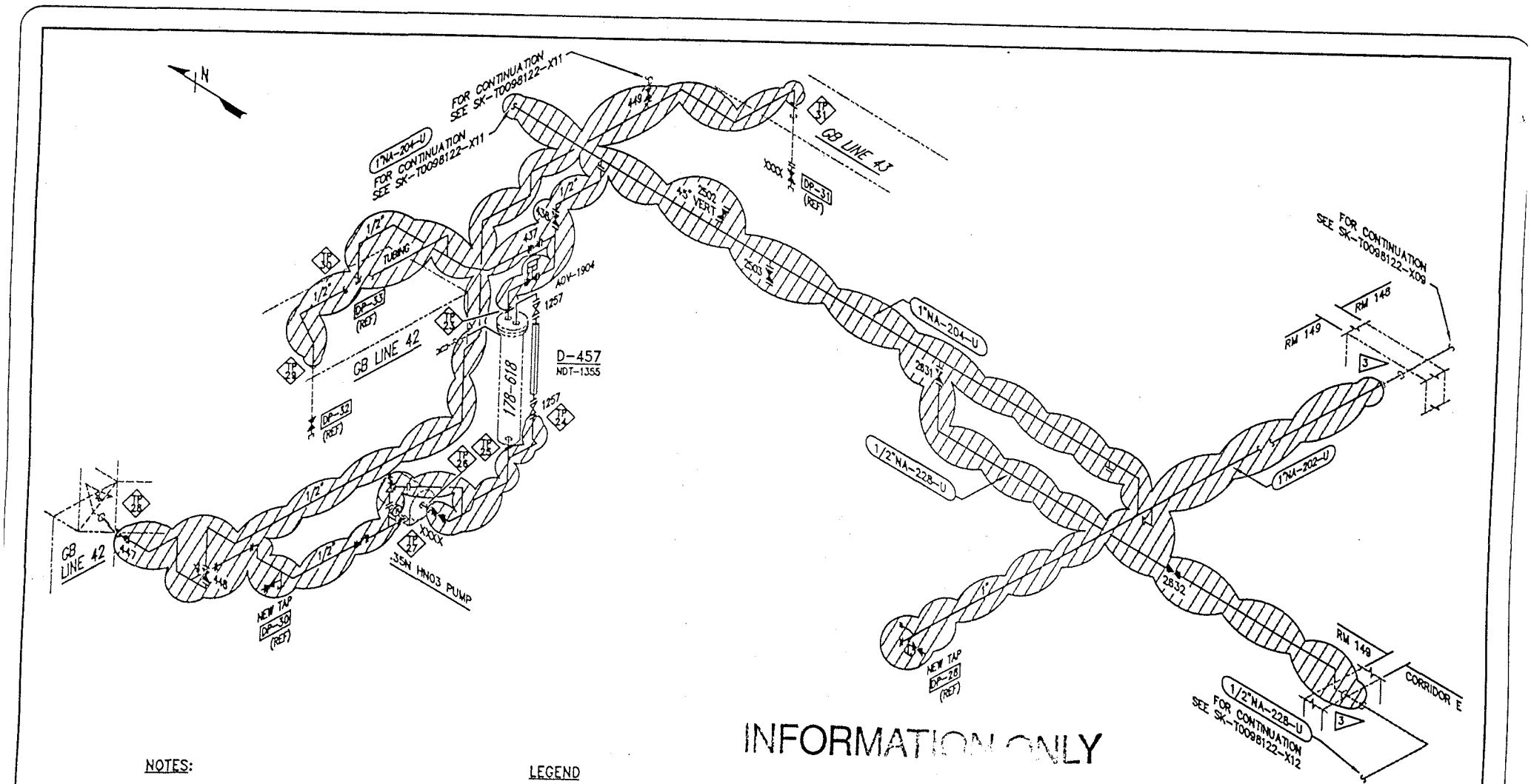
[redacted]

Figure 10: System #19 – Room 149 to Lines 42, 43 and Corridor E



NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED WITH "HV" UNLESS OTHERWISE NOTED.
2. FOR TERMINATION POINT DETAILS, SEE SK-T0098122-X13.
3. FILL THE WALL PENETRATION WITH NON-SHRINK, NON-METALLIC "FIVE STAR GROUT" OR AN ENGINEERING APROVED ALTERNATIVE.

LEGEND

TP — TERMINATION POINT

DP-3 — DRAIN POINT

[redacted]

APPROVED FOR USE
T0098122

G. R. VINCENT — NAME — ROOM DRAIN ENGINEER — TITLE

SIGNATURE — DATE

DRAWN: VINCENT	DATE: 1/04/99	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT GOLDEN, COLORADO	
BLDG/FACILITY: 771		PROCESS PIPING REMOVAL	
ROOM/AREA: 149		.35N – ROOM 149 (LINE 42 & 43)	
GRID COORD/COL NO.		SIZE: B	DRAWING NUMBER: SK-T0098122-X10
SCALE: NONE			SHEET: OF
CAD FILE: X149			

3/

[redacted]

