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F/H AREA HIGH LEVEL WASTE REMOVAL PLAN & SCHEDULE

by

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Enclosure: Letter, Gould to
Bedenbaugh/Weeks, WASTE REMOVAL
PLAN AND SCHEDULE FOR HLW TANK
FARMS, Dated 11/9/93

WSRC-RP-93-1477
Revision 0

F/H Area High Level Waste Removal Plan & Schedule

As Required by the

Federal Facility Agreement for the Savannah River Site

November 1993

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I. Introduction

Section IX.E of the SRS Federal Facility Agreement (FFA) requires the DOE to submit to the EPA and SCDHEC for review and approval, a plan(s) and schedule(s) for the removal from service of waste tank system(s)/component(s) that do not meet secondary containment standards, or that leak or have leaked. The Plan and Schedule for removal from service of these waste tanks is shown in Appendices A and B, respectively. Other portions of this package which include schedule dates are provided for information only. The SRS intends to remove systems from service as opposed to providing secondary containment for non-compliant systems.

The systems that do not meet secondary containment requirements or that have leaked (as determined by tank assessment reports) include High Level Waste Tanks #1-24 along with corresponding ancillary equipment. (Tank #16, which is being addressed under RCRA/CERCLA, is not within the scope of this plan and schedule. Waste removal is complete on Tank 16.)

II. Key HLW System Facilities and Processes

The F and H-Area HLW Tank Farms are one component of a larger integrated waste treatment system consisting of facilities designed for the overall processing of several radioactive waste streams resulting from nuclear material processing. A flow diagram of the HLW system is included in Figure 1. The integrated waste treatment system consists of the following facilities:

- Tank Farm Waste Tanks and Waste Removal Equipment
- Tank Farm Evaporators
- In-Tank Precipitation Facility
- Extended Sludge Processing Facility
- New Waste Transfer Facility
- Defense Waste Processing Facility
 - Vitrification Facility
 - Late Wash Facility
 - Saltstone
- Consolidated Incineration Facility

III. HLW Facility Descriptions and Operating Plans

There are several key activities that must be completed to achieve the objective of removal from service of systems / components that do not comply with containment standards or that have leaked. The activities are as follows:

- Restart the Tank Farm Evaporators
- Restart and operate Extended Sludge Processing
- Start up and successfully operate In-Tank Precipitation
- Start up and operate DWPF
- Perform Waste Removal operations
 - from new style (Type III) tanks as necessary to support waste removal from old tanks
 - from old-style (Type I, II, and IV) tanks that have leaked (i.e., Tanks 1, 9-15 and 20)
 - from old-style tanks with no known leaks
- Design, build, start up and successfully operate the Late Wash facility
- Design, build, start up and operate the Replacement High Level Waste Evaporator

Some of these activities are scheduled to be completed near term. Others are more long term in nature and it is therefore important to monitor progress towards the long term goal, i.e. monitor near term intermediate milestones that will indicate progress and whether the long term target will be met on schedule. Below is a discussion of each key activity and its status.

Tank Farm Waste Tanks & Waste Removal Operations

Facility Description: The highest priority mission in the HLW System is to safely store and monitor the existing inventory of waste in the Tank Farm. About 33.5 million gallons of waste are currently contained in 50 waste tanks. One tank, Tank 16, was emptied in 1980 and remains empty. Of the 50, 23 are old-style tanks and 27 are new-style. The old-style tanks do not meet the criteria for leak detection and secondary containment and will therefore undergo waste removal operations prior to their being removed from service.

Processes and equipment for waste removal and waste processing have been developed and demonstrated in several successful full-scale demonstrations. Sludge removal by hydraulic slurring and cleaning has been demonstrated in Tank 16. Salt and sludge removal using mechanical agitation has also been performed on Tanks 15-22 and Tank 24. Some of these tanks contain small amounts of residual waste that will be removed as part of this plan. Waste removal facilities have been designed using data and experience gained from past removal activities.

The waste removal program involves a series of projects that will install waste removal equipment on the existing waste tanks. The objective of the waste removal program is to remove the waste contained in the tank primary vessel so that the tank can be removed from service or reused. In general, the Type III (new style) tanks will be reused while the Type I, II and IV (old style) tanks will be removed from service when waste removal is complete as defined in Section VI. The tanks to be removed from service will undergo a water washing operation in the primary vessel and an annulus cleaning if waste is present in the annulus. As soon as the waste is removed it must be processed in either the In-Tank Precipitation (ITP) or Extended Sludge Processing (ESP) facilities to prepare it for further processing and disposal at the DWPF Vitrification and Saltstone facilities.

