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Voluntary Consent Order SITE-TANK-005

Combined System Identification and Characterization for the Uranium Dissolution and Extraction Process at the Idaho Nuclear Technology and Engineering Center

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Idaho National Engineering and Environmental Laboratory
Voluntary Consent Order Program
Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-99ID13727

ABSTRACT

This combined system identification and characterization document for the uranium dissolution and extraction process at the Idaho Nuclear Technology and Engineering Center has been prepared to satisfy part of the first milestone and subsequent characterization milestones for the SITE-TANK-005 Action Plan in the Voluntary Consent Order between the State of Idaho Department of Environmental Quality and the United States Department of Energy, Idaho Operations Office. The Voluntary Consent Order addresses potential Hazardous Waste Management Act/Resource Conservation and Recovery Act compliance issues at the Idaho National Engineering and Environmental Laboratory. This document has been prepared to satisfy the system identification milestone under the SITE-TANK-005 Action Plan for 216 units associated with the uranium dissolution and extraction process at the Idaho National Engineering and Environmental Laboratory. This document also satisfies subsequent characterization milestones for 204 units. The document includes a general overview of the uranium dissolution and extraction process. Characterization information is provided for 185 inactive process/product units that have been verified as empty and 19 sumps that have been adequately characterized. Detailed system identification packages are included for 12 units determined to require further characterization under the SITE-TANK-005 Action Plan.

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ACRONYMS

D&D	decontamination and decommissioning
DOE	United States Department of Energy
DOE-ID	United States Department of Energy Idaho Operations Office
EDTA	Ethylenediaminetetraacetic acid
EPA	United States Environmental Protection Agency
FAST	Fluorinel Dissolution Process and Fuel Storage Facility
FDP	fluorinel dissolution process
HCL	Hot Chemistry Laboratory
HWD	hazardous waste determination
HWMA	Hazardous Waste Management Act
ICPP	Idaho Chemical Processing Plant
IDEQ	Idaho Department of Environmental Quality
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MCC	Multicurie Cell
NWCF	New Waste Calcining Facility
PEWE	process equipment waste evaporator
PM	process makeup
RCRA	Resource Conservation and Recovery Act
TBP	tributyl phosphate
TCLP	toxicity characteristic leaching procedure
TFF	Tank Farm Facility
VCO	Voluntary Consent Order
VOE	verification of empty
VOG	vessel off-gas

OPERATIONAL STATUS AND REGULATORY DEFINITIONS

Active	Tank/component is used on a periodic or routine basis
Inactive	Tank/component is not used on a periodic or routine basis (i.e., no transfers or flow in or out of the tank/component)
Active Waste	Tank/component in an active operational status containing waste (or has the potential to contain waste)
Inactive Waste	Tank/component in an inactive operational status containing or having contained waste
Inactive Process/Product	Tank/component in an inactive operational status containing or having contained process or product material
NEW RCRA (ND)	Tank/component that requires further waste characterization (Needs Determination)
NOT REG – EMPTY (ND)	Tank/component is believed to be empty, but the status of tank/component needs additional verification (Needs Determination)
Process Unit	A unit that is used in the manufacture, creation, or fabrication of a product
Product Unit	A unit that stores raw materials to be used in a manufacturing process, a treatment process, or stores the end product of a production process.
RCRA (H/TBD)	Tank/component known to manage or managed hazardous waste that requires determination of future regulatory management
RCRA (I)	RCRA interim status tank on the Part A permit application

VOLUNTARY CONSENT ORDER
SITE-TANK-005

COMBINED SYSTEM IDENTIFICATION AND CHARACTERIZATION FOR THE URANIUM DISSOLUTION AND EXTRACTION PROCESS AT THE IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER

INTRODUCTION

In June 2000, the Idaho Department of Health and Welfare[a] and the United States Department of Energy (DOE), Idaho Operations Office (DOE-ID) entered into a Consent Order (IDEQ 2000) regarding the Idaho National Engineering and Environmental Laboratory (INEEL). The Consent Order, or Voluntary Consent Order (VCO), is a long-term agreement between the State of Idaho and the DOE to resolve potential compliance issues with provisions of the Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) at the INEEL.

The VCO Action Plan documents the actions to be taken and the milestones for covered matters under the VCO. The Action Plan is further separated into detailed action plans that address specific compliance issues. This system identification and characterization document for the uranium dissolution and extraction process specifically addresses a portion of the tanks/components included in the SITE-TANK-005 Action Plan.

The SITE-TANK-005 Action Plan addresses tanks/components that require a hazardous waste determination (HWD) or need to be verified empty. The SITE-TANK-005 VCO Action Plan includes a list of 703 active waste units, inactive waste units, and inactive process/product units. The first milestone under the SITE-TANK-005 Action Plan is the submittal of system identification packages for all of the tanks/components included in the Action Plan.

Subsequent to submittal of the system identification milestone deliverable, the DOE is required to submit hazardous waste determinations or verifications of empty for the tanks/components included in the SITE-TANK-005 Action Plan. The SITE-TANK-005 Action Plan includes 216 units associated with the uranium dissolution and extraction process at the Idaho Nuclear Technology and Engineering Center (INTEC), formerly the Idaho Chemical Processing Plant (ICPP). The purpose of the fuel reprocessing system was to: 1) separate the uranium from residual fission products and transuranic elements, 2) recover the uranium as product, and 3) transfer the waste material, which contained fission products, to storage. Uranium was recovered from spent nuclear fuel through fuel dissolution and sequential liquid-liquid extraction.

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[a] On July 1, 2000, the Division of Environmental Quality, a division within the Idaho Department of Health and Welfare, was elevated to the Idaho Department of Environmental Quality (IDEQ). This department now oversees the implementation of this Consent Order.

Of the 216 units associated with the uranium dissolution and extraction process, 187 units are inactive process/product units, nine units are inactive waste units, and 20 units are active waste units (sumps that are part of a secondary containment system). Because of the large number of inactive process/product units and available characterization information (e.g., verification of empty documentation), this combined system identification and characterization document was prepared to satisfy the first milestone under the SITE-TANK-005 Action Plan and subsequent characterization milestones. This document provides verification of empty documentation for 185 inactive process/product units and characterization documentation for 19 active waste units (sumps). Twelve units have been identified as requiring further characterization under the SITE-TANK-005 Action Plan.

This combined system identification and characterization document for the uranium dissolution and extraction process at the INTEC provides a general overview of the uranium dissolution and extraction process. This document also provides characterization information for those units that could be verified as empty, provides characterization information for the active waste units (sumps that are part of a secondary containment system), and provides detailed system identification documentation for those units that require further characterization (i.e., more information is needed to verify the units as empty, inactive waste units) under the SITE-TANK-005 Action Plan.

FUEL REPROCESSING

The INTEC has been in operation since 1954 and was historically a uranium reprocessing facility for defense and research projects and a storage facility for spent nuclear fuel. Irradiated nuclear fuels were reprocessed to recover unused uranium. The fuels processed at the INTEC were highly enriched (between 20% and 97% U-235; naturally occurring materials typically have a U-235 concentration <1%). The recovery of uranium from spent nuclear fuel was driven by the economic value of uranium (approximately four times that of gold), worker safety, and national security issues.

The uranium dissolution and extraction process at the INTEC includes chemical processing equipment, located in the Fuel Process Building (CPP-601), associated buildings (the Laboratory/Offices Building [CPP-602], the Remote Analytical Facility [CPP-627], and the Headend Processing Plant [CPP-640]), and the Fluorinel Dissolution Process and Fuel Storage (FAST) Facility (CPP-666). The recovery of uranium from spent nuclear fuel involved a variety of dissolution and extraction processes tailored to the specific fuel types being processed.

Design Philosophy

In order to recover uranium in an efficient, continuous, and safe manner, the uranium dissolution and extraction process was divided into relatively small process cells so that portions of the process could be temporarily deactivated and isolated for decontamination and maintenance. The equipment used minimized personnel exposure required for routine maintenance on the system. The process was designed to allow alternative solution routes around failed or deactivated equipment, and redundant equipment was often installed to allow operations to continue during decontamination and maintenance operations. Process equipment was chosen for durability, simplicity, and minimum use of moving parts and seals. This resulted in the use of steam jets and air lifts, as opposed to the use of mechanical pumps in many of the process segments.

Safety concerns associated with radiation exposure and criticality dictated the allowable uranium concentration within a vessel and the geometry of vessels used to handle uranium solutions. Radiation safety and uranium criticality was managed through the use of procedural controls that governed the transfer and sampling of uranium solutions, and through the design of the size, shape, and spacing of process units and lines.

Because highly enriched uranium can be used for nuclear weapons, national security issues required an annual inventory of uranium. Therefore, a mass balance of uranium entering and leaving the uranium dissolution and extraction process was performed. Following a dissolution and extraction campaign, immediate, extensive, and repeated flushing was required to complete the mass balance and meet national security requirements.

Effective and efficient decontamination minimized the potential for radioactivity exposure to personnel during the hands-on maintenance of the processes. Vessels were selected and designed so that they could be completely drained. Piping within the uranium dissolution and extraction process was pitched to drain to low points and back to vessels in the process. Valves and pumps used in the process were selected with minimum internal volume. Additionally, numerous flush lines were installed to allow for the decontamination and flushing of process lines.

Uranium Dissolution and Extraction Process

The dissolution and extraction process at the INTEC was designed to recover uranium from spent nuclear fuels using an acid dissolution followed by a liquid-liquid extraction of the uranium. The uranium was purified through these processes to a solid granular uranium trioxide ready for packaging. Some fuels required applied electrical currents or preliminary combustion of graphite in addition to the acid dissolution process. The following sections describe the basic steps of the uranium dissolution and extraction process as it was most recently (see Schematic P-ST005-INTEC-COMP601-A).

Fuel Dissolution

Dissolution of spent nuclear fuel at the INTEC was performed in several different locations, or headends, producing dissolver product solutions from which uranium could be extracted using a liquid-liquid extraction process. The dissolution of spent nuclear fuels involved dissolving fuels in a highly concentrated acid solution. This dissolution process was facilitated by the addition of various soluble catalysts and nuclear poisons, which created chemically complex uranium solutions. Headends were added or modified as needed to match the different types of fuel to be processed. Headends were abandoned when specific types of fuel were exhausted or when superceded by improved processes.

Custom processing of small lots of specialized fuels was done in the Hot Chemistry Laboratory (HCL) or the Multicurie Cell (MCC) in CPP-627. The dissolver product from the custom dissolvers was sent to the uranium salvage system located in the L-Cell of CPP-601 for purification and uranium accountability sampling. From the uranium salvage system, the dissolved fuel was either sent to the first-cycle extraction process or was concentrated and sent to intercycle storage for second- and third-cycle processing, depending on the chemistry and radioactivity of the fuel.

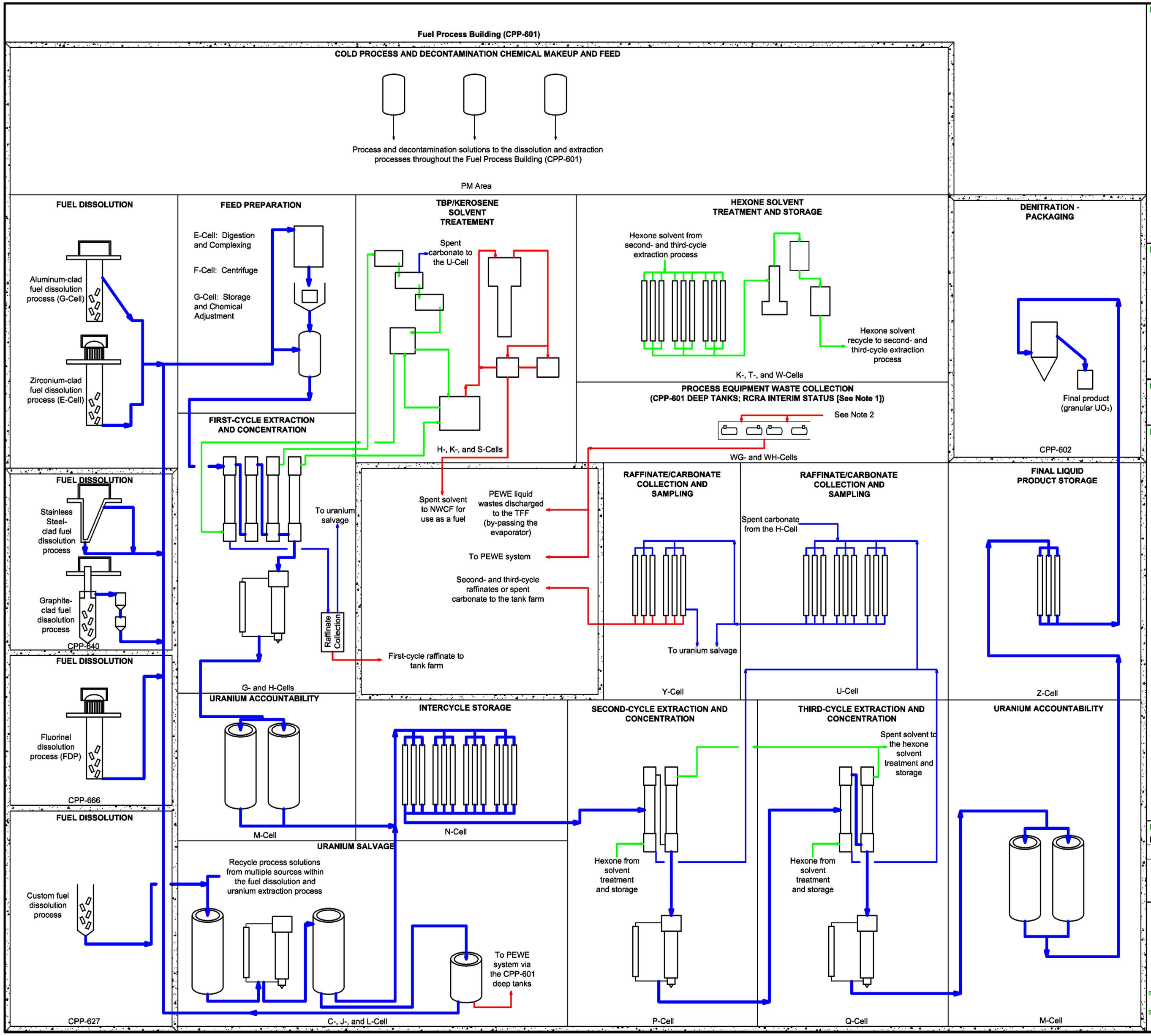
Zirconium-clad nuclear fuels were dissolved in the fluorinel dissolution process (FDP) located in CPP-666. Advanced naval fuels were dissolved using a modified-batch process utilizing hydrofluoric and nitric acids. The acidic dissolver product was transferred to the feed preparation process in CPP-601.

Graphite-clad nuclear fuels from the Space Nuclear Propulsion Program, also known as Rover, were processed in CPP-640. The graphite was combusted in a two-step process, and the ash was then dissolved in hydrofluoric and nitric acids. Stainless-steel clad nuclear fuels were dissolved using the electrolytic dissolution process located in Cell 5 of CPP-640. This electrolytic process used nitric acid and a direct electric current to dissolve the spent fuel. Dissolver product from both the Rover dissolution process and the electrolytic dissolution process was transferred to the feed preparation process in CPP-601.

Dissolution of zirconium-clad nuclear fuels was also performed in the E-Cell of CPP-601 using hydrofluoric acid. Aluminum-clad nuclear fuels were dissolved in the G-Cell of CPP-601 using nitric acid. These dissolution processes, located in CPP-601, could be operated separately or jointly in a manner called coprocessing. Coprocessing reduced waste volume by using the dissolved aluminum cladding to complex the fluoride ions in the zirconium dissolver product instead of adding aluminum nitrate as a reagent. Dissolver solutions from both systems were transferred to the feed preparation processes in CPP-601.

Feed Preparation

From the headend processes, the dissolver product solutions were transferred to the feed preparation processes (except custom fuel dissolution solutions) located in the E-, F-, and G-Cells of



LEGEND

- BUILDINGS AND STRUCTURES
- TANKS AND PROCESS COMPONENTS
- URANIUM FLOW PATH
- URANIUM SALVAGE FLOW PATH
- KEROSENE AND HEXONE SOLVENT RECYCLE FLOW PATH
- PROCESS WASTE FLOW PATH
- PM AREA - PROCESS MAKEUP AREA

REFERENCE DRAWINGS

REFERENCE DOCUMENTS

DOE-ID 2000

NOTES

THIS PROCESS FLOW SCHEMATIC PORTRAYS THE URANIUM DISSOLUTION AND EXTRACTION PROCESSES AS THEY EXISTED AT THE TIME OF SHUTDOWN. THIS SCHEMATIC DOES NOT ATTEMPT TO PRESENT HISTORICAL OPERATIONAL INFORMATION.

NOTE 1. THE DEEP TANKS ARE INTERIM STATUS UNITS INCLUDED IN THE *HWMA/RCRA PART A PERMIT APPLICATION FOR THE IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY* (DOE-ID 2000).

NOTE 2. THE DEEP TANKS RECEIVE WASTE FROM DRAINS AND SUMPS OR TRANSFERS FROM PROCESSES IN THE FUEL PROCESS BUILDING (CPP-601), THE LABORATORY/OFFICES BUILDING (CPP-602), THE REMOTE ANALYTICAL FACILITY (CPP-602), THE HEADEND PROCESSING PLANT (CPP-640), THE FLUORINEL DISSOLUTION PROCESS AND FUEL STORAGE FACILITY (CPP-666), AND THE REMOTE ANALYTICAL LABORATORY (CPP-684).

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

THIS SCHEMATIC IS PROVIDED AS A SUPPLEMENT TO THE VOLUNTARY CONSENT ORDER PROGRAM'S SYSTEM IDENTIFICATION EFFORT. THIS SCHEMATIC IS NOT INTENDED TO BE USED AS A PIPING AND INSTRUMENTATION DIAGRAM NOR IS IT MANAGED BY INEEL CONFIGURATION CONTROL. THIS SCHEMATIC IS FOR VCO PROGRAM USE ONLY.

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
FUEL PROCESS BUILDING (CPP-601) COMPREHENSIVE SCHEMATIC
SPENT FUEL DISSOLUTION AND URANIUM EXTRACTION PROCESS

SCHEMATIC NUMBER: P-ST005-INTEC-COMP601-A

REVISION: 2

SCALE: NONE

DATE: 03/16/01

RESEARCH: E. WAGNER

DRAWING: PORTAGE, INC.

CPP-601. Depending on the fuel type, feed preparation consisted of holding the dissolver product at an elevated temperature to digest residual solids, centrifugation to remove solids, chemical adjustment, complexing, uranium accountability measurement, and/or storage. Prepared dissolver product solutions were then transferred to the first-cycle extraction process located in the G- and H-Cells.

First-Cycle Extraction and Concentration

The first-cycle extraction process was a liquid-liquid extraction that separated the uranium from fission products and cladding salts. The first-cycle extraction process consisted of four pulsed columns and an evaporator. Dissolver product from the headends was fed to the first column (extraction column) where the aqueous solution was put in contact with the organic extractant (5% to 10% solution of tributyl phosphate [TBP] in a refined kerosene [n-dodecane, AMSCO, EXXOL, etc.] diluent).

The uranium-bearing organic solution entered the second column, where a high-salt, low-acid solution (scrub solution) was used to remove additional contaminants from the organic phase. This scrub solution was recycled back to the extraction column feed. The uranium-bearing organic solution entered the third column, where a very dilute nitric acid solution was used to strip the uranium back into the aqueous phase. The aqueous uranium solution then entered the fourth column, where it was washed with a stream of pure refined kerosene diluent to remove any residual TBP or TBP degradation products to protect the product evaporators from a buildup of organic residue. The uranium solution was concentrated in the evaporator from between 2 grams and 5 grams U-235 per liter to between 300 grams and 400 grams U-235 per liter. The concentrated uranium solution was transferred to the M-Cell for uranium accountability measurement and then to the N-Cell for intercycle storage prior to the second- and third-cycle extraction process.

Spent organic and aqueous solutions produced during the first-cycle extraction process were collected and treated, and could be recycled or discharged as waste. Organic solvent used in the first-cycle extraction processes was transferred to the TBP/kerosene solvent treatment processes located in the H-, K-, and S-Cells.

TBP/Kerosene Solvent Treatment and Recycle. The first-cycle extraction solvent was treated and recycled in the H-Cell by means of three mixer settlers. The first stage used strip solution to capture and return any residual uranium to the fourth column feed in the first-cycle extraction process. The second stage used a sodium carbonate stream to remove impurities from the solvent. This carbonate solution was recycled at a 90% ratio with fresh carbonate. The 10% spent carbonate was collected in the U-Cell and sampled in both the U- and the Y-Cells for uranium accountability. If both samples did not exceed uranium limits, the solution was transferred to the Tank Farm Facility (TFF); if either sample failed, the solution was recycled through the uranium salvage system. The third-stage mixer settler used strip solution to neutralize residual carbonate. The treated solvent was collected and recycled back to the first column.

Wash solvent (pure diluent) from the fourth column of the first-cycle extraction process was collected, sampled for uranium accountability, and transferred to the K-Cell for treatment. Waste solvent was treated in a steam stripper, where residual fission products, transuranic elements, and heavy metals were removed. After 1984 the purified solvent was collected and sent to the New Waste Calcining Facility Solvent Storage System (VCO System INTEC-081) (INEEL 2001) for storage prior to being used as a fuel for the New Waste Calcining Facility (NWCF). Prior to the completion of the NWCF in 1984, the solvent was incinerated. At the end of a processing campaign, spent first-cycle extractant could also be processed through the K-Cell and sent to be used as fuel in the NWCF.

Uranium Accountability

Aqueous solution from the first column in the first cycle was collected as first-cycle raffinate and sampled for uranium accountability. If the uranium levels were too high, the raffinate could be recycled for uranium recovery. If the uranium level met the specified limits, the raffinate solution was transferred to the TFF as high-level waste.

Concentrated uranium solution from the first-cycle evaporator was transferred to the M-Cell for uranium accountability measurement and then to the N-cell for intercycle storage prior to the second- and third-cycle extraction process.

Intercycle Storage

Intercycle storage consisted of six criticality safe collection banks. The banks were used for storage of first-cycle extraction solution prior to the start of the second- and third-cycle extraction processes.

Second- and Third-Cycle Extraction and Concentration

When the N-Cell intercycle storage was filled, the dissolution and first-cycle extraction processes were shut down and the second- and third-cycle extraction processes were started. The second- and third-cycle extraction processes are nearly identical and are located in the P- and Q-Cells in CPP-601. The processes were operated in series and used liquid-liquid extraction and evaporation to further concentrate and purify the uranium solutions. The extraction processes used hexone as the organic solvent and followed a similar process to that followed in the first-cycle. Each extraction process consisted of two columns, the first of which combined the extraction and scrub functions of the first-cycle extraction process. The second column was the stripping column. In each cycle, the columns were followed by an evaporator to concentrate the uranium solution for most efficient processing. The chemistry of the second- and third-cycle extraction processes precluded the need for a wash column. Spent organic (hexone) produced in the second- and third-cycle processes were recycled back into the extraction process. Spent hexone solutions were transferred to the K-, T-, and W-Cells for hexone solvent treatment and storage. Aqueous solutions could be recycled back to the process if they contained recoverable amounts of uranium or discharged as a waste.