Figure 11: System #19 – Lines 42 and 43 (Room 149) to Tank D-980 and Line 29

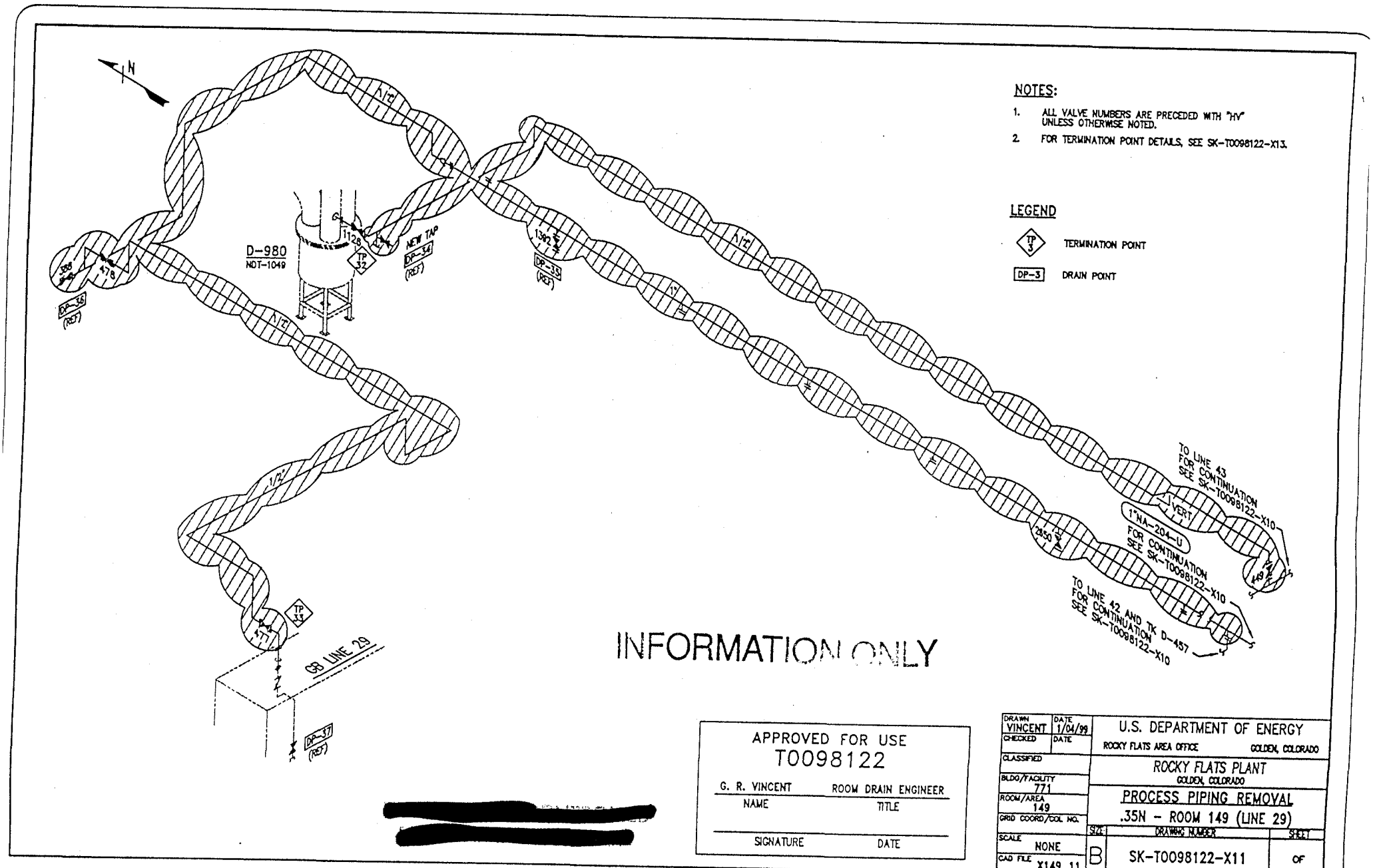


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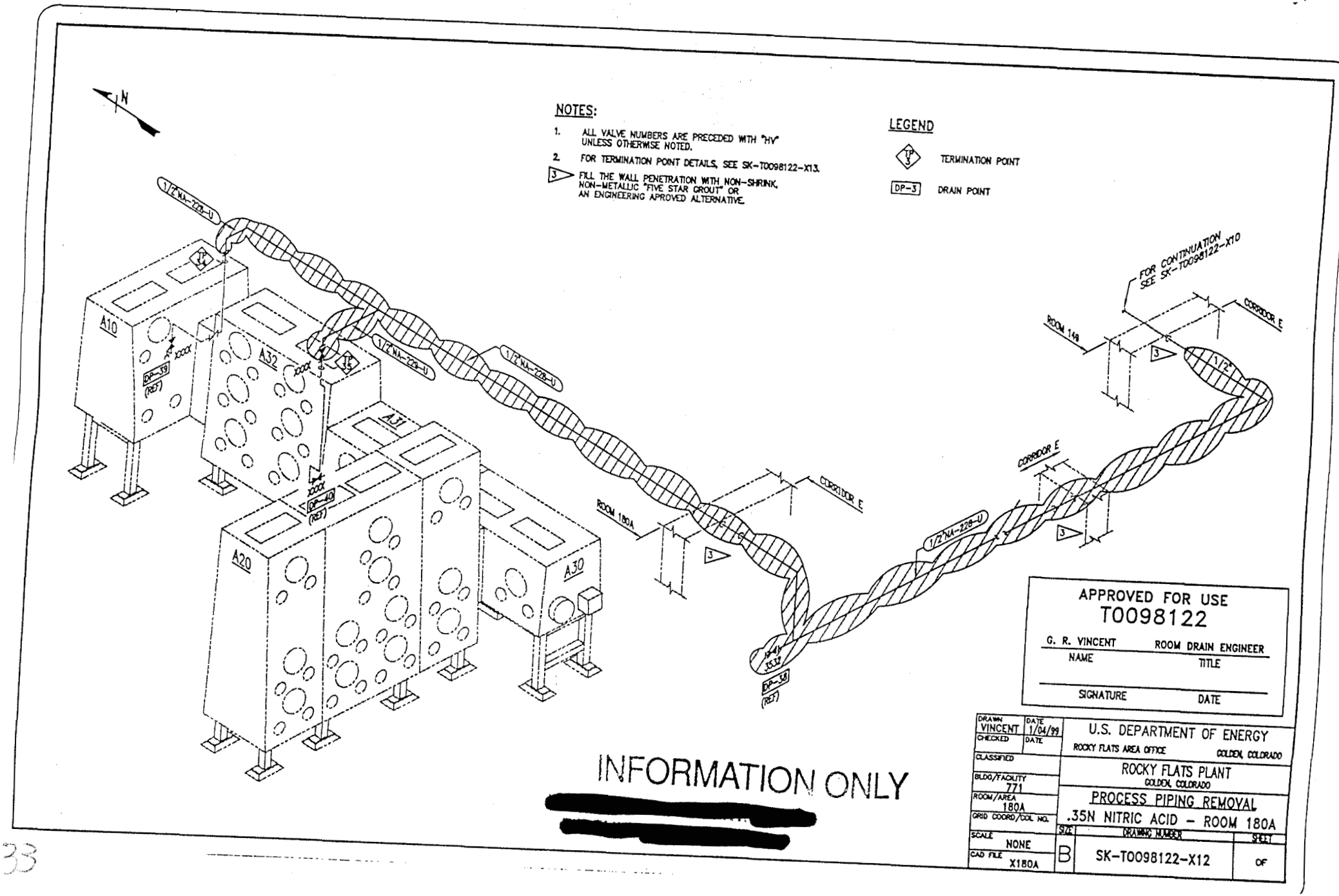
Figure 12: System #19 – Corridor E to Room 180A



INFORMATION ONLY

[redacted]

Attachment 2: System Description and Boundaries for System #20

SYSTEM NUMBER	NAME	ENGINEER	REVISION DATE
20	7N NITRIC ACID (HNO_3)	BOB McALLISTER	01/13/99

A. START POINT

Room 247, Tank T-28

B. END POINT

Rooms 114, 114A, 146, 149, 153, 180A, 181A

C. CHEMICAL COMPOSITION

7N HNO_3

D. RAD/ACTINIDE CONTAMINATION

$< 10^{-3}$ g/l Pu/U

E. ESTIMATED SYSTEM MAX VOLUME

258 Liters

F. TANKS INVOLVED

Room 249; T-20, T-23, T-28, T-44
Room 149; D-456
Room 181A; D-1401, D-1414, D-1415

G. GLOVEBOXES INVOLVED

Room 114; Lines 1(North), 3, 5, and 14(New)- for Ejector pump location only
Room 146; Lines MT-2, 3, and 4
Room 149; Lines 29, 30, 42, and 43D
Room 153; Lines 153B and C
Room 180A; Line A-10
Room 181A; Line SR-14
Room 247; Chemical Hood

H. OTHER COMPONENTS

Room 114, - calibration drops on south wall Line 18, east wall Line 14, west wall between tanks D-706 & 713, and west wall between tanks D-716 & 764.

Room 149; Tank D-456, the Line 42/43D 7N HNO_3 wash cycle pump and heater, and are hard piped, and to be considered plutonium contaminated.