Both old and new-style tanks must undergo waste removal to support the FFA Waste Removal Plan & Schedule. Salt will be removed from new style tanks first, and these tanks will be reused to support Tank Farm evaporator operations and processing of DWPF recycle streams. The first sludge tanks to be emptied will be old-style tanks, which will be removed from service.

Operating Plans: Each waste tank will be fitted with special waste removal equipment. Tanks containing sludge will have four slurry pumps and one transfer pump installed to suspend the settled sludge into a pumpable slurry for transfer to ESP. Tanks containing salt will have three slurry pumps and one transfer jet installed to dissolve the salt and transfer it to ITP.

Tank 41 is the first salt tank to be emptied, in order to create space in the 242-16H evaporator system. Concentrated supernate from Tanks 29, 32, 38, and 43 will also be removed, thus generating space in both the 242-H and 242-16H systems. Tank 29, in the 242-H system, will be the second salt tank to be emptied. Tank 25 will be emptied next in order to make space in the 242-16F evaporator system. Tanks 31 and 38 will be emptied fourth and fifth, to make additional space in the 242-H and 242-16H systems, respectively, as needed to support continued operation of the Evaporators and therefore DWPF.

Sludge removal will begin with Tanks 8, 11 and 15 in FY03.

At this time, waste removal facilities are partially complete on Tanks 1-3, 9-10, 14-15, 17-22, 24 and 29, and nearly complete on Tanks 25, 28, and 41. Waste Removal efforts in FY94-95 will focus on Tanks 41, 29 and 31 as well as support facilities for the Replacement High Level Waste Evaporator (RHLWE).

Tanks #21-23 will continue to be used during the waste removal process to receive low level waste from the Receiving Basin for Offsite Fuels (RBOF) and the Resin Regeneration Facility (RRF), both in H-Area. Tank 21 and 22 will be used for holding spent washwater and providing dilution water in the ESP and ITP processes, respectively. These waste streams contain very small amounts of radioactivity.

Tank Farm Evaporators

Facility Description: Efficient operation of the site's three evaporators is driven by the need to ensure HLW system capacity for receipt of DWPF's recycle stream and the ESP washwater stream, and to provide a flexibility in managing liquid waste inventories.

The Replacement High Level Waste Evaporator (RHLWE) eventually will enable the 242-H Evaporator to be removed from service. The RHLWE is a high capacity evaporator that will enable the Tank Farm to evaporate the ESP washwater and DWPF recycle waste streams. Without the RHLWE, the Tank Farm would be losing space and would eventually fill to capacity which would in turn shut down DWPF. This project will also outfit Tank 32 to be the evaporator feed tank thus enabling Tank 13 to be retired from this service.

Also, in an effort to maximize the available waste tank storage space in the F-Area Tank Farm, Evaporator 242-16F will begin processing high heat waste supernate. This change is needed to support F-Area Canyon operations and to serve as a contingency to process DWPF recycle wastewater.

The RHLWE is currently in the design and construction phase.

Operating Plans: The evaporator systems were voluntarily shut down in April and May, 1993. These include 242-H, 242-16H and 242-16F. The systems were shut down in order to implement an extensive improvement program that enhances training, procedures, equipment labeling, facility maintenance and baseline documentation for each system. Restart of the three existing evaporators will occur within the next several months. The 242-H evaporator will be restarted first, in December, 1993. Its systems had completed an extensive review just prior to its voluntary shutdown; therefore, it needed the least amount of fresh review and upgrades. The 242-16F evaporator is scheduled for restart in March, 1994 to ensure Tank Farm support for the F-Canyon stabilization program. The 242-16H evaporator system will restart in April 1994. The 242-F evaporator remains in cold standby and will not be restarted because its supporting equipment systems are outdated and consequently difficult to operate efficiently.

In-Tank Precipitation (ITP)

Facility Description: All salt waste must be processed in ITP. ITP will receive dissolved salt transferred from the Tank Farm waste tanks that have been outfitted with Waste Removal equipment. ITP separates the salt into a low volume, high activity stream which is fed to DWPF via the planned Late Wash facility to be incorporated into glass; and a high volume, low radioactivity stream that will be incorporated into saltstone.