Hexone Solvent Treatment/Storage and Recycle. The used hexone from the second- and third-cycle extraction processes was collected in the W-Cell for recycle. The hexone was fed to a plate-column still in the K-Cell. A countercurrent sodium hydroxide wash stream removed impurities from the hexone. The purified hexone vapors were condensed and collected. The T-Cell was used to store the purified hexone and to feed it to the extraction columns of the second- and third-cycle extraction processes.

Raffinate/Carbonate Collection and Sampling. The aqueous raffinates from the first column of the second- and third-cycle extraction processes were collected in both the U- and Y-Cells for uranium accountability and criticality safety. The same tanks were used for collecting and sampling spent carbonate solution from first-cycle solvent treatment. If both samples did not exceed uranium limits, the solution was transferred to the TFF; if either sample failed, the solution was recycled through the uranium salvage system.

Uranium Accountability

The aqueous uranium solutions were transferred from the third-cycle extraction process to the M-Cell for uranium accountability. After adequate uranium accountability sampling had been performed, the uranium solutions were transferred to the Z-Cell for final product storage prior to denitration.

Final Liquid Product Storage

The final liquid product storage consisted of three criticality safe storage banks. The banks were used for surge capacity for the denitrator process. The uranium solutions were transferred from the storage banks to the denitration process for solidification and packaging.

Denitration

The heated fluidized bed denitrator, which was operated in the LC area of CPP-602, converted the liquid uranium solution to a solid, granular uranium trioxide. The solid uranium trioxide was then packaged and stored as the final product of the uranium dissolution and extraction process.

Uranium Salvage

The uranium salvage system was used to recover uranium contained in solutions generated from process upsets, leaks in the process cells, and decontamination solutions from process piping and equipment. The uranium salvage system also collected the dissolver product from the custom fuel dissolution process. Uranium solutions were concentrated and chemically adjusted for return to the extraction cycles. If it was suspected that the uranium content of a solution was too low to be recovered, the solution could be sampled in the L-Cell and again in the C-Cell. If both samples showed sufficiently low uranium, the solution could be transferred to the process equipment waste evaporator (PEWE) system via the CPP-601 deep tanks (RCRA interim status units included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]).

The J-Cell was used for the rare recycle of solution from the deep tanks. The CPP-601 deep tanks were always sampled for uranium accountability prior to discharging the contents to the PEWE system. Only when it was determined, based on analytical results, that there were insufficient levels of uranium for recovery were solutions discharged to the PEWE system. The J-Cell evaporator could be used for initial concentration of the recycle solution. This solution would then be transferred to the L-Cell by way of the S-Cell decanter system, which would detect the presence of any first-cycle organic in the solution and return it to the first-cycle solvent treatment process.

Cold Processes and Decontamination Chemical Makeup and Feed (PM Area)

The process makeup (PM) area is an unpartitioned area on the top floor of CPP-601, which was used to supply feed and makeup process chemicals to the extraction systems, the solvent treatment systems, and the dissolvers in CPP-601, CPP-627, and CPP-640. The PM area was also used to supply decontamination solutions and bulk chemicals (nitric acid and aluminum nitrate) to the process cells in CPP-601, the Waste Process Building (CPP-604), CPP-627, CPP-640, and CPP-659.

A typical decontamination cycle consisted of a strong caustic solution to break down the resistant oxide layer, followed by corrosive and/or chelating agents to remove exposed base metal and contaminants. The cycle was completed with a 6 *M* nitric acid flush to restore the oxide layer. The flushes were sampled for radioisotopes to follow the progress of the chemical decontamination. When the

amount of radioisotopes being removed dropped off, another cycle was begun using a different mix of chemicals. The decontamination process could last months, continuing until the activity of the process lines and vessels was sufficiently reduced for personnel access (INEEL 1999a). Decontamination solutions used in the uranium dissolution and extraction process and typical concentrations are identified below:

- Water
- Nitric acid (2 *M* to 6 *M*)
- Potassium permanganate in 2 *M* nitric acid
- Turco 4521 (commercial product composed of ammonium oxalate, oxalic acid, amorphous silica, citric acid, 2-mercaptobenzothiazole)
- Turco 4502 (commercial product composed of potassium hydroxide, potassium permanganate, potassium chromate, hexavalent chromium)
- Oxalic acid in 0.2 *M* citric acid
- Sodium hydroxide in 0.15 *M* tartaric acid
- Turco 4324 (commercial detergent composed of ammonium bicarbonate, sodium hexametaphosphate, octylphenoxypoly [ethyleneoxy]ethanal, noctylphenoxpoly [ethyleneoxy]ethanol), sodium carboxymethyl cellulose)
- Oxalic acid (1 *M*)
- Citric acid (0.5 *M*)
- Oxalic acid in 0.5 *M* nitric acid
- Ammonium hydroxide (0.5 *M*)
- Sodium hydroxide in 0.5 g/L EDTA (0.0017 *M*) solution
- Turco ARR (commercial product used for descaling that consists of sodium hydroxide, kerosene, triethanolamine, diethanolamine, sodium gluconate)
- Sodium fluoride
- Hydrofluoric acid in 2 *M* nitric acid.

Waste Discharges

All units associated with the uranium dissolution and extraction process had a route (either direct or indirect) to one of the INTEC waste systems (CPP-601 deep tanks, CPP-640 waste collection tanks, or the TFF). Process liquids, which do not include evaporator overheads, were not discharged to the waste system unless samples showed that there was insufficient uranium for recovery. Any liquids from

decontamination and/or flushing of process units that discharged to one of the waste systems were managed as waste; however, the process units themselves were not and did not become waste units as supported by the Environmental Protection Agency:

> *"... the applicability of the hazardous waste tank system standards to process transfer equipment normally used for production purposes, but also used to transfer hazardous waste residue to either a NPDES wastewater treatment system or an onsite RCRA treatment/storage facility. Assuming it is removed within 90 days after production or product storage is stopped, the hazardous waste generated within the product/raw material process tanks does not become subject to the hazardous waste tank system standards until it exits the unit in which it was generated... We consider the point of exit from the process tank to be the introductory point for the hazardous waste into a hazardous waste tank system. Therefore, any process transfer equipment, even if normally used for production purposes, that is also used to transfer hazardous waste residues during equipment washout/cleanout procedures to a hazardous waste storage/treatment tank, would be considered part of a hazardous waste tank system and thus subject to the standards of such."* (J.E. Carra, EPA to H. Bedbury, Diamond Shamrock Chemicals Co., December 19, 1986, RPPC No. 9483.1986(11), Fax-On-Demand Code 13790)

The following sections discuss the three waste systems associated with the uranium dissolution and extraction process and how the 216 VCO tanks and/or components addressed in this document related to these waste systems.

CPP-601 PEWE Collection System (CPP-601 Deep Tanks)

The CPP-601 PEWE collection system collects low-level and intermediate-level liquid wastes from processes within CPP-601. Liquids are transferred to the deep tanks (VES-WG-100, VES-WG-101, VES-WH-100, and VES-WH-101; RCRA interim status units) located in the WG- and WH-Cells in CPP-601. These tanks, along with their associated transfer pumps, valves, and piping are included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* (DOE-ID 2000). The deep tanks receive waste from drains and sumps or transfers from processes in CPP-601, -602, -627, -640, -666, and -684 (Remote Analytical Laboratory). Although most process sources of liquid waste for the deep tanks are currently inactive, the deep tanks still have the ability to receive liquid waste from the laboratories in CPP-602 (active), CPP-627 (inactive), and CPP-684 (active), and water infiltration collected in sumps throughout CPP-601. Solutions collected in the deep tanks are normally transferred to the PEWE system; however, the capability exists to transfer solutions directly to the tank farm. Rarely, during fuel reprocessing, solutions were recycled back to the uranium dissolution and extraction process for uranium recovery. The deep tanks are also configured such that they could also be discharged to the TFF.

Twenty-two separation units, identified in the SITE-TANK-005 Action Plan and discussed in this document, discharged directly to the CPP-601 PEWE collection system either on a continuous or routine basis during the operation of the uranium dissolution and extraction process. Units that continuously discharged to the CPP-601 PEWE collection system did so as a normal part of their operation. These continuously discharging separation units discharged solution to the process, as well as the CPP-601 PEWE collection system, and were operated as process units. Other process units infrequently discharged to the CPP-601 PEWE collection system during operation. Solutions discharged to the CPP-601 PEWE collection system were determined to be a waste only when sampling results indicated that the uranium concentration was not sufficient for recovery. The solutions were not, therefore, classified as a waste until they were discharged into the CPP-601 PEWE collection system. In addition to discharges to the CPP-601 PEWE collection system during operations decontamination solutions could also be directly discharged to the CPP-601 PEWE collection system.

The following VCO units discharged to the deep tanks via the PEWE collection system on a continuous or routine basis during operations:

- Product Transfer Tank (VES-C-101; 98CPP00114) Routine
- Slurried Solids Catch Tank (VES-F-107; 98CPP00153) Routine
- Slurried Solids Catch Tank (VES-F-108; 98CPP00154) Routine
- ID Column Scrub Collection Tank (VES-H-108; 98CPP00197) Routine
- Third-Stage Mixer Settler (VES-H-117; 98CPP00201) Continuous
- Thermosyphon Evaporator (VES-J-125; 98CPP00229) via VES-J-131 Continuous
- Phase Separator (VES-J-131; 98CPP00232) Continuous
- Solvent Plate Recovery Still (VES-K-104; 98CPP00235) via VES-K-105 Continuous
- K-104 Still Phase Separator (VES-K-105; 98CPP00236) Continuous
- Packed Steam Stripping Column (VES-K-109; 98CPP00238) via VES-K-110 Continuous
- Phase Separator (VES-K-110; 98CPP00239) Continuous
- Phase Separator (VES-L-105; 98CPP00248) Continuous
- Rework Evaporator (VES-L-130; 98CPP00262) Continuous
- Raffinate Evaporator (VES-U-129; 98CPP00514) via VES-U-300 Continuous
- Raffinate Evaporator (VES-U-130; 98CPP00515) via VES-U-301 Continuous
- Raffinate Vapor Condenser (VES-U-300; 98CPP00518) Continuous
- Raffinate Vapor Condenser (VES-U-301; 98CPP00519) Continuous
- Hexone Solvent Feed Tank (VES-W-129; 98CPP00549) Routine
- Y-Cell Evaporator (VES-Y-140; 98CPP00581) Continuous
- Off-Gas Water Separator (VES-Z-123; 98CPP00597) Continuous
- First-Cycle Product Evaporator (EVP-H-130; 98CPP01615) via HE-H-300 Continuous
- Evaporator Condenser (HE-H-300; 98CPP01621) Continuous

Ancillary equipment and discharge piping from the process units that discharge to the CPP-601 PEWE collection system are considered ancillary to the deep tanks and are not addressed under the VCO,

but will be evaluated and closed at a future date as part of the HWMA/RCRA closure of the deep tanks. Ancillary equipment includes piping, vented pipe manifolds, valves, pumps, samplers, steam or air jets, air lifts, disengaging pots, strainers, mist eliminators, condensers, sumps, funnels, or other equipment designed to transfer waste solutions to or from the deep tanks.

CPP-640 Waste Collection Tanks

All piping, valves, and pumps used to collect and transfer decontamination solutions to the CPP-640 waste collection tanks are considered ancillary to the CPP-640 waste collection tanks and are not addressed under the VCO, but will be evaluated and closed as part of the HWMA/RCRA closure of the CPP-640 waste collection tanks.

- Electrolytic Dissolver (VES-HC5-100; 98CPP01085)
- Dissolver Surge Tank (VES-HC5-101; 98CPP01086)
- Centrifuge Wash Tank (VES-HC2-108; 98CPP01076) (Capability existed but was never used)

Tank Farm Facility

Raffinate solutions could be discharged to the TFF or could be recycled back to the process. Solutions discharged to the TFF were considered waste solutions only after being discharged from the process units. The decision on how to complete the HWMA/RCRA closure of the piping, valves, and pumps used to collect or transfer solutions to the TFF from the fuel dissolution and extraction process has not been finalized. Until that decision is made, the piping, valves, lines, and pumps will be covered under the VCO.

The primary transfer route (post-1980) for first-, second-, and third-cycle wastes from the process areas to the TFF was via 2-in. lines (2" PUA-104854 and 2" PUA-104853), which discharged to VES-WM-178 where solutions could be transferred to the rest of the TFF. Transfer lines from the CPP-601 process (VES-E-110) to the 30,000-gal waste tanks, VES-WM-103 through -106 (VCO System INTEC-080) are included in VCO System INTEC-080, INTEC Tank Farm Auxiliary High-Level Waste Tank System.

- Complexing Surge Tank (VES-E-110; 98CPP00142)
- First-Cycle Run Tank (VES-G-115; 98CPP00178)
- First-Cycle Run Tank (VES-G-116; 98CPP00179)
- Raffinate Evaporator (VES-U-129; 98CPP00514)
- Raffinate Evaporator (VES-U-130; 98CPP00515)
- Aqueous Raffinate Collection Tank (VES-Y-101; 98CPP00564)
- Aqueous Raffinate Collection Tank (VES-Y-102; 98CPP00565)
- Aqueous Raffinate Collection Tank (VES-Y-103; 98CPP00566)

- Aqueous Raffinate Collection Tank (VES-Y-104; 98CPP00567)
- Aqueous Raffinate Collection Tank (VES-Y-111; 98CPP00568)
- Aqueous Raffinate Collection Tank (VES-Y-112; 98CPP00569)
- Aqueous Raffinate Collection Tank (VES-Y-113; 98CPP00570)
- Aqueous Raffinate Collection Tank (VES-Y-114; 98CPP00571)
- Aqueous Raffinate Collection Tank (VES-Y-121; 98CPP00573)
- Aqueous Raffinate Collection Tank (VES-Y-122; 98CPP00574)
- Aqueous Raffinate Collection Tank (VES-Y-123; 98CPP00575)
- Aqueous Raffinate Collection Tank (VES-Y-124; 98CPP00576)
- Aqueous Raffinate Collection Tank (VES-Y-131; 98CPP00577)
- Aqueous Raffinate Collection Tank (VES-Y-132; 98CPP00578)
- Aqueous Raffinate Collection Tank (VES-Y-133; 98CPP00579)
- Aqueous Raffinate Collection Tank (VES-Y-134; 98CPP00580)
- Y-Cell Evaporator (VES-Y-140; 98CPP00581)

Historical Process Modifications

The uranium dissolution and extraction process at the INTEC was last used as a three-cycle process and is generally presented throughout this document as the process existed at the time the dissolution and extraction operations at the INTEC were terminated. However, the development of this three-cycle process evolved over the lifetime of the uranium dissolution and extraction process. Figure 1 summarizes significant events during the operation of the uranium dissolution and extraction process at the INTEC. The following discussion is presented to highlight the historical development and major process modifications of the dissolution and extraction processes at the INTEC. Units that were taken out of service prior to the last processing campaign are referred to as 'inactive' in the unit description.

Hexone extraction for the recovery of uranium was the first process to be developed. When the Fuel Process Building (CPP-601) was constructed in 1953, the extraction process used three hexone extraction cycles, located in the P-, Q-, and S-Cells, to recover uranium. Later development of n-dodecane/TBP extraction was incorporated into a new first-cycle extraction process installed in the F-, G-, and H-Cells. The columns in the F-Cell were geometrically safe, but those in the G- and H-Cells were designed to be larger to accommodate higher processing rates. Criticality protection in the G- and H-Cells was provided by administrative means, including limits on input rates, reliance on dissolution chemistry, or the use of soluble neutron poisons.

After a brief development period, it was determined that the F-Cell columns were inefficient and, therefore, were removed. At this time the lines from the complexing surge tank (VES-E-110), which discharged directly to the 30,000-gal TFF tanks (VES-WM-103, -104, -105, and –106; VCO System INTEC-080 [INEEL 2001]), were cut and capped. The original hexone extraction cycles in the P- and Q-Cells were modified to become the current second- and third-cycles in the extraction process. This involved cutting the throughput of the P-Cell by a factor of two, and doubling the throughput of the Q-Cell. After limited service as the fourth-cycle, the extraction process equipment in the S-Cell was removed (INEEL 1999a).

Raffinate collection from the hexone extraction cycles originally included boildown from the raffinate evaporators located in the U- and Y-Cells. It was determined that there was no net benefit to the operation of these evaporators VES-U-129, -130, and VES-Y-140, and the raffinate evaporator systems were isolated and abandoned.

Solvent treated in the K-Cell was originally burned in a solvent burner and combustion gases were exhausted directly up the main stack. In 1984, the solvent burner was replaced with collection tanks in CPP-694 (VES-NCE-184, -185, and -186) which stored the treated solvent until it could be burned as fuel in the NWCF (CPP-659).

The J-Cell was the original uranium salvage cell. It was replaced by the L- and C-Cell system in 1987 to improve criticality safety. Parts of the J-Cell system were being prepared to return to service as a dedicated first-stage evaporation process for PEW recycle when all reprocessing activities were halted.

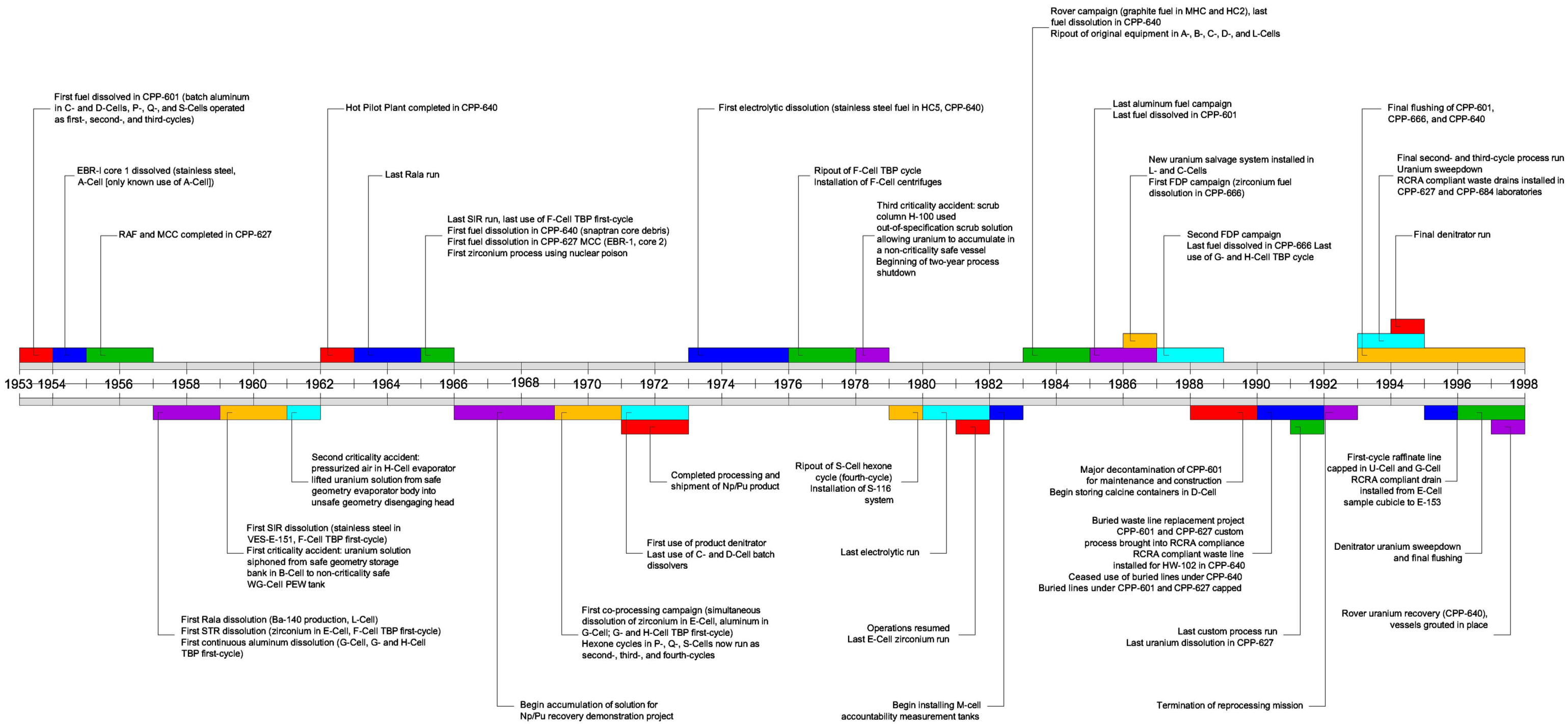
Termination of Fuel Reprocessing at the INTEC

In 1992, the DOE announced that the fuel reprocessing portion of the INTEC mission would be phased out. Eventually, this decision led to the phase out of all fuel dissolution, solvent extraction, product denitration, and other related processes at the INTEC.

Figure 1. Timeline showing significant events during operation of the uranium dissolution and extraction process.

INSERT Figure 1 – Timeline (11 x 17) here.