Room 149; calibration drops on the north shielding wall by Tank D-971, Column D-10 east side of Line 30, inside the tank farm shielding at Tank D-466

Room 180A; calibration drop at Column D-3

Room 247; P-120 7/12N HNO_3 transfer pump

I. SYSTEM INTERFACES

Room 146, Line MT-4; 7N HNO_3 is connected to a complex manifold. Isolation from the manifold is recommended.

Room 149; 7N HNO_3 is hard piped to Tank D-467, and from D-456 into Lines 42and 43D. Tank D-456, the 7N HNO_3 pump and associated piping to Lines 42 and 43D are contaminated.

Room 181A, Line SR-14; 7N HNO_3c is hard piped to Tanks D-1401, 1414 and 1415. In order to separate 7N HNO_3 from System 3, TBP/Dodecane, do not vent purge or drain the 7N HNO_3 into tank D-1401, 1414 or 1415.

Attachment 2: System Description and Boundaries for System #20, cont.

J. CHEMICAL COMPATIBILITY AT INTERFACE(S)

System 3, tributyl phosphate (TBP)/dodecane process liquids can currently be vented, purged and/or drained into the same container as long as 7N HNO_3 is not added to Tanks D-1401, 1414, and 1415 prior to performing any of the activities. Therefore, 7N HNO_3 will have to be removed prior to entering the fill valves for Tanks D-1401, 1414, and 1415.

NOTE: Nitric acid should not be mixed with Potassium Hydroxide (KOH), Freon or Hydrogen Peroxide (H_2O_2).

K. NARRATIVE DESCRIPTION

7N HNO_3 was a primarily used to wash and recondition the ion exchange columns, and provide calibration solution for Raschig Ring, annular, and pencil tanks.

There are approximately 1760 liner feet of primarily ½ and 1 inch diameter piping involved in this system.

NOTE: All drawings referenced in this description are ST-TOO97792 series unless stated otherwise.

7N HNO_3 would be batched in Tank T-20 by pumping 12N HNO_3 from Tank T-23 to Tank T-20, and adding water by way of the funnel above Tank T-20. (Drawing 01)

Tank T-20 was then circulated through the pump, with the normality sample taken from the Densitrol loop, also attached to Tank T-20. The contents of Tank T-20 would be then transferred to Tank T-28, for distribution to the first floor through piping penetrations into Rooms 146 and 149. (Drawing 01)

5.8N HNO_3 would also be batched in Tank T-44 by pumping the 12N HNO_3 from T-23, and adding water by funnel, into T-44. (Drawing 01)

The northeast pipe chase drops into Room 146, with a north and south branch. The north branch feeds Lines MT-2 (two drops), MT-3 (two drops), and MT-4 (two drops), and calibration drops at Column K-15 in Room 146 and one in Room 146B. (Drawing 02)

The south branch continues through Room 146 into 146A, through Room 146A into Corridor E, and from Corridor E into Room 181A. The south branch terminates at Glovebox SR-14 and Tanks D-1401, 1414, and 1415. (Drawings 02 & 03)

The northwest pipe chase from Room 247 to Room 149 splits in two, with the south branch continuing in Room 149, and the north branch entering Room 114.

The south branch enters Line 29, Line 30 (two drops), the contaminated piping to Tank D-457, the 7N HNO_3 transfer pump, pump discharge piping to Lines 42 and 43D, Line 42 piping manifold, and 5 calibration drops. (Drawing 04)

The south branch continues through Room 149 into Corridor E, north down Corridor E into Room 180A, terminating in Gloveboxes A-10, and at a calibration drop. (Drawings 04 & 06)

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Attachment 2: System Description and Boundaries for System #20, cont.

K. NARRATIVE DESCRIPTION (continued)

The north branch of the northwest pipe chase continues through Room 114, entering Line 1 (two drops), Line 3, Line 5, and terminating at 7 calibration drops. (Drawing 04 & 05)

The continuation of the north branch through Room 114enters Corridor A, through Corridor A into Corridor D, west down Corridor D to Room 153, and terminating in Gloveboxes 153B and 153C. (Drawings 04 & 06)

Remove the piping between tanks T-23 drain, the HNO_3 circulation/transfer pump, T-44 fill, T-28 fill and drain, and T-20 fill and drain line.

The remainder of the piping removal should then follow the subsystem method as described below.

Room 247, Subsystem 1

Piping between tanks T-23 drain, the HNO_3 circulation/transfer pump, T-44 fill, T-28 fill and drain, and T-20 fill and drain line

Ensure that HV-280 on Tank T-23 drain and HV-281 on Tank T-28 drain, are LO/TO in the closed position

Room 146, 146A, Room 146C, Corridor E, 181A, Subsystem 2

VP/TD at D-1401, 1402, and 1415 (remove check valves and install hose connection) and work back to SR-14
Piping back to Room 146
Calibration drops in Room 146C and Column K-15.
Piping to Lines MT-2, 3, and 4

Room 149, Subsystem 3

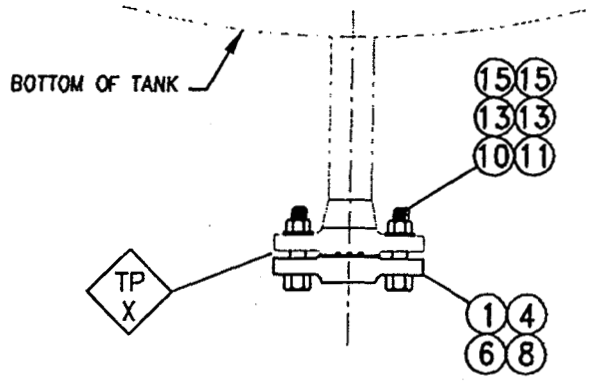
Piping to the 6 calibration drops
Piping to Tank D-457, the 7N HNO_3 pump, and associated piping
Piping to Lines 29, 30, 42, and 43D

Rooms 114, 153, and Corridor D, Subsystem 4

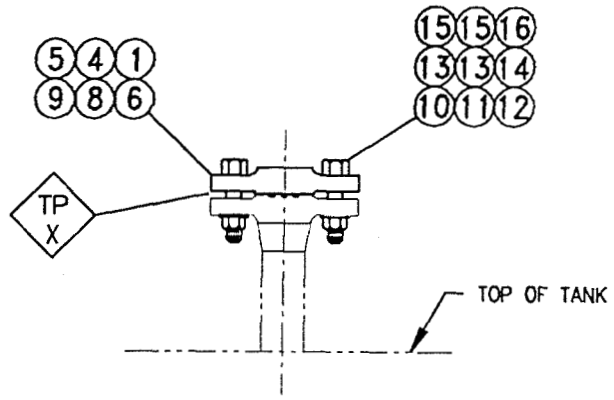
Piping to the 7 calibration drops in Room 114
Piping to Lines 1North, 3 and 5
Piping From Room 114 to Gloveboxes 153B and 153C in Room 153

Room 180A and Corridor E, Subsystem 5

Piping from Room 149 to Room 180A
Piping to the calibration drop
Piping to Glovebox A-10