The operation of each evaporator system (described above) is dependent upon having sufficient salt receipt space in existing waste tanks. At this time, all three evaporator systems are running out of salt space. The only way to recover the needed salt space is to remove the salt from the tanks and process it through ITP. When salt is removed from old tanks, which are not required to support evaporator operations, the tanks will be removed from service. When salt is removed from new tanks, the tanks are reused to receive salt which comes from Separations, ESP washwater and DWPF recycle. For this reason, the first several tanks to have salt removed are new style tanks.

The design and construction of ITP is nearing completion. The facility is in startup testing.

Operating Plans: Facility startup is currently scheduled for 1994. ITP salt processing yields two streams. The high radioactivity precipitate stream is fed to the Late Wash facility for further treatment. The low radioactivity filtrate is sent to the Saltstone Facility for stabilization and disposal. See below for additional details on both.

ITP will process salt in 500,000 gallon batches. Tanks were assigned to particular batches based on waste volume and chemistry.

Extended Sludge Processing (ESP)

Facility Description: All sludge waste must be processed in ESP. ESP will receive sludge from waste tanks and will wash the sludge to dissolve any excess aluminum and salt content. The sludge removal and washing processes generate millions of gallons of washwater that must be evaporated. ESP will process a total of 6 sludge batches in order to process all sludge contained in the old and new-style waste tanks.

The design and construction of ESP is complete. The facility is currently operating in a startup testing mode.

Operating Plans: ESP is currently processing the first sludge batch to be fed to DWPF. Sludge processing removes excess salts and aluminum from the sludge, and yields two streams. The wash water is evaporated and stored, and the washed sludge is transferred to DWPF for processing. Restart of the evaporators must precede ESP restart in order to provide enough tank space to handle the ESP washwater.

ESP's production plan is based on a total of six batches, which have been defined on the basis of sludge volume, chemistry and rheology. Sludge Batch #1 is planned to feed DWPF for approximately 66 months.

New Waste Transfer Facility (NWTF)

Facility Description: The NWTF (also referred to as H-Diversion Box 8) will serve as the "hub" for all transfers from DWPF to the Tank Farm and for transfers between the F and H-Area Tank Farms. The NWTF replaces the aging HDB-2 facility and consists of four pump tanks and a large diversion box with an enclosed overhead crane / camera system for remote maintenance. The NWTF is strictly a waste transferring facility; no processing occurs there.

The NWTF is currently in the startup testing phase.

Operating plans: The NWTF will be operated to meet the needs of the HLW system.

Defense Waste Processing Facility (DWPF) - Vitrification Facility

Facility Description: Sludge from the ESP facility and precipitate from ITP are fed to DWPF. Further treatment of the precipitate stream generates liquid benzene contaminated with low levels of radioactivity. Interim storage for this benzene stream is provided in an above-ground, double-walled tank prior to final treatment at the Consolidated Incineration Facility (CIF). Other by-products of the DWPF process are returned to the Tank Farm for later processing via the New Waste Transfer Facility (NWTF).

Final treatment of the sludge and precipitate occurs when the two streams are combined and glass formers, called frit, are added. The mixture is fed to the DWPF melter, where it turns into molten radioactive glass. The glass is then poured into stainless steel canisters and allowed to solidify. The canisters are sealed and decontaminated, and then stored at DWPF until a Federal Repository is available to accept the canisters for final disposal.

Operating Plans: Operation of the DWPF is essential to the waste removal schedule. The DWPF Vitrification facility is currently in the startup testing phase with a small amount of construction left to be done. The facility feed rate and analytical laboratory availability will drive DWPF attainment.

DWPF - Late Wash

Facility Description: Late Wash will process the salt precipitate from ITP before it is transferred to the vitrification building. ITP stores the salt precipitate in a carbon steel waste tank (Tank 49), in which sodium nitrite is used as a corrosion inhibitor. The nitrite ion concentration must be reduced to make the salt precipitate compatible with the DWPF process. This is done in the Late Wash facility using a process similar to ITP. Late Wash is therefore necessary for long term support of the salt removal mission.

Late Wash is currently in the design and early construction phase. ITP will produce salt precipitate and store it in Tank 49 until Late Wash is ready for startup.

Operating Plans: The Late Wash facility is scheduled to start up in parallel with DWPF radioactive operations.

DWPF - Saltstone

Facility Description: This facility receives the low level waste stream from ITP (decontaminated salt solution) combined with evaporator bottoms from the F/H Effluent Treatment Facility (ETF) and mixes it with cement, slag and flyash to form a grout-like mixture called saltstone. The grout is pumped into concrete disposal vaults and allowed to solidify in place.