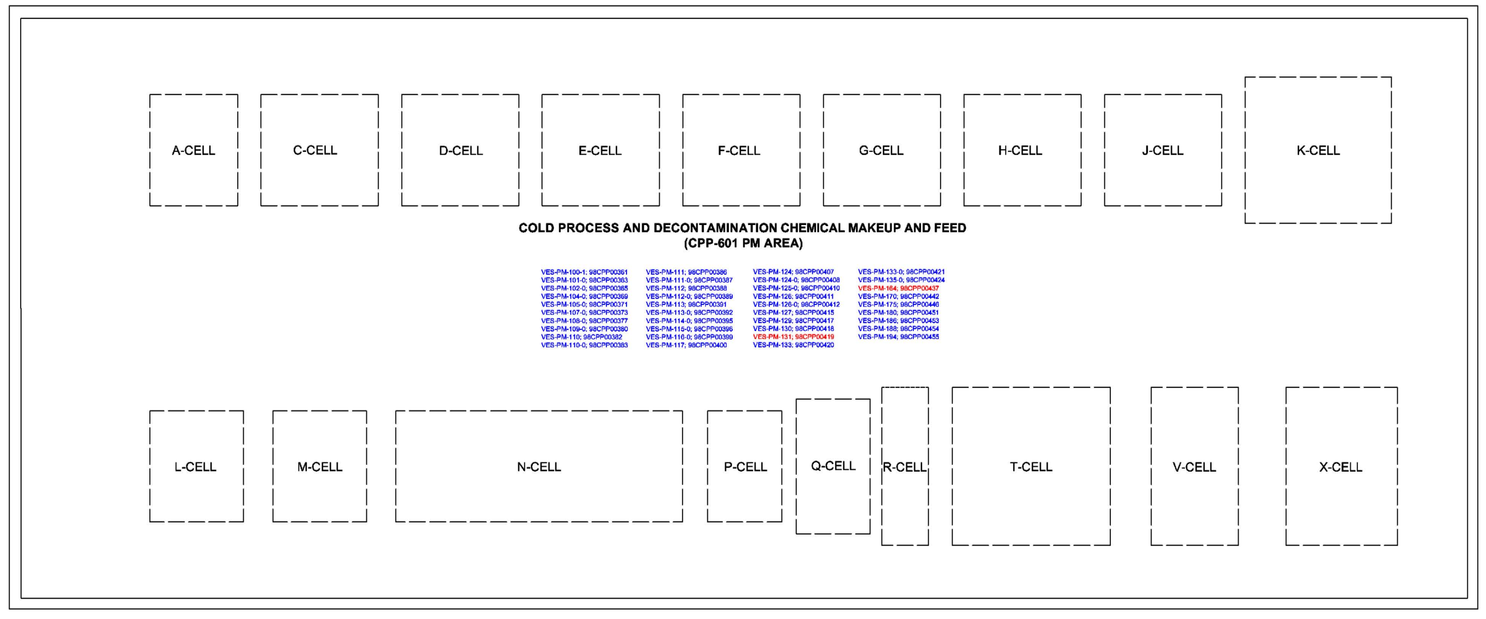
Timeline of INTEC Processing Operations



SYSTEM IDENTIFICATION

This document satisfies the system identification milestone under the SITE-TANK-005 Action Plan for 216 units (see Schematic P-ST005-INTEC-COMP601-B). All units identified in this package were part of the uranium dissolution and extraction process at the INTEC as described in the previous sections of this document. This document does not, by design, include piping and instrumentation diagrams or detailed process flow diagrams of the individual units addressed by this document.

Twelve units included in this combined system identification and characterization document were determined to require further characterization under the SITE-TANK-005 Action Plan (see Units Requiring Further Characterization). Therefore, more detailed system identification packages are provided for these units in Appendices A through E.



LEGEND

BUILDINGS AND STRUCTURES
INACTIVE PROCESS/PRODUCT TANKS - VERIFIED EMPTY
UNITS REQUIRING FURTHER CHARACTERIZATION OR VERIFICATION OF EMPTY
SUMPS INCLUDED IN THE VCO

REFERENCE DRAWINGS

REFERENCE DOCUMENTS

DOE-ID 2000

NOTES

1. THE FOLLOWING VCO UNITS DISCHARGED DIRECTLY TO THE PEWE COLLECTION SYSTEM EITHER CONTINUOUSLY OR ROUTINELY DURING OPERATION. THESE UNITS ARE SEPARATION VESSELS WHICH TRANSFERRED LIQUIDS BACK INTO THE PROCESSES IN ADDITION TO THE PEWE SYSTEM. ALL ACTIVE AND INACTIVE SUMPS DISCHARGED TO THE PEWE SYSTEM AND ARE NOT LISTED BELOW.

   PRODUCT TRANSFER TANK (VES-C-101; 98CPP00114)
   SLURRIED SOLIDS CATCH TANK (VES-F-107; 98CPP00153)
   SLURRIED SOLIDS CATCH TANK (VES-F-108; 98CPP00154)
   ID COLUMN SCRUB COLLECTION TANK (VES-H-108; 98CPP00197)
   THIRD-STAGE MIXER SETTLER (VES-H-117; 98CPP00201)
   THERMOSYPHON EVAPORATOR (VES-J-125; 98CPP00229)
   PHASE SEPARATOR (VES-J-131; 98CPP00232)
   SOLVENT PLATE RECOVERY STILL (VES-K-104; 98CPP00235)
   K-104 STILL PHASE SEPARATOR (VES-K-105; 98CPP00236)
   PACKED STEAM STRIPPING COLUMN (VES-K-109; 98CPP00238)
   PHASE SEPARATOR (VES-K-110; 98CPP00239)
   PHASE SEPARATOR (VES-L-105; 98CPP00248)
   REWORK EVAPORATOR (VES-L-130; 98CPP00262)
   RAFFINATE EVAPORATOR (VES-U-129; 98CPP00514)
   RAFFINATE EVAPORATOR (VES-U-130; 98CPP00515)
   RAFFINATE VAPOR CONDENSER (VES-U-300; 98CPP00518)
   RAFFINATE VAPOR CONDENSER (VES-U-301; 98CPP00519)
   HEXONE SOLVENT FEED TANK (VES-W-129; 98CPP00549)
   Y-CELL EVAPORATOR (VES-Y-140; 98CPP00581)
   OFF-GAS WATER SEPARATOR (VES-Z-123; 98CPP00597)
   FIRST-CYCLE PRODUCT EVAPORATOR (EVP-H-130; 98CPP01615)
   EVAPORATOR CONDENSER (HE-H-300; 98CPP01621).

2. THE VCO UNITS THAT DISCHARGED DECONTAMINATION SOLUTIONS TO THE CPP-640 WASTE COLLECTION TANKS. HOWEVER, THE VCO UNIT LOCATED IN THE CELL 2 ONLY HAD THE CAPABILITY TO DISCHARGE TO THE WASTE COLLECTION TANKS BUT NEVER ACTUALLY DID DISCHARGE. ALL ACTIVE AND INACTIVE WASTE SUMPS LOCATED IN CELL 2 AND CELL 5 DISCHARGED TO THE CPP-640 WASTE COLLECTION TANKS.

   CENTRIFUGE WASH TANK (VES-HC2-108; 98CPP01076)
   ELECTROLYTIC DISSOLVER (VES-HC5-100; 98CPP01085)
   DISSOLVER SURGE TANK (VES-HC5-101; 98CPP01086)

3. THE VCO UNITS THAT DISCHARGED SOLUTIONS TO THE TANK FARM FACILITY DURING NORMAL OPERATIONS.

   COMPLEXING SURGE TANK (VES-E-110; 98CPP00142)
   FIRST-CYCLE RUN TANK (VES-G-115; 98CPP00178)
   FIRST-CYCLE RUN TANK (VES-G-116; 98CPP00179)
   RAFFINATE EVAPORATOR (VES-U-129; 98CPP00514)
   RAFFINATE EVAPORATOR (VES-U-130; 98CPP00515)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-101; 98CPP00564)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-102; 98CPP00565)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-103; 98CPP00566)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-104; 98CPP00567)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-111; 98CPP00568)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-112; 98CPP00569)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-113; 98CPP00570)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-114; 98CPP00571)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-121; 98CPP00573)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-122; 98CPP00574)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-123; 98CPP00575)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-124; 98CPP00576)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-131; 98CPP00577)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-132; 98CPP00578)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-133; 98CPP00579)
   AQUEOUS RAFFINATE COLLECTION TANK (VES-Y-134; 98CPP00580)
   Y-CELL EVAPORATOR (VES-Y-140; 98CPP00581)

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

THIS SCHEMATIC IS PROVIDED AS A SUPPLEMENT TO THE VOLUNTARY CONSENT ORDER PROGRAM'S SYSTEM IDENTIFICATION EFFORT. THIS SCHEMATIC IS NOT INTENDED TO BE USED AS A PIPING AND INSTRUMENTATION DIAGRAM NOR IS IT MANAGED BY INEEL CONFIGURATION CONTROL. THIS SCHEMATIC IS FOR VCO PROGRAM USE ONLY.

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
FUEL PROCESS BUILDING (CPP-601) COMPREHENSIVE VCO SCHEMATIC
FLOOR PLAN AND UNIT LOCATIONS

SCHEMATIC NUMBER: P-ST005-INTEC-COMP601-B
REVISION: 2
SCALE: NONE
DATE: 03/16/01
RESEARCH: PORTAGE, INC.
DRAWING: PORTAGE, INC.

CHARACTERIZATION

The SITE-TANK-005 Action Plan includes active and inactive waste units and inactive process/product units that require a hazardous waste determination (HWD) or verification of empty (VOE). Waste units included in the Action Plan must be characterized; inactive process/product units are believed to be empty, but must be documented.

This combined system identification and characterization document addresses 216 units included in the SITE-TANK-005 Action Plan. During system identification, information was obtained documenting that the majority of these units (185 VCO units) were flushed and emptied. In addition to providing the verification of empty documentation for the 185 inactive process/product units, this document provides characterization information for 19 sumps (active waste units). Twelve units require further characterization (HWD or VOE) under the SITE-TANK-005 Action Plan. Therefore, this document satisfies the first milestone under the SITE-TANK-005 Action Plan (submittal of system identification information for 216 VCO units associated with the uranium dissolution and extraction process) and subsequent characterization milestones for 204 of these units.

EPA listed hazardous waste numbers are not applicable to any of the uranium dissolution and extraction process waste streams or units. Although listed hazardous waste numbers (F001, F002, F005, and U134) are associated with the CPP-601 deep tanks, these hazardous waste numbers did not originate in the uranium dissolution and extraction process. The application of the U134 hazardous waste number for hydrogen fluoride is the result of unused, pure, sole active ingredient hydrofluoric acid being discharged to the PEWE system as a result of quality control and quality assurance testing (approximately 400 mL to 900 mL per shipment) of incoming bulk loads of hydrofluoric acid (INEEL 1999b) in the INTEC laboratories. Unused, pure, sole active ingredient hydrofluoric acid was not discharged to the CPP-601 PEWE collection system from process or waste units associated with the uranium dissolution and extraction process.

The following sections describe the characterization of the 216 VCO units included in this document.

Verification of Empty for Inactive Process/Product Units

The following sections provide the verification of empty documentation for 185 inactive process/product tanks.

Shutdown History

The fuel dissolution processes were evaluated after each processing campaign and were either modified, updated, or put in standby condition until the start of the next campaign. Therefore, each unit within CPP-601 has a unique last process use date associated with the shutdown of a process, the updating of a process, the beginning of a standby condition, or the removal of that unit from service.

Each of the units, unless specifically stated otherwise, was emptied to the extent possible immediately after (i.e., <90 days) its last use using common industrial practices applicable at the time. Uranium was valuable, and all uranium solutions were removed from process tanks in order to ensure complete recovery and accountability. As a general practice, units were put into a standby condition after being flushed and emptied until the next process campaign started; however, not all of the units and processes within CPP-601 were required for each campaign.

Stainless steel-clad fuel dissolution in the electrolytic dissolution process ended in 1981. The dissolver (VES-HC5-102) and the surge tank (VES-HC5-101) were flushed and emptied for uranium accountability following the dissolution campaign. The last zirconium dissolution campaign also ended in 1981. The dissolver (VES-E-101) and charge water tank (VES-E-106) were flushed and emptied for uranium recovery and accountability following the campaign. These tanks and the rest of the E-Cell received further decontamination flushing to lower radiation levels so that process improvements could be performed in 1986.

The Headend Processing Plant was modified in 1983 to allow processing of fuels from the Rover project, which operated until August of 1984. After shut down, the process units were flushed and emptied for uranium accountability and placed in standby awaiting the next dissolution campaign.

The aluminum dissolution campaign ended in 1985, and the dissolvers and first-cycle equipment were flushed and emptied for uranium recovery and accountability. The dissolvers were placed in standby condition, while the rest of the first-cycle equipment was used in the FDP campaigns beginning in 1986.

The last FDP campaign started in 1988. After completion of that campaign, the first-cycle process equipment was flushed and emptied for uranium recovery and accountability. The aluminum dissolvers and first-cycle equipment were then further decontaminated for maintenance and process improvements in anticipation of an aluminum dissolution campaign in 1992. The E-Cell digestion and complexing tanks were used for storage of in-process uranium solutions from 1989 to 1993. They were then flushed and emptied for uranium accountability in preparation for radiological decontamination.

Processing of the FDP solutions through the second- and third-cycles was nearly complete when operations were suspended and studies were performed in preparation for the Buried Line Replacement Project to determine if the PEWE collection lines were RCRA compliant. The study required access to all process cells; therefore, process solutions were removed from each of the cells in order to lower radiation levels to permit access. Upon completion of the buried line upgrades, uranium dissolution operations resumed in the Multicurie Cell (MCC) and the Hot Chemistry Lab (HCL).

In 1992, the DOE announced that the reprocessing portion of the INTEC mission would be phased out. As a result, all fuel dissolution, solvent extraction, product denitration, and other related processes at INTEC were phased out. At the time of the shutdown order, the units within CPP-601 were in various stages of use. The first-cycle processes had been in standby condition since 1988. A final run of the second- and third-cycle extraction processes was required to remove in-process uranium solutions. This final run was completed in 1994, and the second- and third-cycle process vessels were subsequently flushed and emptied. All process units were flushed as part of the shutdown of the fuel dissolution processes.

Units located in the CPP-601 PM area supported all phases of the fuel dissolution processes. Units that supported the first-cycle extraction process were emptied and flushed at the end of the first-cycle run in 1988 using common industrial practices. Process chemicals were left in other first-cycle process makeup units for use in the next dissolution campaign and/or the second- and third-cycle processes. Upon the shutdown notice and the end of the second- and third-cycle process runs, the PM area units were flushed and emptied along with the remainder of the fuel dissolution process equipment.

Final Flushing and Sampling

Final flushing and emptying of process units within the CPP-601 was performed as a precautionary measure and for uranium accountability. This final flushing was performed by circulating dilute nitric

acid through all of the vessels and piping, followed by three water flushes. The final rinsates were sampled for uranium accountability and RCRA constituents, although this was not required because the units were not waste tanks and not RCRA-regulated. The following uranium dissolution and extraction process units were not included in the RCRA flushing and sampling: the air tanks (TK-PO-121, VES-PM-124-0, -125-0, -126-0, and -133-0), the isolated vessels (VES-E-151, VES-J-117, VES-U-129, VES-U-130, VES-Y-140, VES-Y-150, VES-Y-160, VES-Y-161, VES-HC2-151, VES-PA-102, HE-U-300, and HE-U-301), and the PM tanks (VES-PM-114-0, -131, -164, -175, -180, -186, and -188). The air tanks were not rinsed and flushed because they were not waste tanks and never contained a liquid solution. The isolated vessels were flushed and rinsed for uranium accountability when they were taken out of service, and the isolation of the tanks made it impossible to perform additional flushes of these tanks. The PM area tanks were not considered waste tanks and were drained and emptied using common industrial practices; therefore, no additional flushing was performed.

Sampling and analysis demonstrated that all of the final flush solutions for the uranium dissolution and extraction process units were below toxicity characteristic leaching procedure (TCLP) levels with the exception of two units. The flush solutions for these two vessels (VES-PM-104-0 and VES-PM-105-0) were below TCLP for all metals except mercury. Although the flush solutions in these two tanks were slightly above the TCLP limits for mercury, they are still considered empty process/product tanks. Materials in these two tanks were never a waste and were emptied from the tanks using common industrial practices in 1986. The two tanks were visually inspected in August 1999 and were clean and dry with no odors or stains.

Inactive Process/Product Units Verified Empty

Table 1 identifies 185 units associated with the uranium dissolution and extraction process included in the SITE-TANK-005 Action Plan that have been verified as empty. The table includes the last process use and the date(s) the tank was flushed and emptied. All of these vessels were inactive process/product units and never stored waste. Each of the in-process units was extensively flushed for uranium accountability. The terms used in Table 1 are defined as follows:

Units Flushed and Emptied for Uranium Accountability (Uranium Sweepdown) – The flushes were designed to remove uranium from tanks and associated ancillary equipment. These flushes used nitric acid and/or water and were typically more rigorous than standard chemical industrial practices.

Units Flushed and Emptied using Common Industrial Practices (Decontamination Flushes) – The flushes were designed to remove residual radioactive material from process equipment to allow safe maintenance access. The flushing procedures generally used nitric acid and water. Radiation surveys were then taken to plan the next flushes. In second- and third-cycle cells, the general flush (nitric acid and water) would often be sufficient to reduce radiation levels. First-cycle cells usually required a long sequence (several months, dozens to hundreds of flushes) of decontamination procedures to reduce radiation levels to allow access to process equipment. These decontamination procedures were written specifically for the needs of the particular processing campaign and varied with type of fuel processed and equipment requiring access.

Final Flushing – Although not required by regulation because the units associated with the uranium dissolution and extraction process were not waste tanks, these flushes were conducted as a precautionary measure to ensure that potentially RCRA-hazardous materials were flushed from the process. They consisted of a dilute nitric acid flush followed by three water rinses. They were patterned after uranium sweepdown and decontamination flushes to contact all process vessels and ancillary equipment.

In the first-cycle cells, the flushing was done in two stages. First, extensive flushes were done to all equipment; these flushes were not sampled. Then, flushes were made of statistically representative portions of the system and sampled in one of the units most likely to accumulate any RCRA-hazardous materials. Following the final second- and third-cycle/denitrator run in 1994, these final flushes were incorporated as modifications to standard operating procedures for uranium sweepdown of those systems.

The 185 inactive process/product units included in Table 1 have been flushed, rinsed, and emptied and do not require further characterization under the SITE-TANK-005 Action Plan.

Ancillary Equipment

The uranium dissolution and extraction process was designed to minimize the accumulation of liquids or sludges in ancillary equipment such as transfer equipment, valves, and process piping. Each unit and associated piping was designed and pitched so that any residual material in the unit or line would flow to a low point where a drain recycled the material back to the process.

Extensive flushing of systems was conducted following processing campaigns for uranium accountability and to allow safe maintenance access. These flushing activities were performed using standard radiological and industrial practices and were designed to flush all system components. Based on the extensive flushing of the uranium dissolution and extraction process, ancillary equipment and piping associated with the VCO units in CPP-601 are considered empty. Upon decontamination and decommissioning (D&D) of CPP-601 and associated buildings, all material removed from the facility will be characterized prior to disposal.

Table 1. Inactive process/product units requiring no further characterization.