1 DETAIL
SCALE: NONE
1" - TYP FOR TP-28
1/2" - TYP FOR TP-21



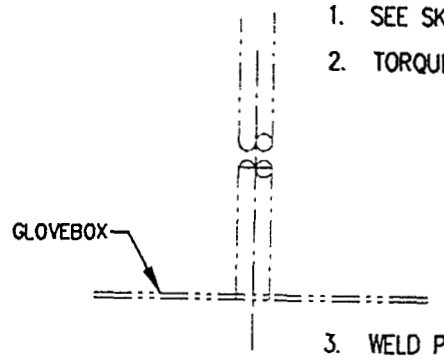
2 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-20 & -37
1" - TYP FOR TP-38
3" - TYP FOR TP-43

NOTES:

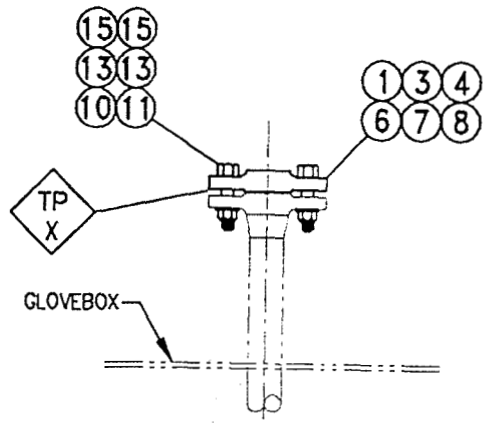
1. SEE SK-T0097522-01, -02, & -03 FOR TERMINATION POINT LOCATIONS.
2. TORQUE FLANGE BOLTS IN ACCORDANCE WITH PLANT GUIDANCE SX-162.

NOMINAL FLANGE SIZE	RECOMMENDED BOLT TORQUE (FT-LB)
1/2"	28 (±4)
3/4"	40 (±6)
1"	53 (±8)

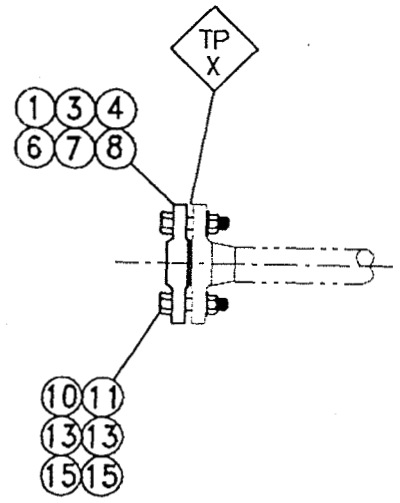
3. WELD PIPING PER RFP STANDARD SM-102.



9 DETAIL - OPTIONAL
SCALE: NONE

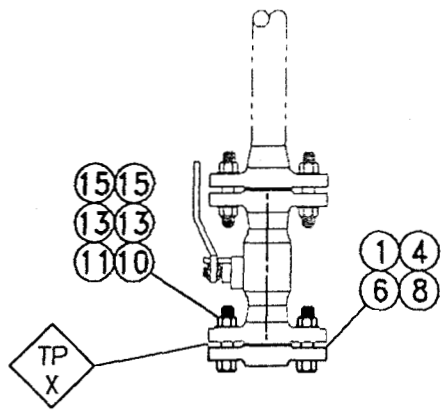


3 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-1, -2, -5, -6, -7, -17, -23, -24, -27, -35 & -36
3/4" - TYP FOR TP-10 & -13
1" - TYP FOR TP-31 & -32

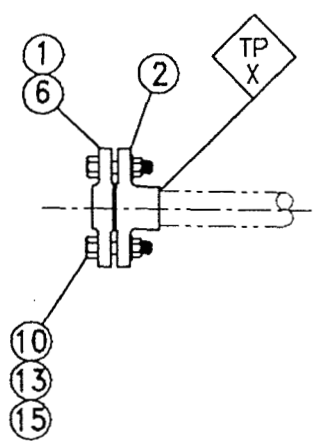


4 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-3
3/4" - TYP FOR TP-39
1" - TYP FOR TP-15, -16, -22, -25, -30 & -40

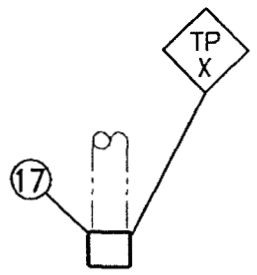
PART	QTY	DESCRIPTION	MATERIAL
1	23	FLANGE, 1/2", BLIND, RF, CLASS 150, ASTM A182 GR F B16.5	304L SST
2	2	FLANGE, 1/2", SLIP ON, RF, CLASS 150, ASTM A182 GR F 304L	304L SST
3	3	FLANGE, 3/4", BLIND, RF, CLASS 150, ASTM A182 GR F B16.5	304L SST
4	16	FLANGE, 1", BLIND, RF, CLASS 150, ASTM A182 GR F B16.5	304L SST
5	1	FLANGE, 3", BLIND, RF, CLASS 150, ASTM A182 GR F B16.5	304L SST
6	23	GASKET, 1/2" PIPE DIA, 1/8" THK, STYLE 3510, 150# RING TYPE W/ TAB, GARLOCK INC	GARLOCK GYLON
7	3	GASKET, 3/4" PIPE DIA, 1/8" THK, STYLE 3510, 150# RING TYPE W/ TAB, GARLOCK INC	GARLOCK GYLON
8	16	GASKET, 1" PIPE DIA, 1/8" THK, STYLE 3510, 150# RING TYPE W/ TAB, GARLOCK INC	GARLOCK GYLON
9	1	GASKET, 3" PIPE DIA, 1/8" THK, STYLE 3510, 150# RING TYPE W/ TAB, GARLOCK INC	GARLOCK GYLON
10	104	BOLT, 1/2"-13 UNC-2A X 2 3/4" LG ASTM A193, GRADE B2, CLASS 2	SST
11	64	BOLT, 1/2"-13 UNC-2A X 3" LG ASTM A193, GRADE B2, CLASS 2	SST
12	4	BOLT, 5/8"-11 UNC X 4" LG ASTM A193, GRADE 8	SST
13	4	NUT, HEAVY HEX, 1/2"-13 UNC-2B ASTM A194, GRADE B2, CLASS 2	SST
14	4	NUT, HEAVY HEX, 5/8"-11UNC-2B ASTM A194, GRADE 8	SST
15	332	WASHER, 1/2", TYPE B, NARROW SERIES ANSI B 18.22.1	SST
16	8	WASHER, 5/8", TYPE B, NARROW SERIES ANSI B 18.22.1	304 SST
17	2	CAP, 1/2" SOCKET WELD. SCH. 40 B16.11	304L SST
18	1	GROUT, 5 STAR, BAG, SHOP STOCK	GROUT
19	1	PLUG, 3/4", THREADED, CLASS 3000, FORGED ASTM A105, ANSI B16.11	CARBON STEEL
20	2	PATCH, FIBERGLASS REPAIR, 4"X6", MCMASTER-CARR P/N 74645A77, CAT. 103, PAGE 2718	FIBERGLASS
21	28	CONNECTOR, HOSE, 1/2" MNPT X 3/8" BARB CAJON SS-8-HC-1-6	316 SST