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00067	CEN-F-400	CENTRIFUGE/ PROCESS UNIT	F CPP-601	FEED PREPARATION	•LAST PROCESS USE 1985 AS PART OF LAST ALUMINUM DISSOLVER CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00068	CEN-F-401	CENTRIFUGE/ PROCESS UNIT	F CPP-601	FEED PREPARATION	•LAST PROCESS USE 1985 AS PART OF LAST ALUMINUM DISSOLVER CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00080	SU-L-116	L-CELL SUMP/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•ONLY DISCHARGE FROM SUMP IS RETURNED TO PROCESS •FLUSHED/EMPTIED AT END OF FUEL PROCESSING ACTIVITIES •SUMP EMPTIED WITHIN 90 DAYS; SUMP IS EMPTY	30%
98CPP00081	SU-LC-100	OPERATING PIT SUMP/ PROCESS UNIT	LC AREA CPP-601	DENITRATION/ PACKAGING	•ONLY DISCHARGE FROM SUMP IS RETURNED TO PROCESS •FLUSHED/EMPTIED AT END OF FUEL PROCESSING ACTIVITIES •SUMP EMPTIED WITHIN 90 DAYS; SUMP IS EMPTY	15%
98CPP00082	SU-M-115	M-CELL FLOOR SUMP/ PROCESS UNIT	M CPP-601	URANIUM ACCOUNTABILITY	•ONLY DISCHARGE FROM SUMP IS RETURNED TO PROCESS •FLUSHED/EMPTIED AT END OF FUEL PROCESSING ACTIVITIES •SUMP EMPTIED WITHIN 90 DAYS; SUMP IS EMPTY	15%
98CPP00112	TK-PO-121	SURGE AIR TANK/ PROCESS UNIT	Operating Corridor CPP-601	FEED PREPARATION	•AIR TANK THAT WAS ALWAYS AT A SIGNIFICANTLY HIGHER PRESSURE THAN THE PROCESS UNITS; THEREFORE, THERE WAS NO CHANCE FOR PROCESS SOLUTIONS TO ENTER THE UNIT •A FAILURE WOULD RESULT IN ELEVATED RADIATION LEVELS AS THE UNIT WAS ASSOCIATED WITH THE FIRST-CYCLE EXTRACTION PROCESS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00114	VES-C-101	PRODUCT TRANSFER TANK (SAMPLE AND TRANSFER TANK)/ PROCESS UNIT	C CPP-601	URANIUM SALVAGE	•LAST PROCESS USE 1994 AS PART OF LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED DEC 1994 AND NUMEROUS ADDITIONAL TIMES AS PART OF OTHER VESSEL FLUSHES •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00115	VES-C-102	KNOCKOUT POT/ PROCESS UNIT	C CPP-601	URANIUM SALVAGE	•LAST PROCESS USE 1994 AS PART OF LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED DEC 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00134	VES-E-101	ZIRCONIUM DISSOLVER TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1981, AS PART OF LAST ALUMINUM/ZIRCONIUM CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM HEEL FLUSHED, RINSED, AND EMPTIED BY APRIL 1981 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00135	VES-E-102	COMPLEXING TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 BEFORE FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00136	VES-E-103	DIGESTION TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 BEFORE FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00139	VES-E-106	CHARGE WATER TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1981, AS PART OF LAST ALUMINUM/ZIRCONIUM CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM HEEL FLUSHED, RINSED, AND EMPTIED BY APR 1981 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00140	VES-E-108	HOLD-UP TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 BEFORE FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00141	VES-E-109	DIGESTION TANK (E-301)/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00142	VES-E-110	COMPLEXING SURGE TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 BEFORE FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00145	VES-E-151	SIR DISSOLVER TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE AND LINES CUT 1965, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •AFTER THE LAST PROCESSING, THE URANIUM HEEL WAS FLUSHED OUT, THE TANK WAS RINSED, EMPTIED, AND THE BOTTOM LINES CUT •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00146	VES-E-153	DIGESTION TANK/ PROCESS UNIT	E CPP-601	FEED PREPARATION	•LAST PROCESS USE 1991, USED FOR IN-PROCESS STORAGE UNTIL 1993 BEFORE FINAL URANIUM RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN OF E-CELL VESSELS WAS COMPLETED MAY 1993 •FLUSHED/EMPTIED MAY 1993, FEB 1994, AND IN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00150	VES-F-101	CENTRIFUGE MANIFOLD TANK/ PROCESS UNIT	F CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 93 AND FEB 94 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00151	VES-F-105	CLARIFIED SOLUTION COLLECTION TANK/ PROCESS UNIT	F CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 93 AND FEB 94 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00152	VES-F-106	CLARIFIED SOLUTION COLLECTION TANK/ PROCESS UNIT	F CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 93 AND FEB 94 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00168	VES-G-101	ALUMINUM DISSOLVER/ PROCESS UNIT	G CPP-601	FUEL DISSOLUTION	•LAST ALUMINUM PROCESSING CAMPAIGN ENDED JAN 1986, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND MAY 1993 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00172	VES-G-105	DISSOLVER RUN TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993, MAY 1993, AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00173	VES-G-106	FIRST-CYCLE FEED TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00174	VES-G-108	DISSOLVER RUN TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993, MAR 1993, MAY 1993, AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00175	VES-G-111	IA EXTRACTION COLUMN/ PROCESS UNIT	G CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00178	VES-G-115	FIRST-CYCLE RUN TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00179	VES-G-116	FIRST-CYCLE RUN TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00181	VES-G-151	ALUMINUM DISSOLVER/ PROCESS UNIT	G CPP-601	FUEL DISSOLUTION	•LAST ALUMINUM PROCESSING CAMPAIGN ENDED JAN 1986, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND MAY 1993 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00185	VES-G-155	DISSOLVER RUN TANK/ PROCESS UNIT	G CPP-601	FEED PREPARATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND MAY 1993 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00192	VES-H-100	IB COLUMN/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00195	VES-H-103	IC COLUMN/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00197	VES-H-108	ID COLUMN SCRUB COLLECTION TANK/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00199	VES-H-115	FIRST-STAGE MIXER SETTLER/ PROCESS UNIT	H CPP-601	TBP/KEROSENE SOLVENT TREATMENT	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00200	VES-H-116	SECOND-STAGE MIXER SETTLER/ PROCESS UNIT	H CPP-601	TBP/KEROSENE SOLVENT TREATMENT	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00201	VES-H-117	THIRD-STAGE MIXER SETTLER/ PROCESS UNIT	H CPP-601	TBP/KEROSENE SOLVENT TREATMENT	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00202	VES-H-118	SOLVENT RUN TANK/ PROCESS UNIT	H CPP-601	TBP/KEROSENE SOLVENT TREATMENT	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00211	VES-H-131	EVAPORATOR SURGE AND COLLECTION POT FROM EVP-H-130/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00213	VES-H-134	ID COLUMN/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00222	VES-H-145	CARBONATE RECYCLE SURGE TANK/ PROCESS UNIT	H CPP-601	TBP/KEROSENE SOLVENT TREATMENT	•LAST FDP PROCESSING CAMPAIGN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00224	VES-J-117	ORGANIC CONDENSATE COLLECTION TANK/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDPRUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •LINES CUT AND ISOLATED ~1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00229	VES-J-125	THERMOSYPHON EVAPORATOR/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDP RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1988 •FLUSHED/EMPTIED JAN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00230	VES-J-127	PRODUCT STORAGE TANK/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDP RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1988 •FLUSHED/EMPTIED JAN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00231	VES-J-128	PRODUCT STORAGE TANK/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDP RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1988 •FLUSHED/EMPTIED JAN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00233	VES-J-134	REWORK SOLUTION COLLECTION TANK/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDP RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSINGCAMPAIGN •FLUSHED/EMPTIED MAR 1988 •FLUSHED/EMPTIED JAN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00234	VES-J-135	REWORK SOLUTION COLLECTION TANK/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	•LAST PROCESS USE JUN 1987 AS PART OF THE FIRST FDP RUN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSINGCAMPAIGN •FLUSHED/EMPTIED MAR 1988 •FLUSHED/EMPTIED JAN 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00235	VES-K-104	SOLVENT PLATE RECOVERY STILL/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00236	VES-K-105	K-104 STILL PHASE SEPARATOR/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00237	VES-K-106	SOLVENT COLLECTION TANK/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00244	VES-L-101	SOLUTION COLLECTION TANK/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1993, AUG 1994, DEC 1994, JAN 1995, MAY 1995, NOV 1995, AND MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00245	VES-L-102	SOLUTION COLLECTION TANK/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1993, AUG 1994, DEC 1994, AND NOV 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00246	VES-L-103	PRODUCT STORAGE TANK/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED DEC 1994, AND NOV 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00247	VES-L-104	PRODUCT STORAGE TANK/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED NOV 1995 AND MAY 1996 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00248	VES-L-105	PHASE SEPARATOR/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED NOV 1995 AS PART OF THE L-130 FLUSH •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00262	VES-L-130	REWORK EVAPORATOR/ PROCESS UNIT	L CPP-601	URANIUM SALVAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED NOV 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00303	VES-N-125	FEED STORAGE TANK/ PROCESS UNIT	N CPP-601	INTERCYCLE STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF THE LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED DEC 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00361	VES-PM-100-1	INACTIVE GADOLINIUM OXIDE MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE ~1981 AS PART OF THE LAST ALUMINUM/ZIRCONIUM CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •1999 INSPECTION: ~2 IN. OF LIQUID (~6 L) WITH NITRIC ACID ODOR IN BOTTOM BELOW PIPE DRAIN •FLUSHED/EMPTIED AND VERIFIED EMPTY JAN 2000 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00363	VES-PM-101-0	NITRIC ACID DISSOLVER FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1985 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED NOV 1994 •1999 INSPECTION: NO VISUAL INSPECTION POSSIBLE, WHEN BOTTOM CAP WAS REMOVED ABOUT 10 mL OF LIQUID WAS REMOVED. THE VALVE WAS THEN OPENED - NO LIQUID WAS PRESENT IN THE TANK •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00365	VES-PM-102-0	NITRIC ACID DISSOLVER MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1985 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED NOV 1994 •1999 INSPECTION: NO VISUAL INSPECTION POSSIBLE, BOTTOM DRAIN WAS OPENED, AND NO LIQUID WAS PRESENT •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00369	VES-PM-104-0	CATALYST MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1986 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JAN 1995 •FINAL RINSATE SAMPLE >TCLP FOR MERCURY (0.35 ppm) •1999 INSPECTION: TANK IS CLEAN AND DRY WITH NO ODORS OR STAINS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00371	VES-PM-105-0	CATALYST FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1986 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JAN 1995 •FINAL RINSATE SAMPLE >TCLP FOR MERCURY (0.35 ppm) •1999 INSPECTION: DRY WITH SMALL AMOUNT OF WHITE STAINING •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00373	VES-PM-107-0	IBS FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1995 •1999 INSPECTION: TANK IS CLEAN AND DRY WITH NO ODORS OR STAINS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00377	VES-PM-108-0	ICX FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY WITH NO ODORS OR STAINS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00380	VES-PM-109-0	IDS FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST ALUMINUM DISSOLUTION CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED SEP 1995 •1999 INSPECTION: SMALL AMOUNTS OF BROWNISH STAIN ON BOTTOM 1999 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00382	VES-PM-110	SECOND-CYCLE STRIP FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN •FLUSHED/EMPTIED DEC 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY WITH NO ODORS OR STAINS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00383	VES-PM-110-0	IAX MAKEUP/FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED SEP 1995 •1999 INSPECTION: NO VISUAL INSPECTION POSSIBLE, BOTTOM DRAIN WAS OPENED AND NO LIQUID WAS PRESENT •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00386	VES-PM-111	THIRD-CYCLE STRIP FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN •FLUSHED/EMPTIED DEC 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00387	VES-PM-111-0	STAGE II SOLVENT WASH MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JUN 1994 •1999 INSPECTION: RUSTY STAINING ON SIDES AND BOTTOM •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00388	VES-PM-112	INACTIVE FOURTH-CYCLE STRIP FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE ~1985 AS PART OF LAST ALUMINUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JUL 1995 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00389	VES-PM-112-0	STAGE I SOLVENT WASH FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00391	VES-PM-113	AMMONIUM HYDROXIDE HOLD TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION MAKEUP AND FEED	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN •FLUSHED/EMPTIED MAR 1998; AMMONIUM HYDROXIDE DRUMMED AND SENT TO VENDOR •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00392	VES-PM-113-0	STAGE II SOLVENT WASH FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00395	VES-PM-114-0	CAUSTIC MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •1999 INSPECTION: DRY WITH ~1 L OF CLEAR WHITE CRYSTALS ON THE BOTTOM OF TANK AND HIGH WATER LINE •THE APPROXIMATELY 1 L (0.26 GAL) OF WHITE CRYSTALS ASSOCIATED WITH THE TANK REPRESENTS LESS THAN 0.07% OF THE TOTAL CAPACITY OF THE TANK (398 GAL). •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00396	VES-PM-115-0	STAGE III SOLVENT WASH FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00399	VES-PM-116-0	INACTIVE STAGE III AS MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE/ISOLATED EARLY 1980s (NEVER DEDICATED ANY PARTICULAAR PROCESS UNIT), IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED AUG 1995 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00400	VES-PM-117	INACTIVE BORATED WATER MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1984 AS PART OF ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED DEC 1996 •1999 INSPECTION: LIGHT BROWN STAIN ON BOTTOM •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00407	VES-PM-124	INACTIVE SECOND-CYCLE SCRUB MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AND LINES CUT/VESSEL ISOLATED 1984 AS PART OF GENERAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES •FLUSHED/EMPTIED NOV 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00408	VES-PM-124-0	AIR PULSER RESERVOIR/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•AIR TANK THAT WAS ALWAYS AT A SIGNIFICANTLY HIGHER PRESSURE THAN THE PROCESS UNITS; THEREFORE, THERE WAS NO CHANCE FOR PROCESS SOLUTIONS TO ENTER THE UNIT •A FAILURE WOULD RESULT IN ELEVATED RADIATION LEVELS AS THE UNIT WAS ASSOCIATED WITH THE FIRST-CYCLE EXTRACTION PROCESS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00410	VES-PM-125-0	AIR PULSER RESERVOIR/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•AIR TANK THAT WAS ALWAYS AT A SIGNIFICANTLY HIGHER PRESSURE THAN THE PROCESS UNITS; THEREFORE, THERE WAS NO CHANCE FOR PROCESS SOLUTIONS TO ENTER THE UNIT •A FAILURE WOULD RESULT IN ELEVATED RADIATION LEVELS AS THE UNIT WAS ASSOCIATED WITH THE FIRST-CYCLE EXTRACTION PROCESS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00411	VES-PM-126	SECOND-CYCLE SCRUB FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AUG 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •1999 INSPECTION: WHITE STAIN ON BOTTOM – LIQUID FROM DRAIN LINE pH ~4 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00412	VES-PM-126-0	AIR PULSER RESERVOIR/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•AIR TANK THAT WAS ALWAYS AT A SIGNIFICANTLY HIGHER PRESSURE THAN THE PROCESS UNITS; THEREFORE, THERE WAS NO CHANCE FOR PROCESS SOLUTIONS TO ENTER THE UNIT •A FAILURE WOULD RESULT IN ELEVATED RADIATION LEVELS AS THE UNIT WAS ASSOCIATED WITH THE FIRST-CYCLE EXTRACTION PROCESS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00415	VES-PM-127	INACTIVE THIRD-CYCLE SCRUB MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AND LINES CUT/VESSEL ISOLATED 1984 AS PART OF GENERAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES •FLUSHED/EMPTIED NOV 1994 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00417	VES-PM-129	INACTIVE SECOND-CYCLE SCRUB FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AND LINES CUT/VESSEL ISOLATED 1984 AS PART OF GENERAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES •FLUSHED/EMPTIED AUG 1995 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00418	VES-PM-130	INACTIVE SECOND- AND THIRD-CYCLE STRIP MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AND LINES CUT/VESSEL ISOLATED 1984 AS PART OF GENERAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES •FLUSHED/EMPTIED MAY 1995 •1999 INSPECTION: NO VISUAL INSPECTION POSSIBLE, THE PUMP WAS REMOVED AT WHICH TIME ~100 ML OF CLEAR LIQUID DRAINED OUT OF THE PIPING BELOW THE TANK. THERE WAS NOTHING IN THE TANK •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00420	VES-PM-133	INACTIVE THIRD-CYCLE SCRUB FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE AND LINES CUT/VESSEL ISOLATED 1984 AS PART OF GENERAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES •FLUSHED/EMPTIED JUL 1995 •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00421	VES-PM-133-0	AIR PULSER RESERVOIR/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•AIR TANK THAT WAS ALWAYS AT A SIGNIFICANTLY HIGHER PRESSURE THAN THE PROCESS UNITS; THEREFORE, THERE WAS NO CHANCE FOR PROCESS SOLUTIONS TO ENTER THE UNIT •A FAILURE WOULD RESULT IN ELEVATED RADIATION LEVELS AS THE UNIT WAS ASSOCIATED WITH THE FIRST-CYCLE EXTRACTION PROCESS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00424	VES-PM-135-0	INACTIVE STAGE I-III SOLVENT WASH MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE/ISOLATED 1984 AS PART OF GENERRAL SYSTEM UPGRADE, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JUL 1994 •1999 INSPECTION: NO VISUAL INSPECTION POSSIBLE, BOTTOM DRAIN WAS OPENED AND NO LIQUID WAS PRESENT •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00442	VES-PM-170	CENTRIFUGE DECONTAMINATION MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JUN 1996, WITH VISUAL VERIFICATION OF EMPTY •1999 INSPECTION: SMALL AMOUNT OF RUSTY LOOKING BROWN CRYSTALS ON BOTTOM •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00446	VES-PM-175	INACTIVE COMPLEXER MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1986 AS PART OF LAST ALUMINUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •IN NOV 1993 LIQUID WAS FOUND DRIPPING FROM A FLANGE NEAR THE PUMP ASSOCIATED WITH THE TANK. NO LIQUIDS PRESENT IN THE TANK. •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00451	VES-PM-180	INACTIVE HYDROFLUORIC ACID MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1981 AS PART OF LAST ALUMINUM/ZIRCONIUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •BOTTOM PIPING EMPTIED SEP 1993, NO LIQUIDS PRESENT IN THE TANK •1999INSPECTION: BROWN STAIN ON RUBBER LINER •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00453	VES-PM-186	INACTIVE CHROMIC ACID MAKEUP TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1986 AS PART OF LAST ALUMINUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •1999INSPECTION: DRY, CONTAINS A SMALL AMOUNT OF DRY BROWNISH RESIDUE (<10 mL) AND A DROPPED FLEXIBLE PIPE SECTION •THE SMALL AMOUNT OF BROWNISH RESIDUE (<10 ML OR 0.0026 GAL) REPRESENTSA SMALL FRACTION (<0.002%) OF THE TOTAL CAPCITY OF THE TANK (110 GAL) •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00454	VES-PM-188	INACTIVE HYDROFLUORIC ACID FEED TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1981 AS PART OF LAST ALUMINUM/ZIRCONIUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •BOTTOM PIPING EMPTIED SEP 1993, NO LIQUIDS PRESENT IN THE TANK •1999 INSPECTION: TANK IS CLEAN AND DRY •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	5%
98CPP00455	VES-PM-194	INACTIVE COOLING LOOP SURGE TANK/ PRODUCT UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION CHEMICAL MAKEUP AND FEED	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED USING COMMON INDUSTRIAL PRACTICES AND PLACED IN STANDBY •FLUSHED/EMPTIED JUL 1996 •1999INSPECTION: NO VISUAL INSPECTION POSSIBLE, BOTTOM DRAIN WAS OPENED AND NO LIQUID WAS PRESENT •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00476	VES-Q-120	EVAPORATOR OVERFLOW TANK/ PROCESS UNIT	Q CPP-601	THIRD-CYCLE EXTRACTION AND CONCENTRATION	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00487	VES-T-101	SECOND-CYCLE HEXONE FEED TANK/ PRODUCT UNIT	T CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN AT END OF CAMPAIGN •SUBSEQUENTLY FLUSHED/EMPTIED MAY 1995 WITH VES-T-100 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00488	VES-T-102	THIRD-CYCLE HEXONE FEED TANK/ PRODUCT UNIT	T CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED AT END OF CAMPAIGN •SUBSEQUENTLY FLUSHED/EMPTIED MAY 1995 WITH VES-T-100 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00489	VES-T-103	SPARE HEXONE FEED TANK/ PRODUCT UNIT	T CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •SUBSEQUENTLY FLUSHED/EMPTIED MAY 1995 WITH VES-T-100 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00490	VES-U-101	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00491	VES-U-102	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABLITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00492	VES-U-103	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00493	VES-U-104	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00494	VES-U-105	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00495	VES-U-106	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN•FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00496	VES-U-107	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN•FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00497	VES-U-108	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00498	VES-U-111	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00499	VES-U-112	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00500	VES-U-113	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00501	VES-U-114	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00502	VES-U-115	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00503	VES-U-116	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00504	VES-U-117	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00505	VES-U-118	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00506	VES-U-121	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00507	VES-U-122	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	15%
98CPP00508	VES-U-123	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00509	VES-U-124	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00510	VES-U-125	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00511	VES-U-126	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00512	VES-U-127	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00513	VES-U-128	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00514	VES-U-129	RAFFINATE EVAPORATOR/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00515	VES-U-130	RAFFINATE EVAPORATOR/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00518	VES-U-300	RAFFINATE VAPOR CONDENSER/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00519	VES-U-301	RAFFINATE VAPOR CONDENSER/ PROCESS UNIT	U CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00525	VES-W-101	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00526	VES-W-102	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00527	VES-W-103	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00528	VES-W-104	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	• LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00529	VES-W-105	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00530	VES-W-106	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00531	VES-W-107	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00532	VES-W-108	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00533	VES-W-111	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00534	VES-W-112	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00535	VES-W-113	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00536	VES-W-114	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00537	VES-W-115	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00538	VES-W-116	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00539	VES-W-117	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00540	VES-W-118	ORGANIC RAFFINATE SAMPLE TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00541	VES-W-121	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00542	VES-W-122	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00543	VES-W-123	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00544	VES-W-124	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	• LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00545	VES-W-125	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00546	VES-W-126	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00547	VES-W-127	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00548	VES-W-128	ORGANIC RAFFINATE COLLECTION TANK/ PROCESS UNIT	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00549	VES-W-129	HEXONE SOLVENT FEED TANK	W CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 AND MAY 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00564	VES-Y-101	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00565	VES-Y-102	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00566	VES-Y-103	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00567	VES-Y-104	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00568	VES-Y-111	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00569	VES-Y-112	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00570	VES-Y-113	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00571	VES-Y-114	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAR 1993 AND AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00573	VES-Y-121	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00574	VES-Y-122	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00575	VES-Y-123	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00576	VES-Y-124	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00577	VES-Y-131	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00578	VES-Y-132	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBO NATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00579	VES-Y-133	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00580	VES-Y-134	AQUEOUS RAFFINATE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE JUL 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED AUG 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00581	VES-Y-140	Y-CELL EVAPORATOR/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00583	VES-Y-150	SAMPLE COLLECTION TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1970s, IMMEDIATELY FLUSHED AND EMPTIED VIA BOTTOM DRAIN FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY •LINES CUT/VESSEL ISOLATED 1984 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00584	VES-Y-160	RAFFINATE HOLD TANK/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00585	VES-Y-161	PUMP MONITORING VESSEL/ PROCESS UNIT	Y CPP-601	RAFFINATE/CARBONATE COLLECTION AND SAMPLING	•LAST PROCESS USE 1984 AS PART OF LAST ROVER PROCESS CAMAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND DECONTAMINATION •LINES CUT/VESSEL ISOLATED 1988 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00596	VES-Z-120	Z-CELL VESSEL OFF-GAS KNOCKDOWN TOWER/ PROCESS UNIT	Z CPP-601	FINAL PRODUCT STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •URANIUM SWEEPDOWN IMMEDIATELY FOLLOWING END OF THE URANIUM ACCOUNTABILITY FLUSH AFTER THE DENITRATOR RUN (OCT 1994), FLUSHED AND EMPTIED •FLUSHED AND EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP00597	VES-Z-123	OFF-GAS WATER SEPARATOR/ PROCESS UNIT	Z CPP-601	FINAL PRODUCT STORAGE	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •URANIUM SWEEPDOWN IMMEDIATELY FOLLOWING END OF THE URANIUM ACCOUNTABILITY FLUSH AFTER THE DENITRATOR RUN (OCT 1994), FLUSHED AND EMPTIED •FLUSHED AND EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00605	VES-LC-157	DENITRATOR VESSEL/ PROCESS UNIT	LC AREA CPP-602	DENITRATION/PACK AGING	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00606	VES-LC-158	PRODUCT COLLECTION VESSEL/ PROCESS UNIT	LC AREA CPP-602	DENITRATION/PACK AGING	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •FLUSHED/EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00608	VES-LC-162	DENITRATOR OFF-GAS MIST ELIMINATOR/ PROCESS UNIT	LC AREA CPP-602	DENITRATION/PACK AGING	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AN THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •FLUSHED/EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP00609	VES-LC-163	CONDENSATE COLLECTION VESSEL/ PROCESS UNIT	LC AREA CPP-602	DENITRATION/PACK AGING	•LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY •FLUSHED/EMPTIED MAY 1997 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01076	VES-HC2-108	CENTRIFUGE WASH TANK/ PROCESS UNIT	CELL 2 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE OCT 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1996 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01079	VES-HC2-121	HF SCRUBBER/ PROCESS UNIT	CELL 2 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE OCT 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1996 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98CPP01080	VES-HC2-151	DISSOLVER SURGE VESSEL/ PROCESS UNIT	CELL 2 CPP-640	FUEL DISSOLUTION	•THIS UNIT FAILED TESTING IN 1982/83 AND WAS NEVER USED, IT WAS THEN FLUSHED AND ISOLATED; VES-HC2-152 REPLACED IT •FLUSHED/EMPTIED APR 96 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01081	VES-HC2-152	DISSOLVER/ PROCESS UNIT	CELL 2 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE OCT 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1996 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01082	VES-HC2-153	COMPLEXING VESSEL/ PROCESS UNIT	CELL 2 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE OCT 1984 AS PART OF LAST ROVER PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED MAY 1996 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01085	VES-HC5-100	ELECTROLYTIC DISSOLVER/ PROCESS UNIT	CELL 5 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE NOV 1981 AS PART OF LAST ALUMINUM/ZIRCONIUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED NOV 1981 •FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY 1991 •FLUSHED/EMPTIED NOV 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01086	VES-HC5-101	DISSOLVER SURGE TANK/ PROCESS UNIT	CELL 5 CPP-640	FUEL DISSOLUTION	•LAST PROCESS USE NOV 1981 AS PART OF LAST ALUMINUM/ZIRCONIUM PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED NOV 1981 •FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY 1991 •FLUSHED/EMPTIED NOV 1995 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01615	EVP-H-130	FIRST CYCLE PRODUCT EVAPORATOR/ PROCESS UNIT	H CPP-601	FIRST-CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESS RUN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%
98CPP01621	HE-H-300	EVAPORATOR CONDENSER/ PROCESS UNIT	H CPP-601	FIRST CYCLE EXTRACTION AND CONCENTRATION	•LAST FDP PROCESS RUN ENDED JUL 1988, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED FEB 1993 AND FEB 1994 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Table 1. (Continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION/ UNIT TYPE	CELL #/ BUILDING	PROCESS DESCRIPTION	VERIFICATION OF EMPTY	MILESTONE
98INTEC01663	VES-PA-102	AIR LIFT PIT SUMP/ PROCESS UNIT	FROM F-CELL ACCESS TO THE WASTE TRENCH CPP-601	FEED PREPARATION	•LAST PROCESS USE MID-1970s •SUBSEQUENTLY FLUSHED, EMPTIED, COVERED WITH A STEEL PLATE FOLLOWED BY A LAYER OF CONCRETE AND A LAYER OF LEAD BRICKS (DURING F-CELL RIPOUT) BECAUSE OF THE HIGH RADIATION FIELDS •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY	30%

Characterization of VCO Sumps

Sumps associated with the dissolution and extraction processes collected liquids, which were either returned to process or discharged to the CPP-601 deep tanks (included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]) via the CPP-601 PEWE collection system. The following sections provide the characterization information for the sumps included in the SITE-TANK-005 Action Plan associated with the uranium dissolution and extraction process.