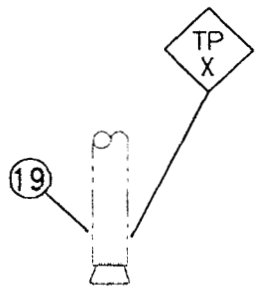
5 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-4, -8, -18 & -45
1" - TYP FOR TP-9, -11, -12, -19, -29, -41, -42 & -48



6 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-33 & -34



7 DETAIL
SCALE: NONE
1/2" - TYP FOR TP-26 & -46



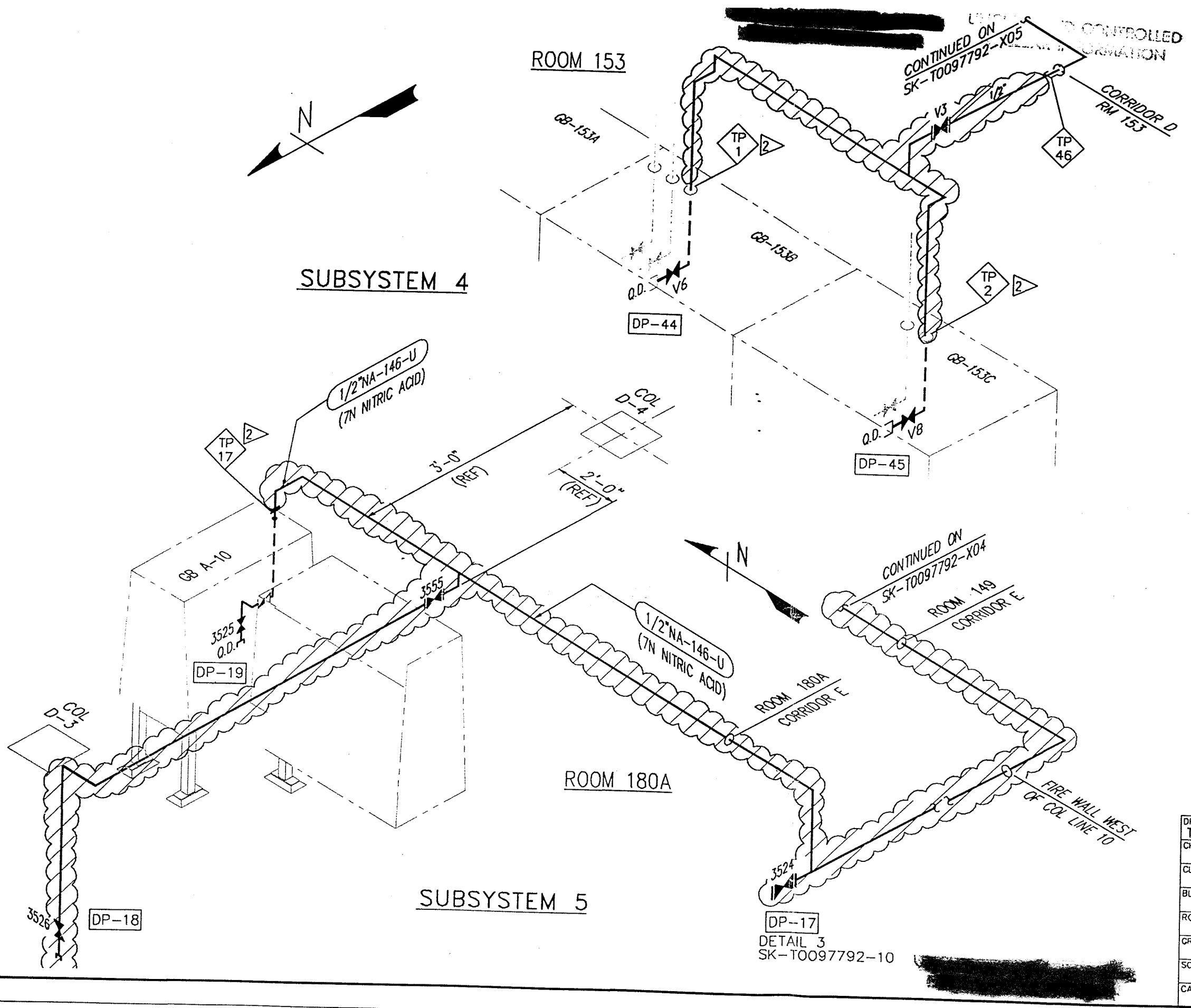
8 DETAIL
SCALE: NONE
3/4" - TYP FOR TP-44

APPROVED FOR USE
T0097792

NAME TITLE

SIGNATURE DATE

DRAWN TRUJILLO	DATE 12/7/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY 771		GOLDEN, COLORADO	
ROOM/AREA VARIOUS		LIQUIDS REMOVAL	
GRID COORD/COL NO.		7N NITRIC ACID TERM. DETS	
SCALE NONE	SIZE B	DRAWING NUMBER SK-T0097792-X07	SHEET OF
CAD FILE 7N-X07			



NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED.
2. SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.

APPROVED FOR USE
T0097792

NAME TITLE

SIGNATURE DATE

[redacted]

DRAWN TRUJILLO	DATE 12/16/98	U.S. DEPARTMENT OF ENERGY
CHECKED	DATE	ROCKY FLATS AREA OFFICE GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT GOLDEN, COLORADO
BLDG/FACILITY 771		PROCESS PIPING REMOVAL
ROOM/AREA 153 & 180A		7N NITRIC ACID - SUBSYSTEMS 4 & 5
GRID COORD/COL NO.		SIZE / DRAWING NUMBER / SHEET
SCALE NONE		B SK-T0097792-X06 OF
CAD FILE 7N-X06		

[redacted]

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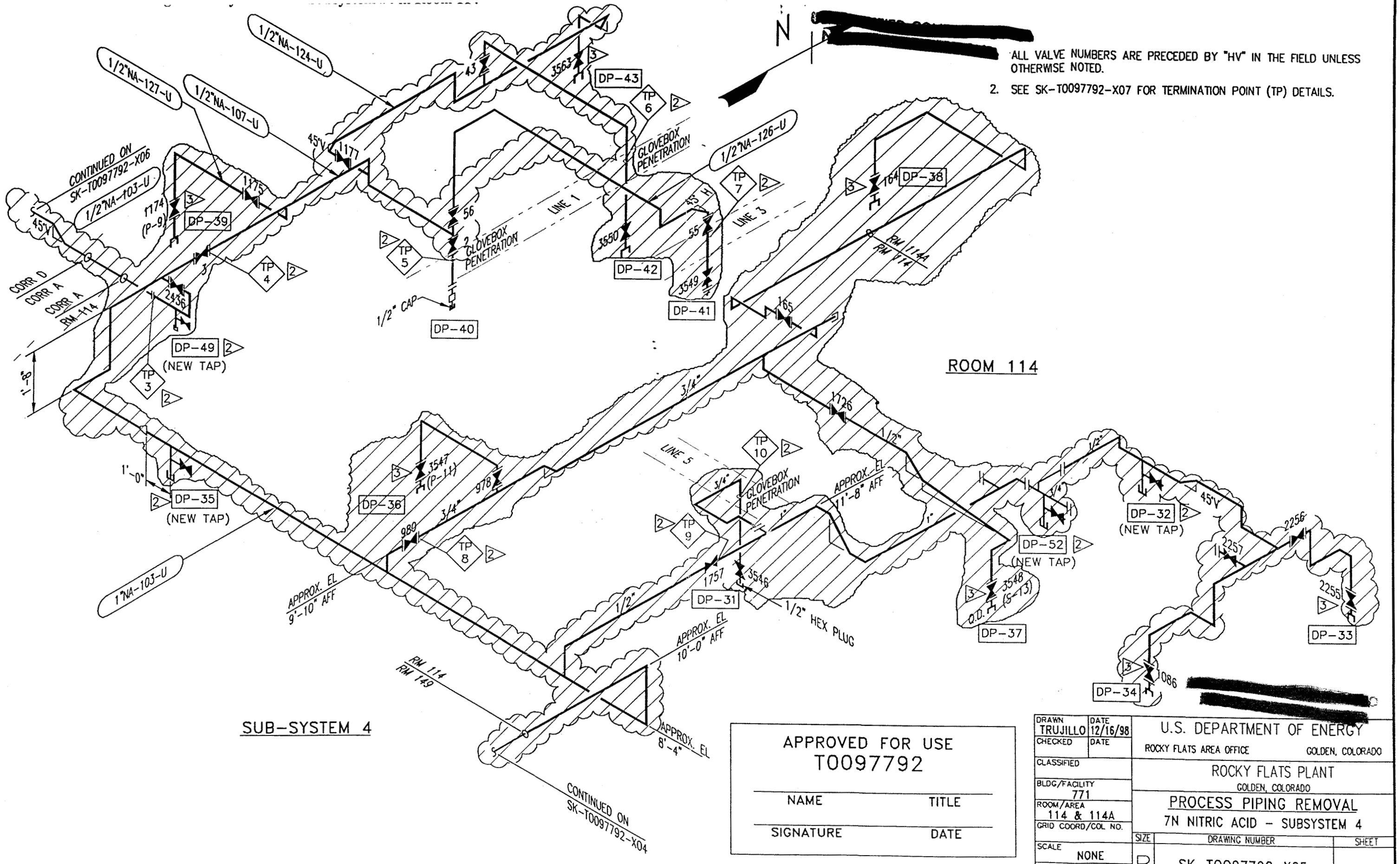

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED.
2. SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.

APPROVED FOR USE
T0097792

NAME TITLE

SIGNATURE DATE

DRAWN TRUJILLO	DATE 12/16/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY 771		GOLDEN, COLORADO	
ROOM/AREA 114 & 114A		PROCESS PIPING REMOVAL	
GRID COORD/COL NO.		7N NITRIC ACID – SUBSYSTEM 4	
SCALE NONE	SIZE B	DRAWING NUMBER SK-T0097792-X05	SHEET OF
CAD FILE 7N-X05			

[redacted]

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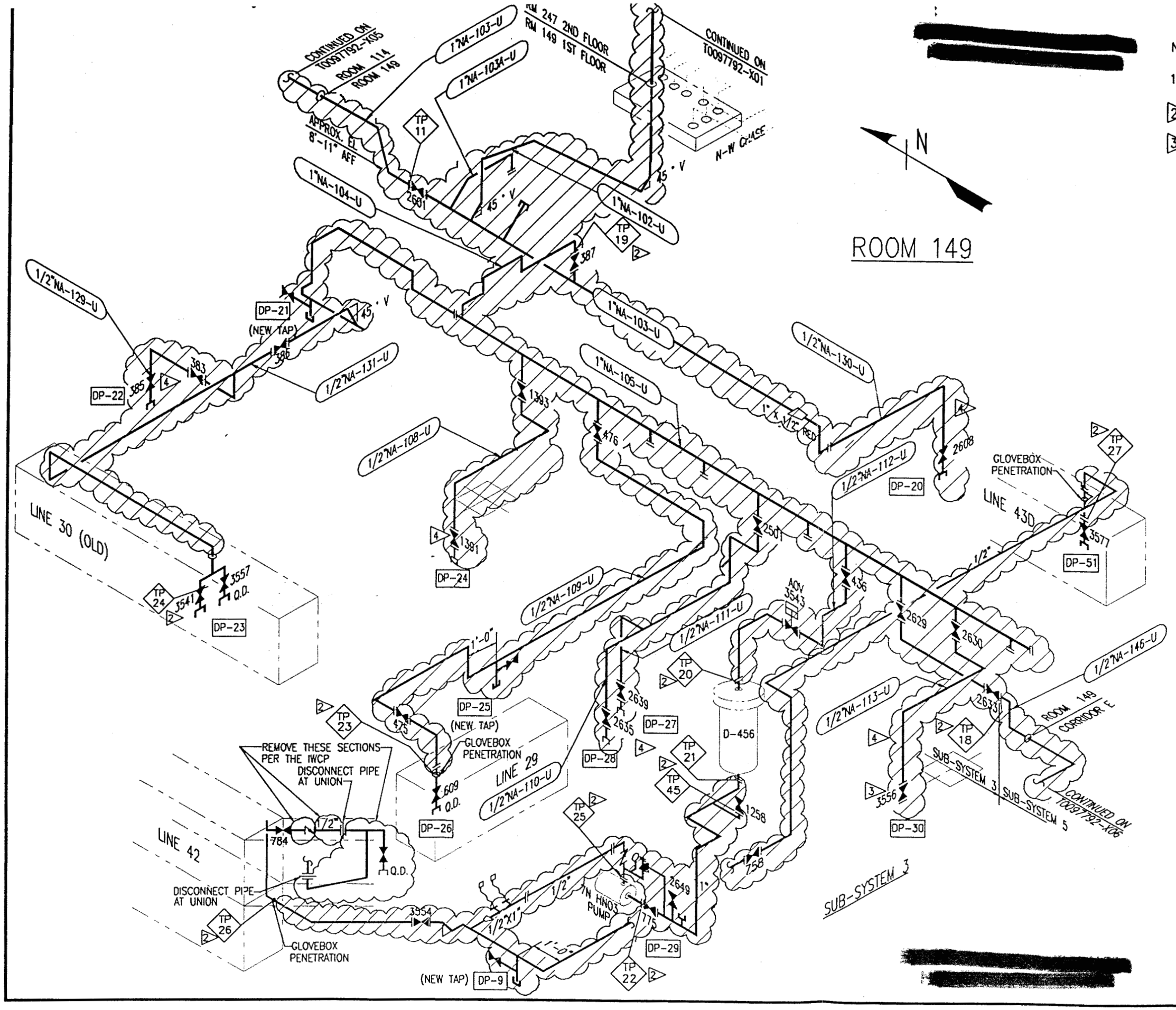

NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED.
2. SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.
3. VALVE WRAPPED IN PLASTIC FOR CONTAMINATION CONTROL PURPOSES.