In-Cell Sumps

In order to facilitate decontamination and provide secondary containment for the dissolution and extraction processes, all process cells in CPP-601 and CPP-640 were lined with stainless steel (varying heights from 1 ft to 10 ft) and the floors were pitched to drain to a sump, usually located near one corner of the process cell (see Schematic P-ST005-INTEC-COMP601-B). The criticality-safe floor sumps were typically 5 in. in diameter by 18 in. in depth, with a capacity of 1.5 gal. The floor sumps are equipped with level detection instrumentation capable of detecting liquid at less than 1 in. and are continuously monitored. The sumps are equipped with transfer jets capable of emptying the sumps below the instrument detection levels.

Most in-cell sumps were designed such that they could be discharged either back to the uranium dissolution and extraction process or to the PEWE system via the CPP-601 deep tanks. During process operation, radiation fields in the cells were usually too high to allow entry to identify the source of liquid entering a sump; therefore, any solutions collected in the sumps were assumed to be product and were transferred back to the dissolution and extraction process. If external decontamination of a process cell was required following the process campaign, the decontamination/flush solutions were collected in the sump and transferred to the PEWE system. Any sump that discharged exclusively back to the uranium dissolution and extraction process (i.e., no direct route to the PEWE system) is classified as an inactive process/product unit included in Table 1, Inactive process/product units requiring no further characterization.

The in-cell sumps listed in Table 2 are included in the SITE-TANK-005 Action Plan. Each sump is an active waste unit listed in the Action Plan as requiring a hazardous waste determination (NEW RCRA [ND]).

Table 2. In-cell sumps included in the SITE-TANK-005 Action Plan that are active waste units.

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/BUILDING	MILESTONE
98CPP00070	SU-B-108	B-CELL SUMP	B-CELL/CPP-601	15%
98CPP00095	SU-S-113	S-CELL FLOOR SUMP	S-CELL/CPP-601	15%
98CPP00096	SU-U-132	U-CELL SUMP	U-CELL/CPP-601	15%
98CPP00099	SU-W-131	W-CELL SUMP	W-CELL/CPP-601	15%
98CPP00109	SU-Y-142	Y-CELL FLOOR SUMP	Y-CELL/CPP-601	15%
98CPP01087	VES-HC5-102	CELL 5 SUMP	CELL-5/CPP-640	15%

Each of the sumps identified above were operated during process operations as process/product units and were part of the secondary containment system for the process cells. The in-cell sumps were

flushed as part of external decontamination procedures for equipment within the cells at the end of the reprocessing mission. Since the shutdown of the uranium dissolution and extraction process, the only potential waste stream to these sumps is water from infiltration, which may occur due to cracks and improperly sealed holes in the building. The sumps are normally dry. Because no listed hazardous wastes were used in the uranium dissolution and extraction process, these sumps did not manage a RCRA hazardous waste stream and are characterized as nonhazardous.

Sumps that Provide Secondary Containment for RCRA-Regulated Piping

The deep tanks located in CPP-601 are RCRA interim status units included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* (DOE-ID 2000). The deep tanks are used to collect PEWE wastes from drains or transfers from processes in CPP-601, CPP-602, CPP-627, CPP-640, CPP-684, and formerly from CPP-666. Piping carrying RCRA-regulated wastes to and from the deep tanks runs through parts of CPP-601. Table 3 identifies the sumps included in the SITE-TANK-005 Action Plan that are part of the secondary containment system for active RCRA-regulated piping associated with the deep tanks in CPP-601.

Table 3. Sumps included in the SITE-TANK-005 Action Plan that provide secondary containment for RCRA-regulated piping (active waste units).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	BUILDING	MILESTONE
98CPP00098	SU-VT-110	SOUTH VENT CORRIDOR FLOOR SUMP	CPP-601 SOUTH VENT CORRIDOR	15%
98CPP00104	SU-WK-104	EAST VENT CORRIDOR FLOOR SUMP	CPP-601 EAST VENT CORRIDOR	15%
98CPP00105	SU-WK-105	EAST VENT CORRIDOR FLOOR SUMP	CPP-601 EAST VENT CORRIDOR	15%
98CPP00106	SU-WK-106	EAST VENT CORRIDOR FLOOR SUMP	CPP-601 EAST VENT CORRIDOR	15%
98CPP00107	SU-WK-107	EAST VENT CORRIDOR FLOOR SUMP	CPP-601 EAST VENT CORRIDOR	15%
98CPP00601	SU-LC-107	LEAK DETECTION SUMP	CPP-602 LC AREA	15%

Each of the sumps identified above provides secondary containment for RCRA-regulated piping associated with the CPP-601 deep tanks. The vent tunnels originally had painted concrete floors with cast iron drains. In 1991, the vent tunnels and the CPP-602 waste trench were upgraded by installing new floors constructed of chemical-resistant epoxy that drained to stainless steel sumps. There have been no known discharges of process liquids from piping in the vent corridors to these sumps since they were installed. The only known discharge of liquids to the sumps identified above is from water infiltration due to cracks and improperly sealed holes in the building or overflow of steam condensate from the primary steam condensate sump (SU-LC-104; VCO System INTEC-043) (INEEL 2001) to the leak detection sump. The sumps are included in the VCO system as isolated components as they are part of an active secondary containment system for a RCRA interim-status hazardous waste system. Liquids collected in the sumps are subsequently managed as mixed waste with the applicable hazardous waste numbers applied to the liquid waste stream.

WG- and WH-Cell Sumps

The west (WG-Cell) and the east (WH-Cell) tank cells contain the four waste liquid collection tanks (VES-WG-100, VES-WG-101, VES-WH-100, and VES-WH-101; RCRA interim status units) that are commonly called "deep tanks" due to their location within CPP-601. The WG-Cell floor sump (SU-WG-102; 98CPP00100) and the WH-Cell floor sump (SU-WH-102; 98CPP00101) are located in the floors of the WG- and the WH-Cells, respectively. The sumps are part of the secondary containment system for the deep tanks and collect any leaks within the cells. The sumps are part of an active secondary containment system for a RCRA interim-status hazardous waste system.

Liquids collected in the sumps are discharged back to the deep tanks and subsequently managed as mixed waste with the applicable hazardous waste numbers applied to the liquid waste stream. These sumps are part of an active secondary containment system and do not routinely manage a waste. Characterization of these sumps is part of the 15% characterization milestone under the VCO.

Sumps that Provide Secondary Containment for Piping that is not RCRA-Regulated

In addition to the vent corridor sumps identified above that provide secondary containment for RCRA-regulated piping, the vent corridor sumps identified in Table 4 are also included in the SITE-TANK-005 Action Plan. These sumps provide secondary containment for piping in the CPP-640 Vent Corridor, the South Vent Corridor, the West Vent Corridor (both SU-WJ-101 and SU-WJ-102), and the East Vent Corridor. These sumps are not part of the secondary containment system for RCRA-regulated piping, but are part of the secondary containment system for other piping (e.g., fire water) in the vent corridors.

Table 4. Sumps included in the SITE-TANK-005 Action Plan that provide secondary containment for RCRA nonhazardous piping (active waste units).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	BUILDING	MILESTONE
98CPP00077	SU-HV-100	CPP-640 VENT CORRIDOR FLOOR SUMP	CPP-640 VENT CORRIDOR	15%
98CPP00097	SU-VT-109	SOUTH VENT CORRIDOR FLOOR SUMP	CPP-601 SOUTH VENT CORRIDOR	15%
98CPP00102	SU-WJ-101	WEST VENT CORRIDOR FLOOR SUMP	CPP-601 WEST VENT CORRIDOR	15%
98CPP00103	SU-WJ-102	WEST VENT CORRIDOR FLOOR SUMP	CPP-601 WEST VENT CORRIDOR	15%
98CPP00108	SU-WK-108	EAST VENT CORRIDOR FLOOR SUMP	CPP-601 EAST VENT CORRIDOR	15%

The layout of the CPP-601 facility and the floor of the vent corridors is sloped such that these sumps are not associated with active RCRA-regulated piping and do not have the potential to receive RCRA-regulated waste.

The vent corridor sumps were installed in 1990 as part of the upgrades to the CPP-601 facility, and there have been no known discharges of liquids from piping in the vent corridors to these sumps. The only known discharge of liquids to the sumps identified above is from water infiltration due to cracks and improperly sealed holes in the building. Liquids collected in the sumps are RCRA-nonhazardous; however, they are discharged to the CPP-601 PEWE collection system and are subsequently managed as mixed waste with the applicable hazardous waste numbers applied to the liquid waste stream. The sumps

are part of a secondary containment system and are used for emergency use. Because the sumps do not and have not managed RCRA-hazardous wastes, they are characterized as nonhazardous.

Units Requiring Further Characterization

Twelve of the 216 units associated with the uranium dissolution and extraction process included in the SITE-TANK-005 Action Plan require further characterization. These units (see Table 5) fall into one of three categories: inactive waste units that require completion of a hazardous waste determination, inactive process/product units that were not emptied within 90 days of last use, or inactive process/product units that require further documentation to verify that they are empty. Further characterization of the 12 units will be performed at a later date under the SITE-TANK-005 Action Plan.

Table 5. Units requiring further characterization under the SITE-TANK-005 Action Plan.

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/ BUILDING	PROCESS DESCRIPTION	OPERATIONAL STATUS/ RCRA REGULATED CATEGORY	REASON FOR FURTHER CHARACTERIZATION
98CPP00079 APPENDIX C	SU-K-107	K-CELL FLOOR SUMP/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	ACTIVE WASTE NEW RCRA (ND)	•SUMP IS AN ACTIVE WASTE UNIT THAT IS INTEGRAL TO THE HEXONE SOLVENT TREATMENT AND STORAGE SYSTEM •LAST PROCESS USE 7JUL 1988 AS PART OF LAST FDP PROCESS CAMPAIGN •FLUSHED/EMPTIED 1994
98CPP00238 APPENDIX C	VES-K-109	PACKED STEAM STRIPPING COLUMN/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE JUL 1988 AS PART OF LAST FDP PROCESS CAMPAIGN IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •CAUSTIC CLEANOUT 1994 •FLUSHED/EMPTIED SEP 1988 AND SEP 1989 •FLUSHED/EMPTIED THROUGH BOTTOM DRAIN 1988
98CPP00239 APPENDIX C	VES-K-110	PHASE SEPARATOR/ PROCESS UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE JULY 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN•FLUSHED/EMPTIED THROUGH BOTTOM DRAIN 1988
98CPP00240 APPENDIX C	VES-K-111	ORGANIC SAMPLE TANK/ PRODUCT UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE JUL 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED THROUGH BOTTOM DRAIN 1988

Table 5. (continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/ BUILDING	PROCESS DESCRIPTION	OPERATIONAL STATUS/ RCRA REGULATED CATEGORY	REASON FOR FURTHER CHARACTERIZATION
98CPP00241 APPENDIX C	VES-K-112	ORGANIC SAMPLE TANK/ PRODUCT UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE JUL 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •FLUSHED/EMPTIED THROUGH BOTTOM DRAIN 1988
98CPP00242 APPENDIX C	VES-K-113	ORGANIC WASTE FEED TANK/ PRODUCT UNIT	K CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE JUL 1988 AS PART OF LAST FDP PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PREOCESSING CAMPAIGN •FLUSHED/EMPTIED SEP 1988 •FLUSHED/EMPTIED THROUGH BOTTOM DRAIN 1988
98CPP00419 APPENDIX D	VES-PM-131	SOLVENT RECOVERY CAUSTIC FEED TANK/ PROCESS UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION MAKEUP AND FEED	INACTIVE PROCESS/PRODUCT NOT REG – EMPTY (ND)	•INACTIVE PROCESS/PRODUCT UNIT REQUIRING ADDITIONAL DOCUMENTATION TO VERIFY EMPTY •LAST PROCESS USE OCT 1994, AS PART OF LAST SECOND AND THIRD-CYCLE PROCESS CAMPAIGN94 •1999 INSPECTION: STUCK DRAIN VALVE DUE TO CRYSTAL FORMATION IN LINES •UNABLE TO ACCESS •CONNECTED TO TANK PM-114-0, WHICH WAS DRY WITH ~1 L OF CLEAR AND WHITE CRYSTALS ON THE BOTTOM, IT IS LIKELY THAT PM-131 IS IN SIMILAR CONDITION

Table 5. (continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/ BUILDING	PROCESS DESCRIPTION	OPERATIONAL STATUS/ RCRA REGULATED CATEGORY	REASON FOR FURTHER CHARACTERIZATION
98CPP00437 APPENDIX D	VES-PM-164	COMPLEXER FEED TANK/ PROCESS UNIT	PM AREA CPP-601	COLD PROCESS AND DECONTAMINATION MAKEUP AND FEED	INACTIVE PROCESS/PRODUCT NOT REG – EMPTY (ND)	•INACTIVE PROCESS/PRODUCT UNIT REQUIRING ADDITIONAL DOCUMENTATION TO VERIFY EMPTY •LAST PROCESS USE 1986 •1999 INSPECTION: THE VESSEL AREA WAS ROPED OFF AT THE TIME OF INSPECTION AND WAS NOT ACCESSIBLE. THIS AREA HAS SINCE BEEN CLEARED FOR ACCESS TO THE VESSELS.
98CPP00153 APPENDIX A	VES-F-107	SLURRIED SOLIDS CATCH TANK/ PROCESS UNIT	F CPP-601	FEED PREPARATION	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST ALUMINUM RUN ENDED JAN 1986, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABLILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN COMPLETED JAN 1986 •FLUSHED AND EMPTY FEB 1986 •URANIUM CLEANOUT COMPLETE AND CRITICALITY CONTROL DOWNGRADED TO MASS BASED •ADDITIONAL DECONTAMINATION FLUSHING 1988, DRAINED EMPTY THROUGH CUT LINE IN 1988. THE CUT LINE WAS A BOTTOM LINE, THE VESSEL WAS EMPTIED SUCH THAT NO SLUDGE WOULD REMAIN. •FLUSHED/EMPTIED MAY 1993

Table 5. (continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/ BUILDING	PROCESS DESCRIPTION	OPERATIONAL STATUS/ RCRA REGULATED CATEGORY	REASON FOR FURTHER CHARACTERIZATION
98CPP00154 APPENDIX A	VES-F-108	SLURRIED SOLIDS CATCH TANK/ PROCESS UNIT	F CPP-601	FEED PREPARATION	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST ALUMINUM CAMPAIGN ENDED JAN 1986, IMMEDIATLEY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED I STANDBY AWAITING NEXT PROCESSING CAMPAIGN •URANIUM SWEEPDOWN COMPLETED JAN 1986 •FLUSHED AND EMPTY FEB 1986 •URANIUM CLEANOUT COMPLETE AND CRITICALITY CONTROL DOWNGRADED TO MASS BASED •ADDITIONAL DECONTAMINATION FLUSHING 1988, DRAINED EMPTY THROUGH CUT LINE IN 1988. THE CUT LINE WAS A BOTTOM LINE, THE VESSEL WAS EMPTIED SUCH THAT NO SLUDGE WOULD REMAIN. •FLUSHED/EMPTIED MAY 1993 •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY
98CPP00232 APPENDIX B	VES-J-131	PHASE SEPARATOR/ PROCESS UNIT	J CPP-601	URANIUM SALVAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LINES CUT AND ISOLATED~1988 •NEVER EMPTIED •CONFIGURATION IS SUCH THAT IT COULD NOT BE EMPTIED THROUGH LINES

Table 5. (continued).

INVENTORY TRACKING #	VESSEL #	DESCRIPTION	CELL #/ BUILDING	PROCESS DESCRIPTION	OPERATIONAL STATUS/ RCRA REGULATED CATEGORY	REASON FOR FURTHER CHARACTERIZATION
98CPP00486 APPENDIX E	VES-T-100	HEXONE SOLVENT STORAGE TANK/ PRODUCT UNIT	T CPP-601	HEXONE SOLVENT TREATMENT AND STORAGE	INACTIVE WASTE NEW RCRA (ND)	•INACTIVE WASTE UNIT •LAST PROCESS USE OCT 1994 AS PART OF LAST SECOND- AND THIRD-CYCLE PROCESS CAMPAIGN, IMMEDIATELY FLUSHED AND EMPTIED FOR URANIUM ACCOUNTABILITY AND PLACED IN STANDBY AWAITING NEXT PROCESSING CAMPAIGN •COLLECTED AND STORED CONTAMINATED HEXONE AND FLUSH SOLUTIONS INCLUDING VES-T-101, -102, AND -103 •FLUSHED/EMPTIED MAY 1995 AT EARLIEST OPPORTUNITY TO GET DISPOSAL SITE TO TAKE SLIGHTLY CONTAMINATED HEXONE •TANK EMPTIED WITHIN 90 DAYS; TANK IS EMPTY

CONCLUSIONS

This document satisfies the system identification milestone for 216 units included in the SITE-TANK-005 Action Plan associated with the uranium dissolution and extraction process at the INTEC. This document also satisfies subsequent characterization milestones for 204 units that have been verified empty or characterized as identified below:

- 185 inactive process/product units have been verified empty (see Table 1, Inactive process product units requiring no further characterization). Upon approval by IDEQ, these units will be moved to Appendix C of the Action Plan — Covered Matters that are Closed.

- Six in-cell sumps have been characterized as nonhazardous per RCRA regulations (see In-Cell Sumps). Upon approval by IDEQ, these units will be moved to Appendix C of the Action Plan — Covered Matters that are Closed.

- Six sumps provide secondary containment for active RCRA-regulated piping. These sumps are part of an active secondary containment system and are used for emergency use only (see Sumps that Provide Secondary Containment for RCRA-Regulated Piping). Upon approval by IDEQ, these units will be moved to Appendix C of the Action Plan — Covered Matters that are Closed.

- Two sumps are part of the secondary containment system for a RCRA interim status system (see WG- and WH-Cell Sumps). Upon approval by IDEQ, these units will be moved to Appendix C of the Action Plan — Covered Matters that are Closed.

- Five vent corridor sumps provide secondary containment for piping that is not RCRA-regulated (see Sumps that Provide Secondary Containment for Piping that is not RCRA-Regulated). These sumps are part of an active secondary containment system, are used for emergency use only, and have been characterized as nonhazardous. Upon approval by IDEQ, these units will be moved to Appendix C of the Action Plan — Covered Matters that are Closed.

Twelve units (see Units Requiring Further Characterization) require additional characterization (i.e., additional information needed to verify empty; hazardous waste determination) under the SITE-TANK-005 Action Plan. These units will be characterized under the SITE-TANK-005 Action Plan at a later date.

REFERENCES

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, Office of Federal Register, July 1, 2000.

DOE-ID, 2000, *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10213, Volume 1, "Bechtel BWXT Idaho, LLC," Revision January.

Idaho Code §39-4401, et seq., "Hazardous Waste Management Act of 1983," *State of Idaho Statutes,* Title 39 Health and Safety, Chapter 44 Hazardous Waste Management.

IDAPA 58.01.05, "Rules and Standards for Hazardous Waste," *Idaho Administrative Procedures Act,* Idaho Department of Environmental Quality Rules.

IDEQ, 2000, B. R. Monson, IDEQ, to D. N. Rasch, DOE-ID, Enclosure: "Consent Order," Idaho Code §39-4413, June 14.

INEEL, 1999a, *Process Description and Operating History for the CPP-601/-640/-627 Fuel Reprocessing Complex at the Idaho National Engineering and Environmental Laboratory,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-99-0040, June.

INEEL, 1999b, *A Regulatory Analysis and Reassessment of U.S. Environmental Protection Agency Listed Hazardous Waste Numbers for Applicability to the INTEC Liquid Waste System,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-98-01213, Revision 1, February.

INEEL, 2001, *Voluntary Consent Order SITE-TANK-005 System Identification,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-00-00037, Book 1, Revision 0, March.

Appendix A

INTEC Slurried Solids Catch Tank System (INTEC-601-1)

INTEC SLURRIED SOLIDS CATCH TANK SYSTEM (INTEC-601-1)

System Description

The INTEC Slurried Solids Catch Tank System (INTEC-601-1), which is part of the dissolver product clarification system, was operated in the F-Cell of the Fuel Process Building (CPP-601). The system was used to separate undissolved solids from the dissolver product solution. Failure to remove the undissolved solids from the dissolver product solutions in fuel reprocessing campaigns resulted in numerous operational difficulties, including plugging of process lines and formation of emulsions in the feed extraction system. Emulsion formation in the extraction cycles caused poor separation of uranium from fission products, thereby decreasing the overall extraction efficiency (INEL 1991). The dissolver product clarification system was designed to accommodate several dissolution products.

Dissolver product solution was transferred to the centrifuge manifold tank (VES-F-101; 98CPP00150 [verified empty]) from any of several dissolver headends (fuel reprocessing processes), providing a surge capacity for the two centrifuges (VES-F-400, 98CPP00067; VES-F-401, 98CPP00068 [both verified empty]). Each centrifuge consists of a vertical bowl that was rotated within a case. The case collected product solution that was gravity-fed into the spinning bowl and exited out the top of the bowl. The product solution traveled up the walls of the spinning bowl and over three horizontal baffles that collected the heavier undissolved particles. Solids were periodically flushed by stopping the flow of solution to the bowl and skimming off the remaining liquid by positioning skimmers under the top baffle, directing the residual liquid into the case. The skimmers were operated pneumatically from the operating corridor via pressurized air from the CPP-601 utilities area and the surge air tank (TK-PO-121; 98CPP00112 [verified empty]).

Solids were removed from the centrifuges by slowing the rotation of the bowl and rinsing the insides with dilute nitric acid from the centrifuge decon makeup tank (VES-PM-170; 98CPP00042 [verified empty]) via spray nozzles. The remaining slurry was then jetted to the slurried solids catch tanks (VES-F-107, 98CPP00153; VES-F-108, 98CPP00154). Although originally designed as separate vessels, the slurried solids catch tanks were used as a single unit. The two vessels are connected by a single line that provided pulse mixing of the slurry solution between the vessels prior to uranium sampling and transfer. By design, if the uranium content in the slurry exceeded the specified limit, the liquid was jetted back to the centrifuge manifold tank; however, the solids were always managed as waste. If the uranium content in the slurry was below the specified limit, the slurried solids were transferred by gravity to the CPP-601 deep tank (VES-WG-101; included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]) (INEL 1991).