[redacted]

APPROVED FOR USE
T0097792

NAME	TITLE
SIGNATURE	DATE

[redacted]

DRAWN TRUJILLO	DATE 12/16/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY 771		GOLDEN, COLORADO	
ROOM/AREA 149		PROCESS PIPING REMOVAL	
GRID COORD/COL NO.		7N NITRIC ACID – SUBSYSTEM 3	
SCALE NONE	SIZE B	DRAWING NUMBER SK-T0097792-X04	SHEET OF
CAD FILE 7N-X04			

[redacted]

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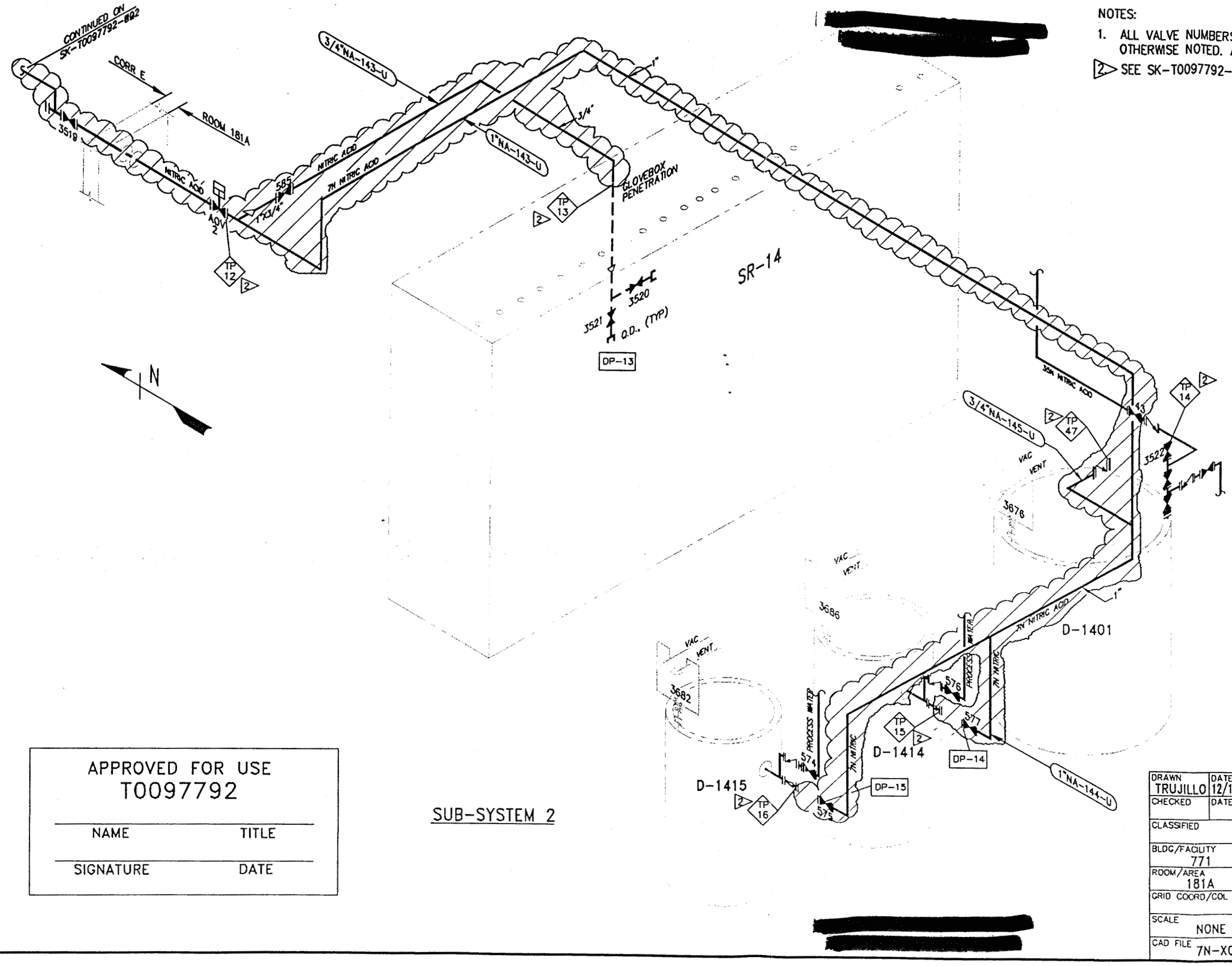


NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED. ALL VALVES ARE FLANGED.

2 SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.

[redacted]

APPROVED FOR USE T0097792	
NAME	TITLE
SIGNATURE	DATE

SUB-SYSTEM 2

[redacted]

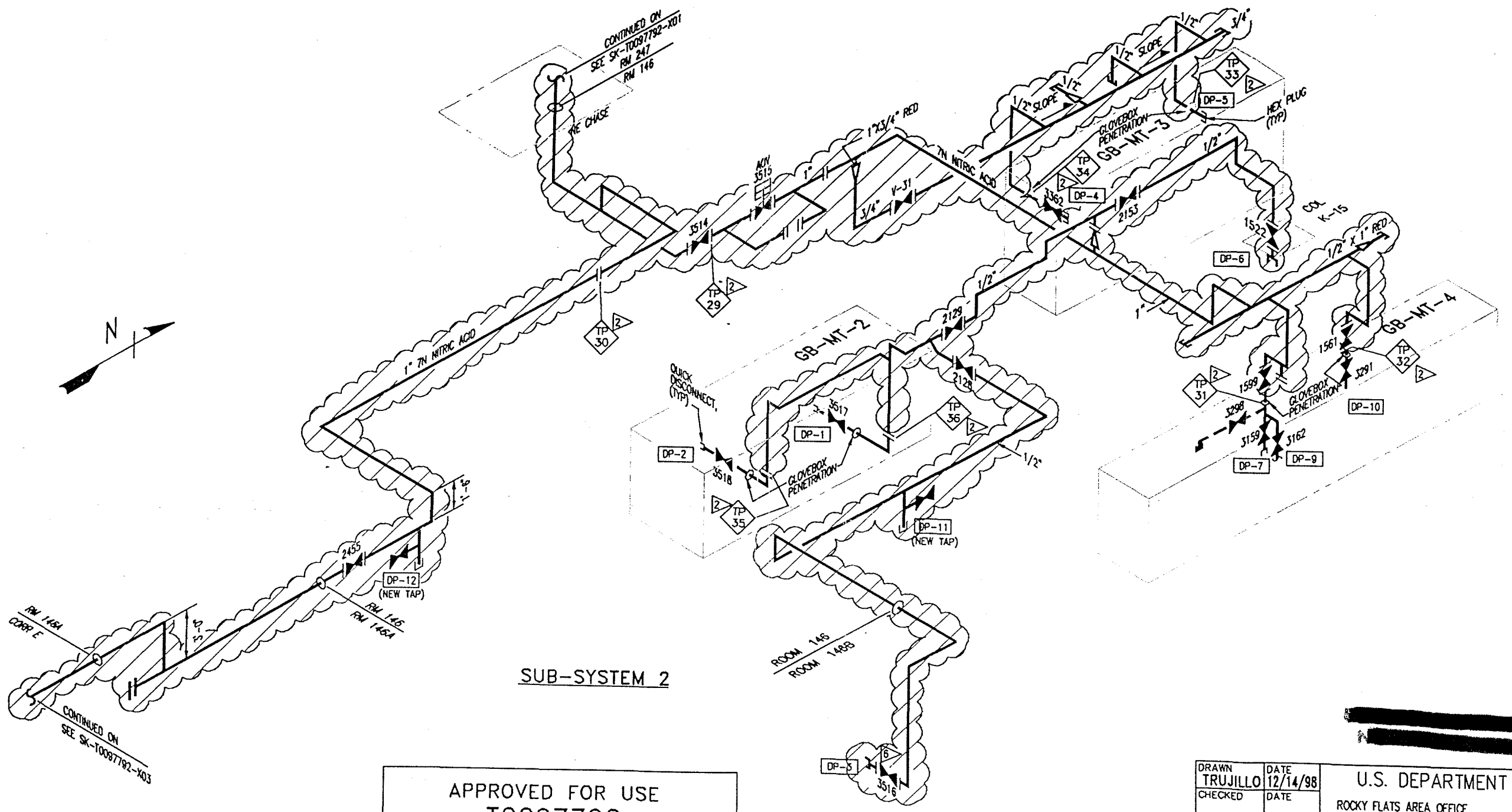
DRAWN TRUJILLO	DATE 12/16/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT GOLDEN, COLORADO	
BLDG/FACILITY 771		PROCESS PIPING REMOVAL	
ROOM/AREA 181A		7N NITRIC ACID - SUBSYSTEM 2	
GRID COORD/COL NO.		SIZE	DRAWING NUMBER / SHEET
SCALE NONE		B	SK-T0097792-X03 / OF
CAD FILE 7N-X03			