System Boundaries

The INTEC Slurried Solids Catch Tank System (INTEC-601-1) includes the following units that require further characterization under the SITE-TANK-005 Action Plan:

1. Slurried Solids Catch Tank (VES-F-107) 98CPP00153 (Figure INTEC-601-1-1)

2. Slurried Solids Catch Tank (VES-F-108) 98CPP00154 (Figure INTEC-601-1-2)

In addition to the two slurried solids catch tanks, the manifold (VES-F-119) and eight steam jets (JET-F-504, -507, -509, -510, -512, -515, -518, and -519) are included as ancillary equipment in the VCO system.

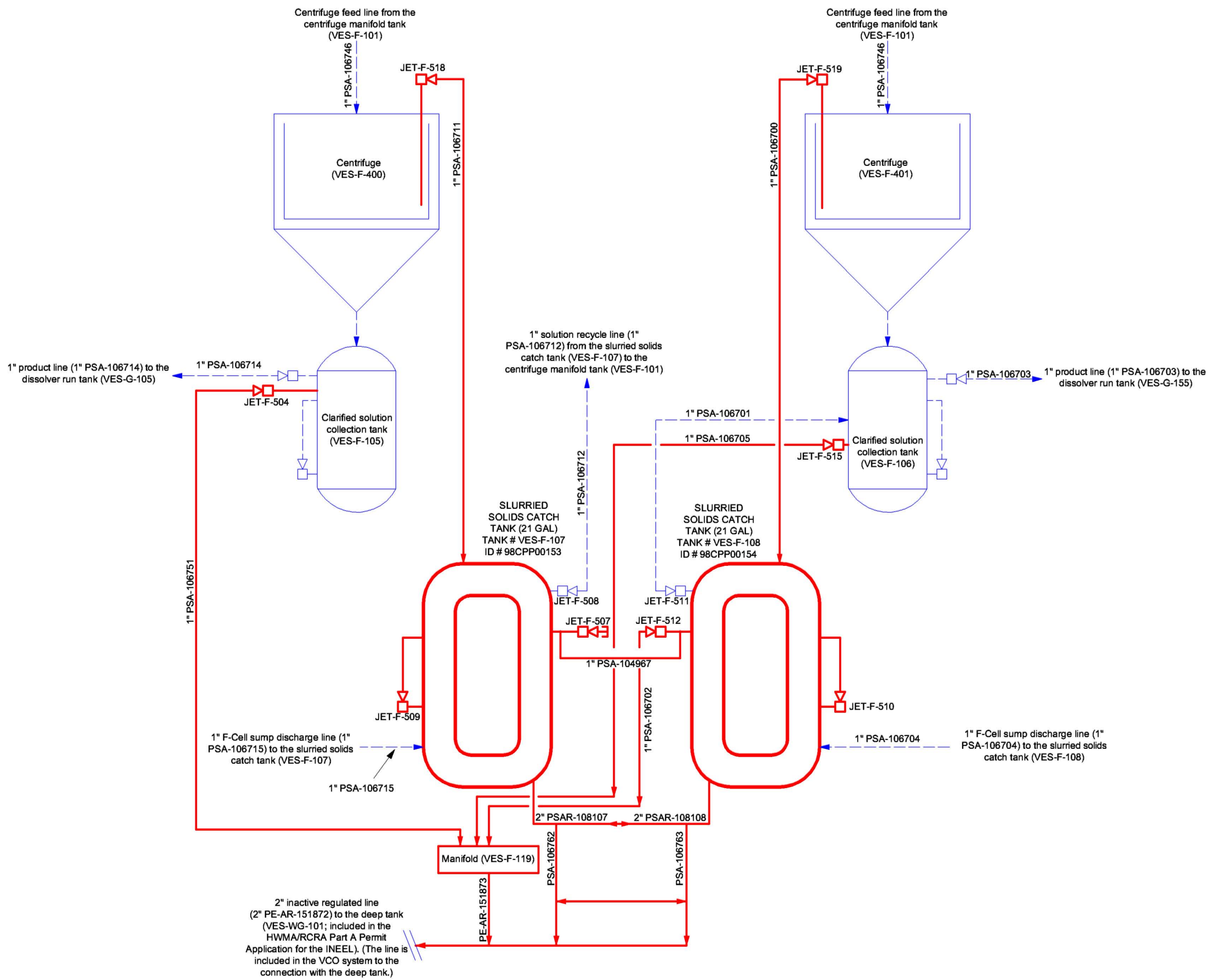
Inlet and outlet piping is included in the VCO system (see Schematic P-ST005-INTEC-601-1) as follows:

- The two 1-in. slurried solids feed lines (1" PSA-106711 and 1" PSA-106700) are included in the VCO system from centrifuges VES-F-400 and -401, respectively, to the slurried solids catch tanks VES-F-107 and -108, respectively. These lines are included because they transferred waste solids to the slurried solids catch tanks from the centrifuges.

- The two 1-in. transfer lines (1" PSA-106751 and 1" PSA-106705) are included in the VCO system from the clarified solution collection tanks to the manifold (VES-F-119). These lines are included because they are waste discharge lines to the manifold.

- The 2-in. inactive regulated line (2" PE-AR-151872) from the slurried solids catch tanks to the deep tank (VES-WG-101; included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID-2000]) is included in the VCO system to the connection with the deep tanks. This line is included because it is an inactive waste transfer line.

The centrifuges and the clarified solution collection tanks are shown on the schematic but are not included in the VCO system because they have been flushed and rinsed as described in Table 1, Inactive process/product units requiring no further characterization. The sump discharge lines to the slurried solids catch tanks are not included because the lines are process return lines. The 1-in. line (1" PSA-106701) from the slurried solids catch tank (VES-F-108) to the clarified solution collection tank (VES-F-106) is not included because it is a process line. The 1-in. solution recycle line (1" PSA-106712) from the slurried solids catch tank (VES-F-107) to the centrifuge manifold tank (VES-F-101) is not included because it is a process line.



LEGEND

- BUILDINGS
- VCO UNITS
- LINES AND COMPONENTS INCLUDED IN THE VCO SYSTEM
- LINES INCLUDED IN SEPARATE SITE-TANK-005 SYSTEM
- UNITS AND COMPONENTS EXCLUDED FROM THE VCO SYSTEM
- LINES EXCLUDED FROM THE VCO SYSTEM

PM AREA = PROCESS MAKEUP AREA
PEW = PROCESS EQUIPMENT WASTE

VCO UNITS

98CPP00153
98CPP00154

REFERENCE DRAWINGS

090315, REVISION 12
090316, REVISION 7
090317, REVISION 8
090318, REVISION 8
090319, REVISION 7
090320, REVISION 3

REFERENCE DOCUMENTS

DOE-ID 2000
INEEL 1999a
INEEL 1999b
INEL 1986
INEL 1991

NOTES

DECON LINES ARE LOCATED ON PROCESS LINES AND PROVIDED MEANS OF FLUSHING FOR LINES THAT BECAME CONSTRICTED DURING OPERATION. ALL DECON LINES ARE CAPPED IN THE PM AREA OF CPP-601 AND ARE NOT INCLUDED IN THE VCO SYSTEM IN THEIR ENTIRETY. THESE LINES ARE NOT SHOWN ON THE SYSTEM SCHEMATIC FOR SIMPLICITY.

FOR EACH VCO SYSTEM THAT IS CHARACTERIZED AS HAZARDOUS, THE SYSTEM BOUNDARIES WILL BE RE-EVALUATED TO ENSURE ANCILLARY EQUIPMENT IS INCLUDED AND SCHEMATICS REVISED, IF NECESSARY, AS PART OF FURTHER VCO MILESTONES.

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

THIS SCHEMATIC IS PROVIDED AS A SUPPLEMENT TO THE VOLUNTARY CONSENT ORDER PROGRAM'S SYSTEM IDENTIFICATION EFFORT. THIS SCHEMATIC IS NOT INTENDED TO BE USED AS A PIPING AND INSTRUMENTATION DIAGRAM NOR IS IT MANAGED BY INEEL CONFIGURATION CONTROL. THIS SCHEMATIC IS FOR VCO PROGRAM USE ONLY.

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
INTEC SLURRIED SOLIDS CATCH TANK SYSTEM (INTEC-601-1)
SLURRIED SOLIDS FLOW SCHEMATIC

SCHEMATIC NUMBER:			REVISION:
P-ST005-INTEC-601-1			2
SCALE:	DATE:	RESEARCH: PORTAGE, INC.	
NONE	03/15/01	DRAWING: PORTAGE, INC.	

TANK INVENTORY ID 98CPP00153
SLURRIED SOLIDS CATCH TANK (VES-F-107)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: F-Cell
Comments	Original Contents: Dissolver product solution (primarily: dissolved fuel, complexed hydrofluoric acid, aluminum nitrate, nitric acid)
Unit Capacity and Dimensions	Capacity: 21 gal Dimensions: 15 cm (6 in.) diameter × 3.9 m (12.8 ft) length
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	090317, Revision 8

Figure INTEC-601-1-1. Slurried Solids Catch Tank (VES-F-107; 98CPP00153).

Slurried Solids Catch Tank (98CPP00153) Unit Description

The slurried solids catch tank (VES-F-107; 98CPP00153) is located in the F-Cell of the Fuel Process Building (CPP-601). The tank is a vertical, cylindrical unit constructed of stainless steel and has a 21-gal capacity. It is 15 cm (6-in.) in diameter by 3.9 m (12.8 ft) in length. The catch tank is an elongated torus (doughnut-shaped) that consists of two 6-in. diameter pipes connected by two semicircular pipes at the top and bottom. The slurried solids catch tank received slurried solids flushed from the centrifuges (VES-F-400 and VES-F-401). The slurried solids catch tank was configured such that decontamination solution could be recycled from a drain at the bottom of the tank to a spray manifold at the top. Although originally designed as separate vessels, the slurried solids catch tanks (VES-F-107 and VES-F-108) were operated as a single unit. Both vessels are connected by a single line that provided pulse mixing of the slurry solution between the two vessels prior to sampling and transferring. The slurry was transferred out of the catch tank after it had been sparged and sampled for solids and uranium content. If the sample showed high levels of uranium, the liquid was jetted to the centrifuge manifold tank and the solids were washed with nitric acid and resampled. When the uranium content in the liquid sample was low enough, the remaining slurry was transferred to the PEWE system.

The tank was flushed and emptied in 1986, decontaminated, and the bottom lines cut for modification. The centrifuges were not used during the final dissolution campaign, but the vessels were again rinsed and emptied during 1991 and the bottom lines were cut as part of the PEWE line upgrade project. The vessels were flushed and the final rinse was sampled for RCRA constituents but none were detected. The slurried solids catch tank was again flushed and emptied in 1993 as part of the final shutdown of the uranium dissolution and extraction process (INEEL 1999b).

TANK INVENTORY ID 98CPP00154
SLURRIED SOLIDS CATCH TANK (VES-F-108)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: F-Cell
Comments	Original Contents: Dissolver product solution (primarily: dissolved fuel, complexed hydrofluoric acid, aluminum nitrate, nitric acid)
Unit Capacity and Dimensions	Capacity: 21 gal Dimensions: 15 cm (6 in.) diameter × 3.9 m (12.8 ft) length
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	090317, Revision 8

Figure INTEC-601-1-2. Slurried Solids Catch Tank (VES-F-108; 98CPP00154)

Slurried Solids Catch Tank (98CPP00154) Unit Description

The slurried solids catch tank (VES-F-108; 98CPP00154) is located in the F-Cell of the Fuel Process Building (CPP-601). The tank is a vertical, cylindrical unit constructed of stainless steel and has a 21-gal capacity. It is 0.2 m (0.5 ft) in diameter by 3.9 m (12.8 ft) in length. The catch tank is an elongated torus (doughnut-shaped) that consists of two 6-in. diameter pipes connected by two semicircular pipes at the top and bottom. The slurried solids catch tank received slurried solids flushed from the centrifuges (VES-F-400 and VES-F-401). The slurried solids catch tank was configured such that decontamination solution could be recycled from a drain at the bottom of the tank to a spray manifold at the top. Although originally designed as separate vessels, the slurried solids catch tanks (VES-F-107 and VES-F-108) were operated as a single unit. Both vessels are connected by a single line that provided pulse mixing of the slurry solution between the two vessels prior to sampling and transferring. The slurry was transferred out of the catch tank after it had been sparged and sampled for solids and uranium content. After analysis, the slurry was transferred from catch tank VES-F-108 to the clarified solution collection tank (VES-F-106) (INEL 1991) or to the PEWE system.

The tank was flushed and emptied in 1986, decontaminated, and the bottom lines cut for modification. The centrifuges were not used during the final dissolution campaign, but the vessels were again rinsed and emptied during 1991 and the bottom lines were cut as part of the PEWE line upgrade project. The vessels were flushed and the final rinse was sampled for RCRA constituents, but none were detected. The slurried solids catch tank was again flushed and emptied in 1993 as part of the final shutdown of the uranium dissolution and extraction process (INEEL 1999b).

References

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Appendix B

INTEC Uranium Rework Phase Separator System (INTEC-601-2)

INTEC URANIUM REWORK PHASE SEPARATOR SYSTEM (INTEC-601-2)

System Description

Uranium-containing solutions with salvageable concentrations of uranium were collected in the J-Cell uranium rework system, reworked, stored, and returned to the extraction processes. The reworking of uranium solutions involved concentrating the uranium in solution by evaporation. These uranium containing solutions included: 1) leaks into process cell floor sumps, 2) solutions that were out of specification because of process upsets, 3) solutions generated through custom dissolution processes in the MCC and the HCL and the Remote Analytical Facility (CPP-627), 4) solutions accumulated as sample residues, and 5) decontamination solutions (INEL 1986). The J-Cell system was emptied, flushed, and shut down in May 1987 in preparation for the next first-cycle run. However, before the J-Cell was used again the fuel processing mission of the INTEC was terminated (INEEL 1999). The uranium rework system was moved to the L-Cell, and in its present configuration, the J-Cell can only receive solution in emergency situations from the four CPP-601 deep tanks (included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]) in the event the solutions must be recycled for uranium recovery.[a]

Uranium-containing solutions were transferred from various stages of the fuel dissolution process to the rework solution collection tanks (VES-J-134, 98CPP00233 [verified empty]; VES-J-135, 98CPP00234 [verified empty]) for further processing. Uranium-containing solution from these collection tanks was transferred through the air lift disengaging pot (VES-J-124; not identified in the SITE-TANK-005 Action Plan) and air lifted to the thermosyphon evaporator (VES-J-125; 98CPP00229 [verified empty]) for rework. The concentrated solution from the thermosyphon evaporator discharged to the product storage tanks (VES-J-127, 98CPP00230 [verified empty]; VES-J-128, 98CPP00231 [verified empty]), where the solution was sampled for uranium and acid content. The results of the sampling and the origin of the solution determined whether the solution was transferred to the first-cycle extraction process or to the M-Cell for processing in the second- and third-cycle extraction systems. In its present configuration, solutions may only be sent to the L-Cell salvage system via the S-116 decanter system or returned to the deep tanks.

Overhead vapors released from the thermosyphon evaporator passed through two condensers (HE-J-301 and -302; not identified in the SITE-TANK-005 Action Plan), which could be operated in parallel or separately. Off-gas from the condensers was routed to the vessel off-gas (VOG) system and the condensate drained into a phase separator (VES-J-131; 98CPP00232), in which extraction solvent (hexone) was separated from the aqueous condensate. The extraction solvents were transferred to an organic condensate collection tank (VES-J-117; 98CPP00224 [verified empty]) and the aqueous condensate discharged into the CPP-601 PEWE collection system. If uranium concentration in any of the process liquids was below specified criteria, as determined by continuous sampling, the solution could be discharged to the deep tanks without passing through the thermosyphon evaporator.

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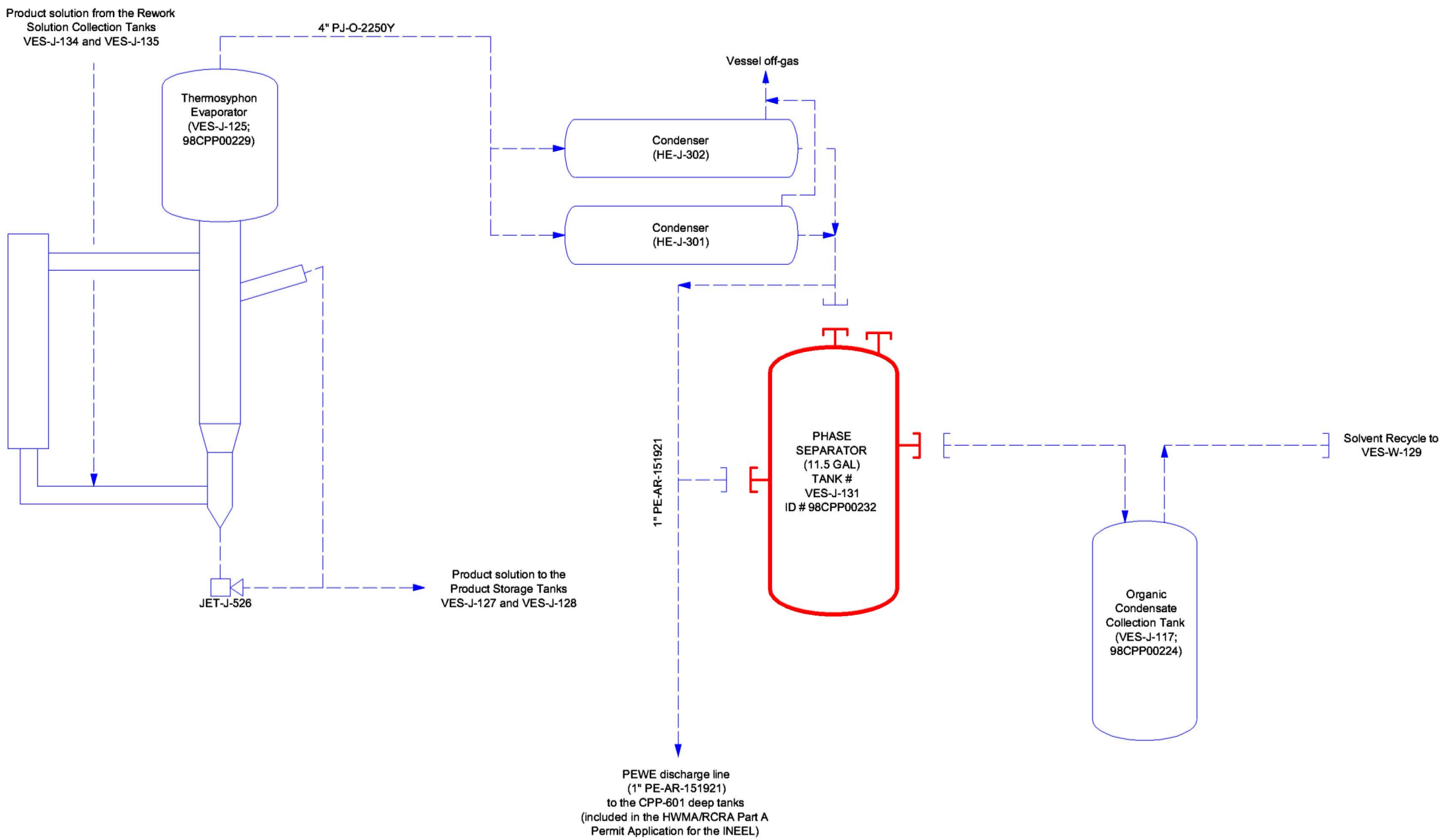
[a] Edward Wagner, Consulting Engineer/Scientist, former CPP-601 Design Engineer. Facility Comment Review Cycle, October 2000.

System Boundaries

The INTEC Uranium Rework Phase Separator System (INTEC-601-2) includes the following unit that requires further characterization under the SITE-TANK-005 Action Plan.

1. Phase Separator (VES-J-131) 98CPP00232 (Figure INTEC-601-2-1)

The INTEC uranium rework phase separator system (see Schematic P-ST005-INTEC-601-2) includes the phase separator as an isolated unit. The phase separator was isolated while it still contained waste; thus, the tank can only be emptied by destructive means. All lines attached to the phase separator were process/product lines that were flushed and emptied and then cut and capped. These lines are included in the VCO system from the phase separator to the point at which they are cut and capped.



LEGEND

- BUILDINGS
- VCO UNITS
- LINES AND COMPONENTS INCLUDED IN THE VCO SYSTEM
- UNITS AND COMPONENTS EXCLUDED FROM THE VCO SYSTEM
- LINES EXCLUDED FROM THE VCO SYSTEM

VCO UNITS

98CPP00232

REFERENCE DRAWINGS

055253, REVISION 3
090398, REVISION 11

REFERENCE DOCUMENTS

DOE-ID 2000
INEL 1986

NOTES

FOR EACH VCO SYSTEM THAT IS CHARACTERIZED AS HAZARDOUS, THE SYSTEM BOUNDARIES WILL BE RE-EVALUATED TO ENSURE ANCILLARY EQUIPMENT IS INCLUDED AND SCHEMATICS REVISED, IF NECESSARY, AS PART OF FURTHER VCO MILESTONES.

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

THIS SCHEMATIC IS PROVIDED AS A SUPPLEMENT TO THE VOLUNTARY CONSENT ORDER PROGRAM'S SYSTEM IDENTIFICATION EFFORT. THIS SCHEMATIC IS NOT INTENDED TO BE USED AS A PIPING AND INSTRUMENTATION DIAGRAM NOR IS IT MANAGED BY INEEL CONFIGURATION CONTROL. THIS SCHEMATIC IS FOR VCO PROGRAM USE ONLY.

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
INTEC URANIUM REWORK PHASE SEPARATOR SYSTEM (INTEC-601-2)
EVAPORATOR CONDENSATE FLOW SCHEMATIC

SCHEMATIC NUMBER: P-ST005-INTEC-601-2

REVISION: 2

SCALE: NONE

DATE: 03/15/01

RESEARCH: PORTAGE, INC.

DRAWING: PORTAGE, INC.

TANK INVENTORY ID 98CPP00232
PHASE SEPARATOR (VES-J-131)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: J-Cell
Comments	Original Contents: Nonaqueous solvent raffinates (primarily hexone), water, dilute nitric acid
Unit Capacity and Dimensions	Capacity: 11.5 gal Dimensions: 20.3 cm (8 in.) diameter × 1.9 m (6.1 ft) height
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	053661, Revision 3; 055253, Revision 3; 090398, Revision 11

Figure INTEC-601-2-1. Phase Separator (VES-J-131; 98CPP00232).

Phase Separator (98CPP00232) Unit Description

The phase separator (VES-J-131; 98CPP00232) is a vertical, cylindrical tank located within the J-Cell of the Fuel Process Building (CPP-601). The phase separator is 20.3 cm (8 in.) in diameter by 1.9 m (6.1 ft) in height and has a capacity of 11.5 gal. The phase separator is constructed of Type 304L stainless steel. The phase separator contains a baffle that extends from the top of the tank to below the inlet and outlet nozzles to facilitate the separation of condensate liquids. The tank received condensate from the condensers (HE-J-301 and -302; not identified in the SITE-TANK-005 Action Plan). The organic phase of the condensate overflowed the phase separator to the organic condensate collection tank (VES-J-117) and the aqueous portion flowed under the baffle and discharged into the CPP-601 PEWE collection system. The lines were cut and capped when the tank was isolated in 1988. The configuration of the tank makes it impossible to be emptied through existing lines; thus, the tank has never been flushed and emptied below the overflow lines.

References

DOE-ID, 2000, *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory*, U.S. Department of Energy Idaho Operations Office, DOE/ID-10213, Volume 1, "Bechtel BWXT Idaho, LLC," Revision January.

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INEL, 1986, *Uranium Rework Section 4.9,* Idaho National Engineering Laboratory, WIN-107-4.9, Revision 1, April.

Drawings

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055253, INEEL Reference Drawing, *Process Flow Diagram J-Cell Hot Salvage System*, Idaho National Engineering and Environmental Laboratory, INACTIVE, Revision 3, June 1954.

090398, INEEL Reference Drawing, *CPP 601 J-Cell Flowsheet*, Idaho National Engineering and Environmental Laboratory, Revision 11, February 1999.

Appendix C

INTEC K-Cell Waste Solvent System (INTEC-601-3)

INTEC K-CELL WASTE SOLVENT SYSTEM (INTEC-601-3)

System Description

The INTEC K-Cell Waste Solvent System (INTEC-601-3) was used to purify first-cycle extraction solvents (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc] and tributyl phosphate [TBP]) by removing fission by-products through a steam stripping process. The purified solvent was transferred to spent solvent storage prior to use as fuel in the New Waste Calcining Facility (NWCF). Primary vessels utilized in the waste solvent process included the organic waste feed tank (VES-K-113; 98CPP00242), the packed steam stripping column (VES-K-109; 98CPP00238), the phase separator (VES-K-110, 98CPP00239), and two organic sample tanks (VES-K-111, 98CPP00240; VES-K-112, 98CPP00241).

Waste organic solvent was pumped from the ID column scrub collection tank (VES-H-108; 98CPP00197 [verified empty]) to the organic waste feed tank. The liquid organic waste solvent was fed continuously from the feed tank, through an air lift disengaging pot (VES-K-114; not identified in the SITE-TANK-005 Action Plan), to the top of the packed steam stripping column where the waste solvent flowed downward through a bed of Raschig ring packing. Steam introduced at the bottom of the column flowed upward through the column, vaporizing volatile components of the liquid organic waste solvent by direct contact. The steam and volatile organic material exited the top of the column and flowed to a condenser (VES-K-301; not identified in the SITE-TANK-005 Action Plan) and then to the phase separator where the aqueous and organic phases were separated. The organic phase was skimmed off the top and sent to the organic sample tanks, while the aqueous phase was diverted to the deep tanks (included in the *HWMA/RCRA Part A Permit Application for the INEEL* [DOE-ID 2000]) via the CPP-601 PEWE collection system. Nonvolatile components in the stripping column drained from the bottom of the column to the CPP-601 PEWE collection system, while radioactive impurities and metals adhered to the surface of the packing. After breakthrough of contaminants or a specified run time, the packed steam stripping column was flushed with a caustic solution to remove the impurities. Flushes also drained to the CPP-601 PEWE collection system.

The K-Cell floor sump (SU-K-107; 98CPP00079) collected floor drainage from the K-Cell and discharged the solution either back into one of the organic sample tanks or to the PEWE system via the deep tanks.

System Boundaries

The INTEC K-Cell Waste Solvent System (INTEC-601-3) includes the following units that require further characterization under the SITE-TANK-005 Action Plan.

1.	K-Cell Floor Sump (SU-K-107)	98CPP00079 (Figure INTEC-601-3-1)
2.	Packed Steam Stripping Column (VES-K-109)	98CPP00238 (Figure INTEC-601-3-2)
3.	Phase Separator (VES-K-110)	98CPP00239 (Figure INTEC-601-3-3)
4.	Organic Sample Tank (VES-K-111)	98CPP00240 (Figure INTEC-601-3-4)
5.	Organic Sample Tank (VES-K-112)	98CPP00241 (Figure INTEC-601-3-5)
6.	Organic Waste Feed Tank (VES-K-113)	98CPP00242 (Figure INTEC-601-3-6)

The INTEC K-Cell Waste Solvent System also includes the air lift disengaging pot VES-K-114, the air lift AL-K-550, the condenser HE-K-301, the jet JET-K-506, and the pump P-PA-253 as ancillary equipment.

Inlet and outlet piping is included in the INTEC K-Cell Waste Solvent System (see Schematic P-ST005-INTEC-601-3) as follows:

- The 1-in. organic waste line (1" ASA-100127) is included in the VCO system from the ID column scrub collection tank (VES-H-108) in the H-Cell. This line is included in the VCO system because solutions from the ID column scrub collection tank were considered waste upon discharge.

- The ½-in. sump return line (½" PK-O-1001Y) is included in the VCO system in its entirety.

- The sample loop discharge line is included in the VCO system in its entirety. Materials entering the sump by this route were transferred to the PEWE system as wastes.

- The 1-in. process equipment waste line (1" PK-O-1095Y) from the packed steam stripping column is included in the VCO system to the connection with the 2-in. active, exempt line (2" PE-AR-151864), which is a collection header for the CPP-601 deep tanks (included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]). This line is included in the VCO system because it was not addressed during the HWMA/RCRA Facility Assessment.

- The 1-in. process equipment waste line (1" ASA-100153) from the organic waste feed tank is included in the VCO system to the connection with the 2-in. active, exempt line (2" PE-AR-151864), which is a collection header for the CPP-601 deep tanks (included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]). This line is included in the VCO system because it was not addressed during the HWMA/RCRA Facility Assessment.

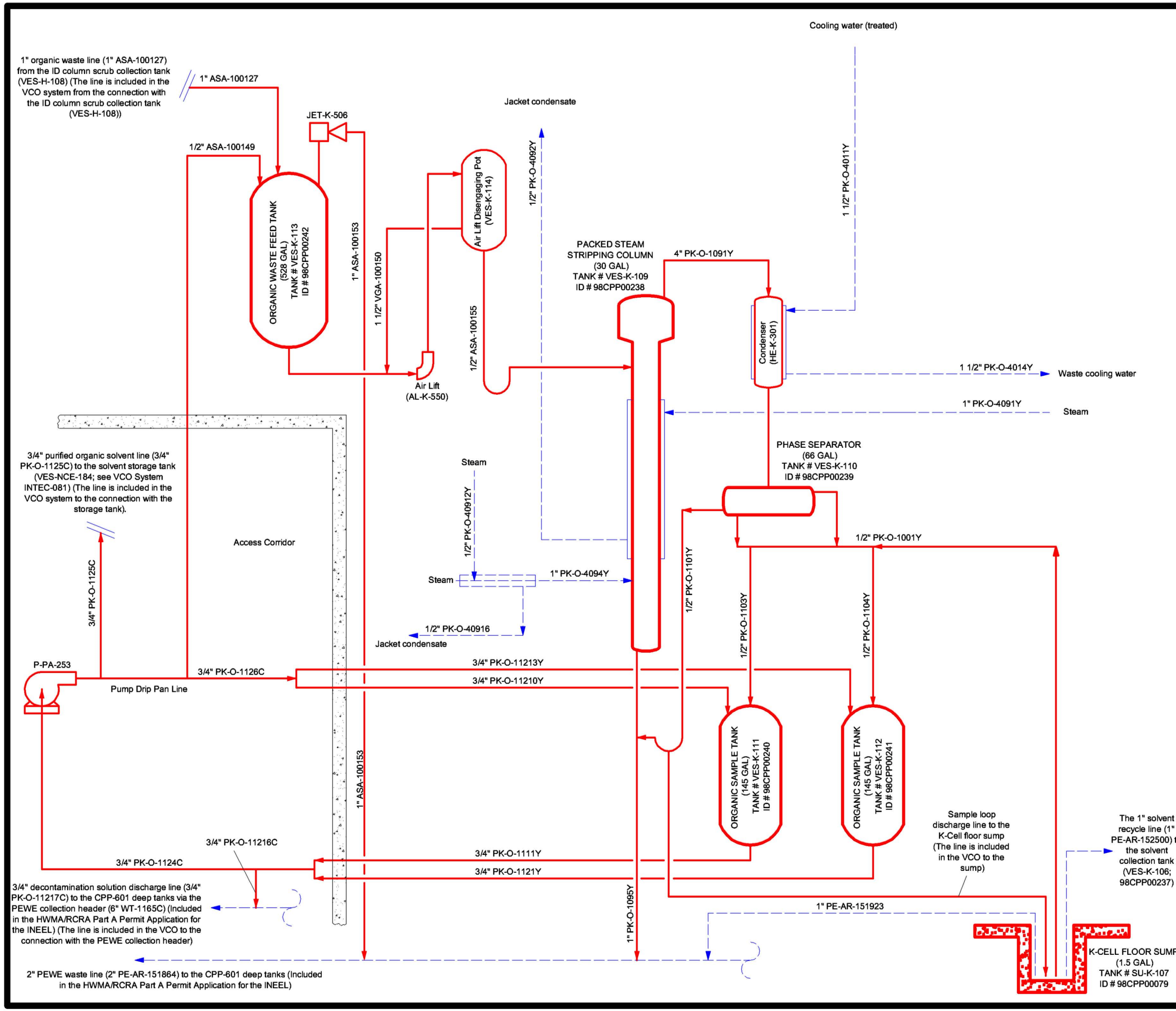
- The ¾-in. decontamination solution discharge line (¾" PK-O-11216C) from the organic sample tanks is included in the VCO system to the connection with the exempt line (¾" PK-O-11217C), which is a collection header for the CPP-601 deep tanks (included in the *HWMA/RCRA Part A Permit Application for the Idaho National Engineering and Environmental Laboratory* [DOE-ID 2000]). This line is included in the VCO system because it was not addressed during the HWMA/RCRA Facility Assessment.

- The ¾-in. purified organic solvent line (¾" PK-O-1125C) to solvent storage tank #1 (VES-NCE-184; not identified in the SITE-TANK-005 Action Plan; see VCO System INTEC-081 [INEEL 2001]) via the purified organic waste solvent lines (1½" PK-O-1125C and 2" OWA-307A) is included in the VCO system to the connection with the storage tank. This line is included in the VCO system because the materials cannot be returned to the process and are waste.

The following lines are not included in the VCO system (see Schematic P-ST005-INTEC-601-3):

- The ½-in. decontamination (½" PK-O-1099Y) from the CPP-601 PM area is shown on the schematic but is not included in the system because it was a process line that has been gravity-drained.

- The K-Cell floor sump was part of the secondary containment system for the process units in the K-Cell. In addition to the K-Cell Waste Solvent System, the K-Cell also housed process units for the hexone recycle system. Thus, the K-Cell floor sump has three discharge lines – a return to the waste solvent system, a return to the hexone recycle system, and a waste discharge line to the CPP-601 PEWE collection system. During process operations, liquids collected in the sump were returned to the process (either the waste solvent system or the hexone recycle system). Therefore, the 1-in. solvent recycle line (1" PE-AR-152500) from the sump to the solvent collection tank (kerosene recycle system) is not included in the VCO system because it is a process line. The 1-in. sump discharge line (1" pe-ar-151923) is not included in the VCO system because it is an inactive, regulated line.



LEGEND

- BUILDINGS
- VCO UNITS
- LINES AND COMPONENTS INCLUDED IN THE VCO SYSTEM
- LINES INCLUDED IN SEPARATE SITE-TANK-005 SYSTEM
- LINES EXCLUDED FROM THE VCO SYSTEM

PM AREA: PROCESS MAKEUP AREA

VCO UNITS

98CPP00079
98CPP00238
98CPP00239
98CPP00240
98CPP00241
98CPP00242

REFERENCE DRAWINGS

057004, REVISION 44
094318, REVISION 11
094319, REVISION 12

REFERENCE DOCUMENTS

DOE-ID 2000
INEEL 1999a
INEEL 1999b
INEL 1986a
INEL 1986b
INEL 1989
INEL 1992
INEL 1996

NOTES

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REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

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IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
INTEC K-CELL WASTE SOLVENT SYSTEM (INTEC-601-3)
SPENT SOLVENT FLOW SCHEMATIC

SCHEMATIC NUMBER: P-ST005-INTEC-601-3

REVISION: 2

SCALE: NONE

DATE: 03/15/01

RESEARCH: PORTAGE, INC.

DRAWING: PORTAGE, INC.

TANK INVENTORY ID 98CPP00079
K-CELL FLOOR SUMP (SU-K-107)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: K-Cell floor drainage
Unit Capacity and Dimensions	Capacity: 1.5 gal Dimensions: 12.7 cm (5 in.) diameter × 0.5 m (1.5 ft) depth
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	ACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-1. K-Cell Floor Sump (SU-K-107; 98CPP00079).

K-Cell Floor Sump (98CPP00079) Unit Description

The K-Cell floor sump (SU-K-107; 98CPP00079) is located in the K-Cell of the Fuel Process Building (CPP-601). The sump is constructed of stainless steel-lined concrete and is 12.7 cm (5 in.) in diameter by 0.5 m (1.5 ft) in depth with a capacity of 1.5 gal. The K-Cell floor sump collected floor process leaks within the K-Cell and transferred the solution back to the process or to the CPP-601 PEWE collection system.

TANK INVENTORY ID 98CPP00238
PACKED STEAM STRIPPING COLUMN (VES-K-109)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: Fission products, radioactively contaminated organic solvent (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc.], tributyl phosphate [<10%]), raschig rings
Unit Capacity and Dimensions	Capacity: 30 gal Dimensions: Top section diameter 0.4 m (1.2 ft); bottom section diameter 20.3 cm (8 in.); 5 m (16.4 ft) in total height
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-2. Packed Steam Stripping Column (VES-K-109; 98CPP00238).

Packed Steam Stripping Column (98CPP00238) Unit Description

The packed steam stripping column (VES-K-109; 98CPP00238) reduced the amount of radioactive contaminants in the spent organic waste solvent from the first-cycle extraction process. The column is a vertical Type 304L stainless steel unit, with an overall height of 5 m (16.4 ft) and a total capacity of 30 gal (6-gal operating capacity), located in the K-Cell of the Fuel Process Building (CPP-601). The column is composed of a top section and a bottom section. The top section is 0.4 m (1.2 ft) in diameter and the bottom section is 20.3 cm (8 in.) in diameter. The column is packed with stainless steel Raschig rings. The column was last used in July 1988. A caustic clean out was performed to remove contaminants from the packing, and the column was flushed and emptied through its bottom drain in 1988 (INEEL 1999b).

The packed steam stripping column was fed organic waste from the organic waste feed tank (VES-K-113). The liquid organic waste flowed from the top of the column downward through the Raschig ring packing. Steam introduced at the bottom of the column flowed upward through the column, vaporizing the volatile components of the liquid organic waste by direct contact. Nonvolatile components collected at the bottom of the column and discharged to the CPP-601 PEWE collection system, and radioactive impurities and metals adhered to the surface of the packing. The steam and organic vapor discharged from the top of the stripping column to a condenser (HE-K-301; not identified in the SITE-TANK-005 Action Plan). Condensate drained from the condenser by gravity to a phase separator. Samples taken during process operation showed that metals remained in the packed steam stripping column. When necessary, the column was cleaned with caustic to remove accumulated contaminants from the packing. The clean-out solutions were flushed to CPP-601 PEWE collection system through a bottom drain.

TANK INVENTORY ID 98CPP00239
PHASE SEPARATOR (VES-K-110)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: Fission products, radioactively contaminated organic solvent (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc.] and TBP [<10%])
Unit Capacity and Dimensions	Capacity: 66 gal Dimensions: 0.6 m (2 ft) in diameter by 1 m (3.2 ft) in length
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-3. Phase Separator (VES-K-110; 98CPP00239).

Phase Separator (98CPP00239) Unit Description

The phase separator (VES-K-110; 98CPP00239) was used to separate aqueous and organic phases. The tank is a horizontal, cylindrical, Type 304L stainless steel unit located in the K-Cell of the Fuel Process Building (CPP-601). The tank is 0.6 m (2 ft) in diameter by 1 m (3.2 ft) in height and has a total capacity of 66 gal (53-gal operating capacity). The tank was last used in July 1988 and was flushed and emptied in 1988 (INEEL 1999b).

Steam and volatile organic solution from the packed steam stripping column and condenser were collected in the phase separator. The mixed solution separated because the aqueous phase was denser than the organic solution. The lighter organic solution rose to the top of the vessel and would spill out the upper overflow line to the organic sample tanks. The denser aqueous solution was drained from the lower overflow line to the CPP-601 PEWE collection system. The vessel also had a bottom drain, which allowed the aqueous liquid to be drained to PEWE system at the end of a run.

TANK INVENTORY ID 98CPP00240
ORGANIC SAMPLE TANK (VES-K-111)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: Fission products, radioactively contaminated organic solvent (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc.] and tributyl phosphate])
Unit Capacity and Dimensions	Capacity: 145 gal Dimensions: 0.7 m (2.2 ft) diameter × 1.3 m (4.1 ft) height
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-4. Organic Sample Tank (VES-K-111; 98CPP00240).

Organic Sample Tank (98CPP00240) Unit Description

The organic sample tank (VES-K-111; 98CPP00241) is one of two sample tanks connected in parallel that collected purified solvent. The tank is a vertical Type 304L stainless steel unit located in the K-Cell of the Fuel Process Building (CPP-601). The tank is 0.7 m (2.2 ft) in diameter by 1.3 m (4.1 ft) in height and has a total capacity of 145 gal (116-gal operating capacity). The tank was last used July 1988 and was flushed and emptied August 1988 (INEEL 1999b).

Purified organic solvent overflowed from the phase separator into the organic sample tank. If the plutonium concentration was below 0.1 μCi/L, the purified organic solvent was pumped from the sample tank to solvent storage tank #1 (VES-NCE-184) for use as fuel in the NWCF. If the concentration exceeded that level, the solvent was recirculated to the organic waste feed tank (VES-K-113). The vessel also had a line to the CPP-601 PEWE collection system for decontamination solutions.

TANK INVENTORY ID 98CPP00241
ORGANIC SAMPLE TANK (VES-K-112)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: Fission products, radioactively contaminated organic solvent (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc.] and tributyl phosphate [<10%])
Unit Capacity and Dimensions	Capacity: 145 gal Dimensions: 0.7 m (2.2 ft) diameter × 1.3 m (4.1 ft) height
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-5. Organic Sample Tank (VES-K-112; 98CPP00241).

Organic Sample Tank (98CPP00241) Unit Description

The organic sample tank (VES-K-112; 98CPP00241) is one of two sample tanks connected in parallel that collected purified solvent. The tank is a vertical Type 304L stainless steel unit located in the K-Cell of the Fuel Process Building (CPP-601). The tank is 0.7 m (2.2 ft) in diameter by 1.3 m (4.1 ft) in height and has a total capacity of 145 gal (116-gal operating capacity). The tank was last used July 1988 and was flushed and emptied August 1988 (INEEL 1999b).

Purified organic solvent overflowed from the phase separator into the organic sample tank. If the plutonium concentration was below 0.1 μCi/L, the purified organic solvent was pumped from the sample tank to the solvent storage tank #1 (VES-NCE-184) for use as fuel in the NWCF. If the concentration exceeded that level, the solvent was recirculated to the organic waste feed tank (VES-K-113). The vessel also had a line to CPP-601 PEWE collection system for decontamination solutions.

TANK INVENTORY ID 98CPP00242
ORGANIC WASTE FEED TANK (VES-K-113)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: K-Cell
Comments	Original Contents: Fission products, radioactively contaminated organic solvents (refined kerosene [n-dodecane, AMSCO™, EXXOL™, etc.] and tributyl phosphate [<10%])
Unit Capacity and Dimensions	Capacity: 528 gal Dimensions: 1.1 m (3.5 ft) diameter × 2.1 m (7 ft) height
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	094318, Revision 11

Figure INTEC-601-3-6. Organic Waste Feed Tank (VES-K-113; 98CPP00242).

Organic Waste Feed Tank (98CPP00242) Unit Description

The organic waste feed tank (VES-K-113; 98CPP00242) functioned as a feed tank for the packed steam stripping column. The tank is a vertical Type 304L stainless steel unit located in the K-Cell of the Fuel Process Building (CPP-601). The tank 1.1 m (3.5 ft) diameter and 2.1 m (7 ft) in height and has a total capacity of 528 gal (396-gal operating capacity). The tank was last used July 1988 and was flushed and emptied August 1988 (INEEL 1999b).

The organic waste feed tank received organic waste solvents (refined kerosene and TBP [<10%]) from the ID column scrub collection tank (VES-H-108). The feed tank continuously fed the organic waste to the top of the packed steam stripping column. The vessel also had a line to the CPP-601 PEWE collection system for decontamination solutions.

References

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Appendix D

INTEC PM Area Tanks Group (INTEC-601-4)

INTEC PM AREA TANKS GROUP (INTEC-601-4)

System Description

The PM area is an unpartitioned area on the top floor of CPP-601 where process makeup operations for the fuel reprocessing activities in CPP-601 occurred, including preparation of dissolvent solutions, catalyst solutions, scrub solutions, stripping solutions, caustic solutions, and decontamination solutions. Dissolvent and catalyst solutions were used to dissolve spent nuclear fuels. Scrub chemical solutions, composed mainly of aluminum nitrate, ammonium hydroxide, and ferrous sulfamate, aided in removing neptunium, plutonium, and fission products from feed solutions. Strip chemical solutions, composed mainly of demineralized water and nitric acid, extracted uranium from the organic phase prior to aqueous uranium solution concentration in the product evaporators. Caustic solution, composed mainly of sodium hydroxide and demineralized water, was used to strip impurities from the hexone extraction solvent. Other chemical solutions prepared in the PM area were used for vessel decontamination and were primarily composed of various combinations of nitric acid, aluminum nitrate, ammonium hydroxide, demineralized water, low-pressure steam, instrument air, and treated water.

The INTEC PM Area Tanks Group (INTEC-601-4) includes two VCO units. The complexer feed tank (VES-PM-164; VES-PM-164) supplied aluminum nitrate to the complexer tank located in the E-Cell. The aluminum nitrate complexed fluoride ions present in zirconium dissolver product to reduce corrosivity. The solvent recovery caustic feed tank (VES-PM-131; 98CPP0419) fed caustic solutions to the solvent recovery system located in the K-Cell.