39

NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED.
2. SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.

[redacted]



SUB-SYSTEM 2

APPROVED FOR USE
T0097792

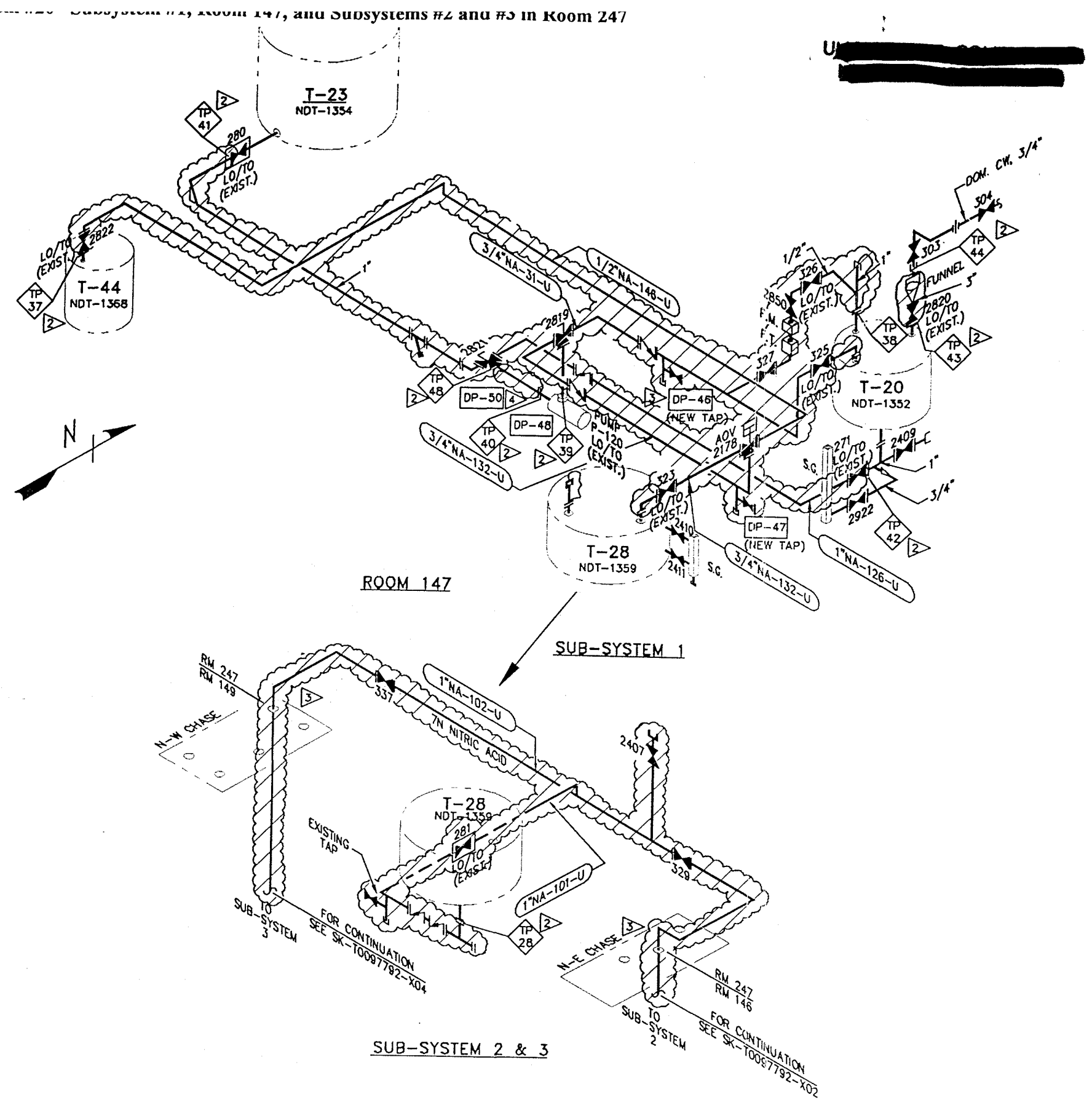
NAME TITLE

SIGNATURE DATE

[redacted]

[redacted]

DRAWN TRUJILLO	DATE 12/14/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY 771		GOLDEN, COLORADO	
ROOM/AREA 146 & 146A		PROCESS PIPING REMOVAL	
GRID COORD/COL NO.		7N NITRIC ACID - SUBSYSTEM 2	
SCALE NONE	SIZE B	DRAWING NUMBER SK-T0097792-X02	SHEET OF
CAD FILE 7N-X02			



NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY "HV" IN THE FIELD UNLESS OTHERWISE NOTED.
2. SEE SK-T0097792-X07 FOR TERMINATION POINT (TP) DETAILS.
3. PATCH HOLES THROUGH FLOOR WITH A FIBERGLASS REPAIR KIT.

APPROVED FOR USE
T0097792

NAME TITLE

SIGNATURE DATE

DRAWN TRUJILLO	DATE 12/3/98	U.S. DEPARTMENT OF ENERGY	
CHECKED	DATE	ROCKY FLATS AREA OFFICE	GOLDEN, COLORADO
CLASSIFIED		ROCKY FLATS PLANT	
BLDG/FACILITY 771		GOLDEN, COLORADO	
ROOM/AREA 247		PROCESS PIPING REMOVAL	
GRID COORD/COL NO.		7N NITRIC ACID - SUBSYSTEMS 1, 2 & 3	
SCALE NONE		SIZE B	DRAWING NUMBER SK-T0097792-X01
CAD FILE 7N-X01			SHEET OF