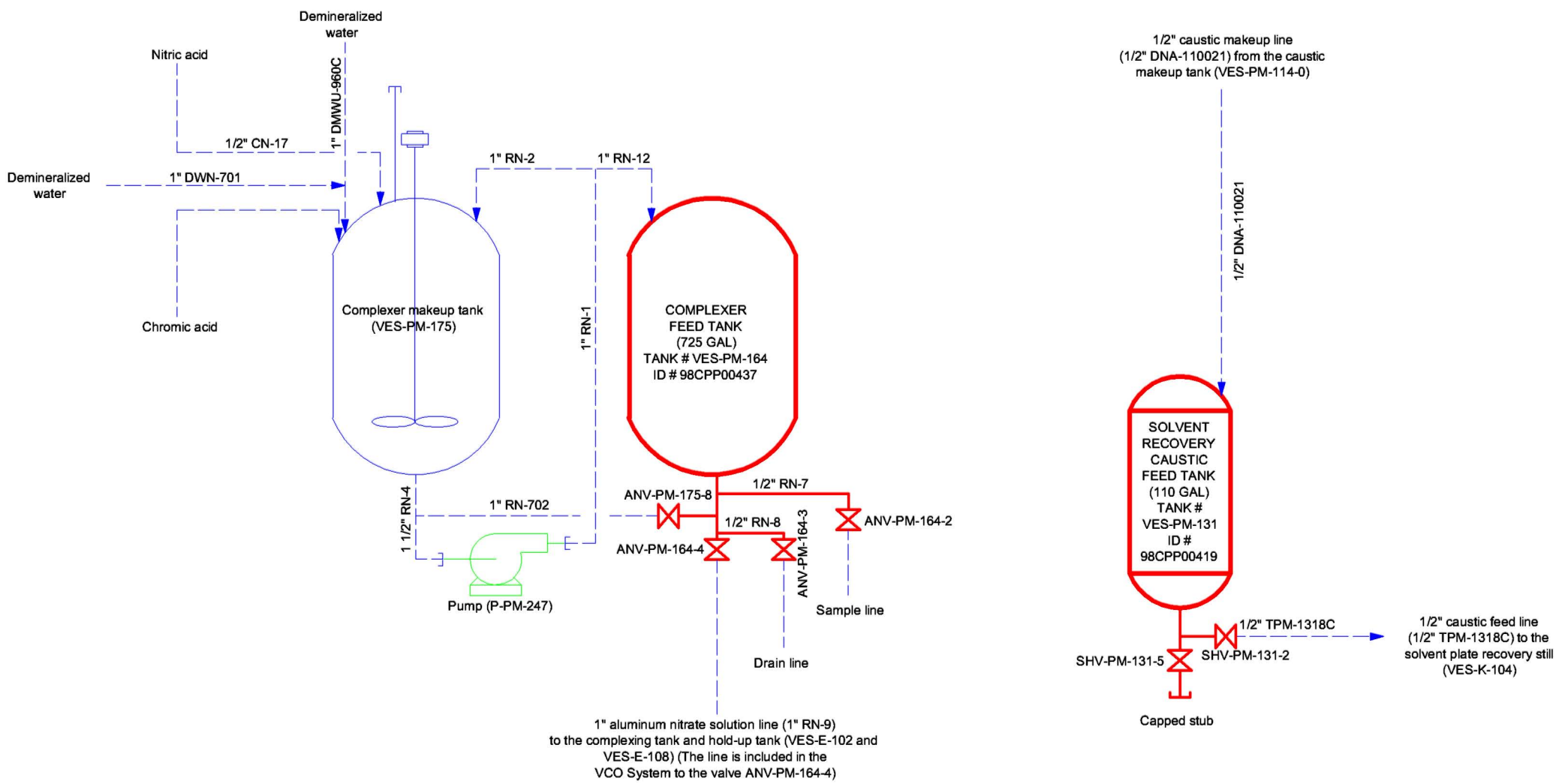
System Boundaries

The INTEC PM Area Tanks Group (INTEC-601-4) includes the following units that require further characterization under the SITE-TANK-005 Action Plan.

1.	Solvent Recovery Caustic Feed Tank (VES-PM-131)	98CPP00419 (Figure INTEC-601-4-1)
2.	Complexer Feed Tank (VES-PM-164)	98CPP00437 (Figure INTEC-601-4-2)

The solvent recovery caustic feed tank is included in the VCO system grouping as an isolated unit because additional information is needed to verify the tank as empty. The drain line is included in the system to the valves (SHV-PM-131-2 and -5) just below the tank. The lines into and out of this tank are not included in the VCO system grouping because they are empty process lines.

The complexer feed tank is included in the VCO system grouping as an isolated unit because additional information is needed to verify the tank as empty. The drain line is included in the VCO system to the valves (ANV-PM-164-2, -3, -4, and ANV-PM-175-8) below the tank. The remaining lines into and out of this tank are not included in the VCO system grouping because they are empty process lines.



LEGEND

- BUILDINGS
- VCO UNITS
- LINES AND COMPONENTS INCLUDED IN THE VCO SYSTEM
- LINES INCLUDED IN SEPARATE SITE-TANK-005 SYSTEM
- UNITS AND COMPONENTS EXCLUDED FROM THE VCO SYSTEM
- LINES EXCLUDED FROM THE VCO SYSTEM
- REMOVED COMPONENTS AND LINES

VCO UNITS

98CPP00391
98CPP00419
98CPP00437

REFERENCE DRAWINGS

055590, REVISION 0
056122, REVISION 6
056388, REVISION 23
056718, REVISION 7
093941, REVISION 14
098399, REVISION 2
098401, REVISION 5
098402, REVISION 2
098404, REVISION 1
098406, REVISION 1
098407, REVISION 3

REFERENCE DOCUMENTS

INEL 1990
INEL 1992

NOTES

FOR EACH VCO SYSTEM THAT IS CHARACTERIZED AS HAZARDOUS, THE SYSTEM BOUNDARIES WILL BE RE-EVALUATED TO ENSURE ANCILLARY EQUIPMENT IS INCLUDED AND SCHEMATICS REVISED, IF NECESSARY, AS PART OF FURTHER VCO MILESTONES.

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

THIS SCHEMATIC IS PROVIDED AS A SUPPLEMENT TO THE VOLUNTARY CONSENT ORDER PROGRAM'S SYSTEM IDENTIFICATION EFFORT. THIS SCHEMATIC IS NOT INTENDED TO BE USED AS A PIPING AND INSTRUMENTATION DIAGRAM NOR IS IT MANAGED BY INEEL CONFIGURATION CONTROL. THIS SCHEMATIC IS FOR VCO PROGRAM USE ONLY.

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
INTEC PM AREA TANKS GROUP (INTEC-601-4)
PROCESS MAKEUP SOLUTION FLOW SCHEMATIC

SCHEMATIC NUMBER: P-ST005-INTEC-601-4

REVISION: 2

SCALE: NONE

DATE: 03/15/01

RESEARCH: PORTAGE, INC.

DRAWING: PORTAGE, INC.

TANK INVENTORY ID 98CPP00419
SOLVENT RECOVERY CAUSTIC FEED TANK (VES-PM-131)

INTEC-003P1.JPG

Photograph showing the Solvent Recovery Caustic Feed Tank.

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: Process Makeup (PM) Area
Comments	Original Contents: Sodium hydroxide
Unit Capacity and Dimensions	Capacity: 110 gal Dimensions: 0.8 m (2.5 ft) diameter × 0.9 m (3 ft) height
RCRA-Regulated Category	NOT REG – EMPTY (ND)
Operational Status	INACTIVE PROCESS/PRODUCT
Reference Drawings	056718, Revision 7; 093941, Revision 14; 098402, Revision2; 098408, Revision 1; 159580, Revision 5

Figure INTEC-601-4-1. Solvent Recovery Caustic Feed Tank (VES-PM-131; 98CPP00419).

Solvent Recovery Caustic Feed Tank (98CPP00419) Unit Description

The solvent recovery caustic feed tank (VES-PM-131; 98CPP00419) is centrally located on the main floor in the northern part of the PM area in the Fuel Process Building (CPP-601). The tank is configured as a vertical cylinder with domed ends and is constructed of Type 347 stainless steel. The tank is 0.8 m (2.5 ft) in diameter by 0.9 m (3 ft) in height and has a capacity of 110 gal.

The solvent recovery caustic feed tank supplied caustic solution, consisting of sodium hydroxide and demineralized water, to the solvent plate recovery still (VES-K-104) in the K-Cell. The caustic solution was used for stripping impurities from the hexone solvent. The hexone solvent was used in the second- and third-cycle extraction process to extract uranium from a feed solution that resulted from the dissolution of spent nuclear fuel. The solvent recovery caustic feed tank has been drained but has not been verified as empty.

TANK INVENTORY ID 98CPP00437
COMPLEXER FEED TANK (VES-PM-164)

INTEC-005P2.JPG

Photograph showing the Complexer Feed Tank.

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: Process Makeup (PM) Area
Comments	Original Contents: Aluminum nitrate, borated water, nitric acid, chromic acid
Unit Capacity and Dimensions	Capacity: 725 gal Dimensions: 1.5 m (5 ft) diameter × 1.7 m (5.5 ft) height (measured)
RCRA-Regulated Category	NOT REG – EMPTY (ND)
Operational Status	INACTIVE PROCESS/PRODUCT
Reference Drawings	056122, Revision 6; 056388, Revision 23; 056718, Revision 7; 098407, Revision 3; 098408, Revision 1

Figure INTEC-601-4-2. Complexer Feed Tank (VES-PM-164; 98CPP00437).

Complexer Feed Tank (98CPP00437) Unit Description

The complexer feed tank (VES-PM-164; 98CPP00437) is located on the southwest side of the PM area in the Fuel Process Building (CPP-601). The complexer feed tank is a vertical, cylindrical unit constructed of Type 347 stainless steel and is contained within a berm. The tank has a capacity of 725 gal and is 1.5 m (5 ft) in diameter by 1.7 m (5.5 ft) in height. The complexer feed tank was designed to operate at 120°C (248°F) at vacuum pressure but was operated at 25°C (77°F) at atmospheric pressure (INEL 1992). The complexer feed tank supplied aluminum nitrate solution to the complexing tank and the hold-up tank (VES-E-102 and VES-E-108) for use in the fuel dissolution process. Aluminum nitrate solution was supplied to the complexer feed tank from the complexer makeup tank (VES-PM-175; excluded from VCO system) in which the aluminum nitrate solution was prepared. The complexer feed tank was taken out of service in 1986 (INEEL 1999) and was drained; however, it has not been verified as empty.

References

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Appendix E

INTEC T-Cell Hexone Solvent Storage and Feed System (INTEC-601-5)

INTEC T-CELL HEXONE SOLVENT STORAGE AND FEED SYSTEM (INTEC-601-5)

System Description

The INTEC T-Cell Hexone Solvent Storage and Feed System (INTEC-601-5) is located at the operating corridor level above the U-Cell, on the east side of the Fuel Process Building (CPP-601). Hexone, the organic extractant used in the second- and third-cycle extraction process, was used to extract uranium from the aqueous feed stream in the presence of excess nitrate. After being used for uranium extraction, most of the hexone solvent was recovered, purified, and recycled back into the second- and third-cycle uranium extraction process (INEL 1990).

The purified hexone solvent was collected in the solvent collection tank (VES-K-106; 98CPP00237 [verified empty]) in the K-Cell of CPP-601. Two pumps (P-PA-212 and P-PA-213) in the CPP-601 Access Corridor transferred the purified hexone solvent to the hexone solvent storage tank (VES-T-100; 98CPP00486) in the T-Cell for storage. When ready for use in the second-and third-cycle uranium extraction process, the hexone solvent was pumped from the hexone solvent storage tank to the second-cycle hexone feed tank (VES-T-101; 98CPP00487 [verified empty]), the third-cycle hexone feed tank (VES-T-102; 98CPP00488 [verified empty]), and, if needed, the spare hexone feed tank (VES-T-103; 98CPP00489 [verified empty]) (INEL 1990).

From the second-cycle hexone feed tank, the hexone solvent was metered to the second-cycle solvent accumulator (VES-P-101; not identified in the SITE-TANK-005 Action Plan) in the P-Cell for use in the second-cycle uranium extraction process. From the third-cycle hexone feed tank, the hexone solvent was metered to the third-cycle solvent accumulator (VES-Q-101; not identified in the SITE-TANK-005 Action Plan) in the Q-Cell for use in the third-cycle uranium extraction process. The spare hexone feed tank was occasionally used to provide hexone solvent to the third-cycle uranium extraction process in the Q-Cell and also to the old fourth-cycle uranium extraction process in the S-Cell before the fourth-cycle equipment in the S-Cell was removed in 1980.[a] The hexone solvent could also be drained from any of the T-Cell hexone solvent storage and feed system tanks to the hexone solvent salvage tank (VES-W-129; 98CPP00549 [verified empty]) in the W-Cell for recycle to the hexone purification process (INEL 1990).

System Boundaries

The INTEC T-Cell Hexone Solvent Storage and Feed System (INTEC-601-5) includes the following unit that requires further characterization under the SITE-TANK-005 Action Plan:

1. Hexone Solvent Storage Tank (VES-T-100) 98CPP00486 (Figure INTEC-601-5-1)

A standard centrifugal pump (P-T-200) is also included in the VCO system (see Schematic P-ST005-INTEC-601-5) as ancillary equipment.

The ¾-in. hexone solvent feed lines (¾" HX-AR-151364 and ¾" HX-AR-151372) from the hexone solvent storage tank to the spare hexone feed tank, the third-cycle hexone feed tank, and the second-cycle

[a] Ed Wagner, BBWI Consulting Engineer/Scientist, former Design Engineer at CPP-601. Personal communication with Paul Sealey, Portage Environmental Inc., July 19, 2000.

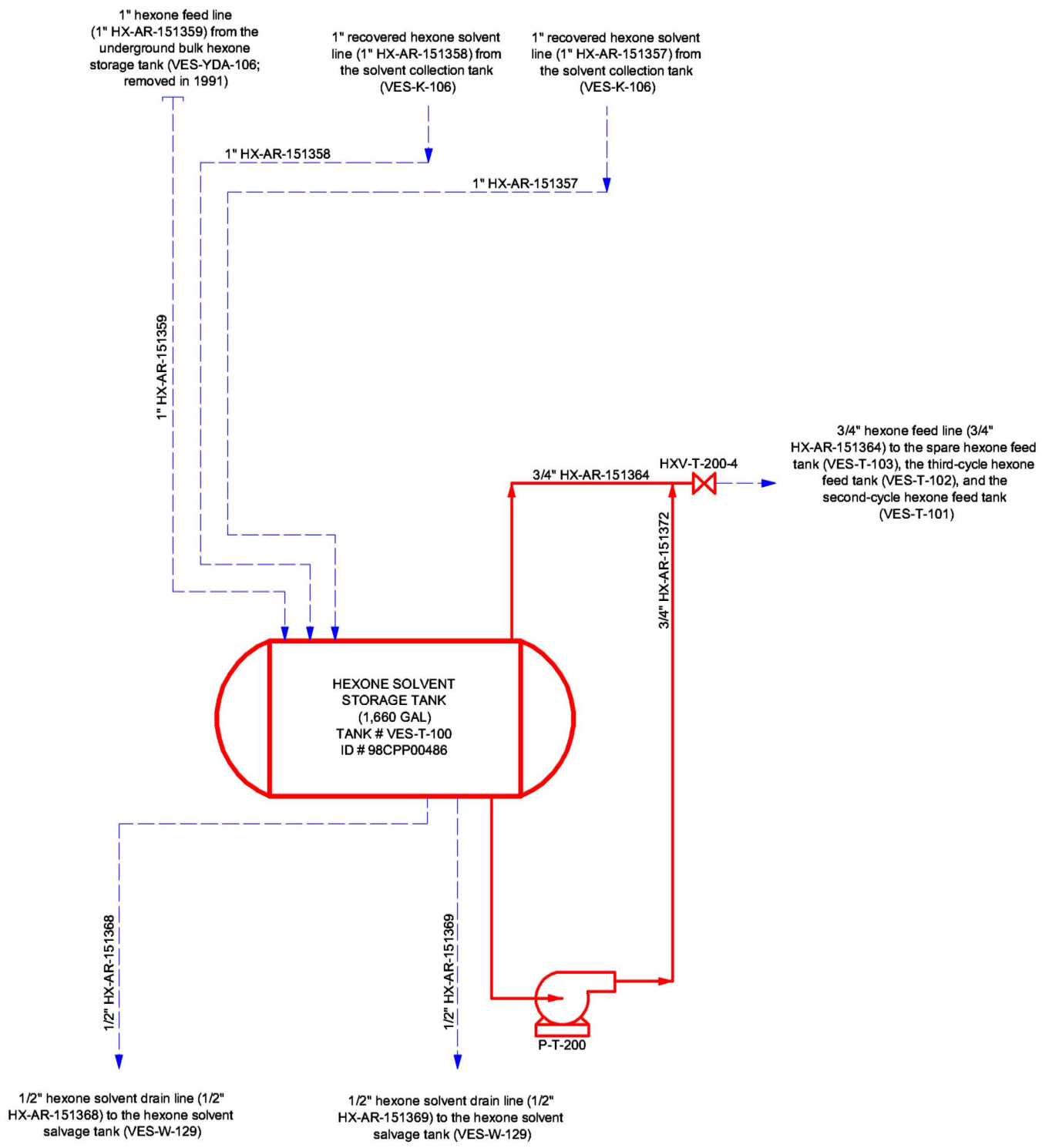
hexone feed tank are included in the VCO system to valve HXV-T-200-4. These lines are included because they were used to circulate solvent and to empty the hexone solvent storage tank. The line was broken at the valve and a flexible hose was connected to the line to drain the tank; therefore, piping downstream of this valve is not included in the system.

The following lines are not included in the in the T-Cell hexone solvent storage and feed system (see Schematic P-ST005-INTEC-601-5):

- The solvent transfer lines (1" HX-AR-151358 and 1" HX-AR-151357) from the solvent collection tank to the hexone solvent storage tank are shown on the schematic but are not included in the system because they were flushed and emptied at process shutdown.

- The hexone feed line (1" HX-AR-151359) from the underground bulk hexone storage tank (VES-YDA-106; removed in 1991) is not included in the system because it was a process line that was emptied into the hexone solvent storage tank and was cut and capped.

- The ½-in. hexone solvent drain lines (½" HX-AR-151368 and ½" HX-AR-151369) from the hexone solvent storage tank to the hexone solvent salvage tank (VES-W-129) via the hexone solvent drain header (1" HX-AR-151400; flushed and emptied with the T-Cell feed tanks) are not included in the system because they were process lines that were emptied into the hexone solvent salvage tank.



LEGEND

- BUILDINGS
- VCO UNITS
- LINES AND COMPONENTS INCLUDED IN THE VCO SYSTEM
- LINES INCLUDED IN SEPARATE SITE-TANK-005 SYSTEM
- UNITS AND COMPONENTS EXCLUDED FROM THE VCO SYSTEM
- LINES EXCLUDED FROM THE VCO SYSTEM

VCO UNITS

98CPP00486

REFERENCE DRAWINGS

055044, REVISION 39
057004, REVISION 44
059965, REVISION 22
090841, REVISION 13
104070, REVISION 25

REFERENCE DOCUMENTS

INEL 1990
INEL 1992
INEEL 1999b

NOTES

FOR EACH VCO SYSTEM THAT IS CHARACTERIZED AS HAZARDOUS, THE SYSTEM BOUNDARIES WILL BE RE-EVALUATED TO ENSURE ANCILLARY EQUIPMENT IS INCLUDED AND SCHEMATICS REVISED, IF NECESSARY, AS PART OF FURTHER VCO MILESTONES.

REVISIONS

REV	DESCRIPTION	DATE	INIT
2	UPDATED REV CONSISTENT WITH DOCUMENT; NO SCHEMATIC CHANGES	01/21/02	PE
1	UPDATED PER IDEQ COMMENT RESOLUTION	09/01/01	PE

VOLUNTARY CONSENT ORDER PROGRAM

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IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
IDAHO NUCLEAR TECHNOLOGY AND ENGINEERING CENTER
T-CELL HEXONE SOLVENT STORAGE AND FEED SYSTEM (INTEC-601-5)
HEXONE SOLVENT FLOW SCHEMATIC

SCHEMATIC NUMBER: P-ST005-INTEC-601-5

REVISION: 2

SCALE: NONE

DATE: 03/15/01

RESEARCH: PORTAGE, INC.

DRAWING: PORTAGE, INC.

TANK INVENTORY ID 98CPP00486
HEXONE SOLVENT STORAGE TANK (VES-T-100)

No Photograph Available
(High Radiation Area)

Unit Location	Facility: INTEC Building: CPP-601, Fuel Process Building Room: T-Cell
Comments	Original Contents: Hexone
Unit Capacity and Dimensions	Capacity: 1,660 gal Dimensions: 1.8 m (6 ft) diameter × 2.1 m (7 ft) length
RCRA-Regulated Category	NEW RCRA (ND)
Operational Status	INACTIVE WASTE
Reference Drawings	055044, Revision 39; 057004, Revision 44; 059965, Revision 22; 090841, Revision 13; 104070, Revision 25

Figure INTEC-601-5-1. Hexone Solvent Storage Tank (VES-T-100; 98CPP00486).

Hexone Solvent Storage Tank (98CPP00486) Unit Description

The hexone solvent storage tank (VES-T-100; 98CPP00486) is located in the northwest corner of the T-Cell, at the operating corridor level above the U-Cell, on the east side of the Fuel Process Building (CPP-601). The hexone solvent storage tank is a horizontal, cylindrical tank with domed ends and is constructed of ¼-in. Type 347 stainless steel. The tank is 1.8 m (6 ft) in diameter by 2.1 m (7 ft) in length and has a capacity of 1,660 gal.

The hexone solvent storage tank was used to store purified hexone solvent received from the solvent collection tank (VES-K-106) in the K-Cell. The tank also received fresh hexone from the underground bulk hexone storage tank (VES-YDA-106; removed in 1991), which was located outside of CPP-601 (INEEL 1999a). When ready for use in the second- and third-cycle uranium extraction process, the hexone solvent was pumped from the hexone solvent storage tank, via pump P-T-200, to the second-cycle hexone feed tank (VES-T-101), the third-cycle hexone feed tank (VES-T-102), and, if needed, the spare hexone feed tank (VES-T-103). The hexone solvent storage tank could also drain into the hexone solvent salvage tank (VES-W-129) in the W-Cell for recycle to the hexone purification process (INEL 1990).

The hexone solvent storage tank was last used October 1994 to collect and store contaminated hexone and flush solutions. Once a disposal site for the slightly contaminated hexone was identified in May 1995, the tank was flushed and emptied via a flexible hose attached to valve HXV-T-200-4.

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104070, INEEL Reference Drawing, *CPP-601, Process Building, Cell "T" Flowsheet*, Idaho National Engineering and Environmental Laboratory, Sheet 1 of 1, Revision 25, October 1990.