Operating Plans: Saltstone is fully operational. Saltstone processing rates vary, based on the level in Tank 50. Additional vaults must be built to store future receipts from ITP.

Consolidated Incineration Facility (CIF)

Facility Description: The CIF will burn low level and mixed combustible waste as well as the liquid benzene stream generated by the operation of the DWPF. Therefore, the CIF is needed before the DWPF benzene storage tank (Organic Waste Storage Tank) is filled.

Operating Plans: The CIF is currently in the construction phase. It will be started up and operated to meet the needs of the HLW system.

IV. Assumptions

Many assumptions have been made in order to establish the planning basis for the HLW System. These assumptions are summarized below.

General

There will be no significant technical issues in the High Level Waste system.

There will be no impacts from external reviews.

Evaporators

The 242-H and the 242-16H pots each are assumed to fail once in the next five years, resulting in a six month outage for each system.

Canyon waste volumes will be per the current forecast. This assumes that there will be no K-15 processing, but there may be reprocessing of fuel through reactor charge K-14. Also, deinventory plans for those Separations facilities which are expected to be in standby in FY1997 have been included as they pertain to waste volume increases.

Waste Removal

The definition of "waste removal" is provided in Section VII, below.

Each tank's waste removal schedule is based upon a typical construction-through-startup authorization task duration of 22-30 months. Additional tank specific activities were then applied to account for the unique design and operational characteristics of each tank.

As waste removal and water washing/annulus cleaning operations are completed for each old-style tank, that tank will be transitioned to SRS's Environmental Restoration (ER) division for decommissioning and closure, in accordance with applicable permits and other regulatory requirements. Six months are included in the waste removal duration after water washing/annulus cleaning for transition to ER, although the transition program is yet to be defined. However, the ER schedule for decommissioning and closure of these tanks is not currently included in this plan.

In-Tank Precipitation (ITP)

The entire contents of Tank 41 can be removed. Tank 41 criticality concerns can be controlled and will not adversely impact the waste removal schedule of 30 months.

ITP will operate per the current processing baseline, after Tank 41 salt removal is complete.

Ongoing seismic and geotechnical evaluations and resultant emergent work, if any, can be completed in parallel with other startup activities, and thus will not impact the ITP startup schedule.

In-Tank Precipitation (ITP), con't

Benzene abatement will not be required.

The ITP Distributed Control System (DCS) reliability issue will be resolved in a way that does not impact the ITP startup date.

Extended Sludge Processing (ESP)

The samples taken from ESP Tanks 42 and 51 are representative of the tank contents. If they are not, more washes or aluminum dissolution could be necessary, thus extending the schedule.

Aluminum dissolution completed in Tank 42 during the 1983 demonstration was adequate and the entire tank contents were adequately agitated.

Defense Waste Processing Facility (DWPF) Vitrification

Identification of Safety Class Items and resolution of SAR issues will not impact the DWPF startup schedule, and no plant modifications will be required.

Simulated Radioactive Operations will take place for ten weeks during and after Mercury Runs testing. This will allow facility personnel time to adapt to radioactive facility conditions without risk.

The level of emergent work will trend downward as startup activities progress.

DWPF Late Wash

None.

DWPF Saltstone

New saltstone vaults will be funded, constructed, and made operational on a schedule to support Saltstone facility operations.

There will be no significant issues regarding the Saltstone Performance Assessment.

V. Key Issues

Due to technical and programmatic issues, there is a significant degree of uncertainty inherent in the Appendix B schedules. Some of the key issues are:

Tank 41 Criticality - Rigorous sampling during salt removal will be required to ensure nuclear safety. This could extend the schedule for salt removal or dictate the need to add chemicals to prevent criticality in Tank 41.

Geotechnical Issues - Recent geologic surveys have revealed potentially weak areas near Tank Farm structures. More detailed surveys are in progress to accurately determine the extent of increased risk, if any. Site remediation measures may be needed.

Separations De-Inventory - The site mission continues to move away from nuclear materials production, and toward waste management and environmental restoration. Future missions for the existing F-Area and H-Area Canyons are uncertain at this time. Plans are being generated for the disposition of nuclear materials used in or produced by Separations processes. Until these plans are better defined, the impact of canyon de-inventorying activities on the HLW system will be unclear.

Analytical Laboratory Support - Analytical laboratory services are needed to support HLW system activities. By design, many waste processing steps are followed by analytical analyses whose results are needed prior to proceeding with subsequent waste processing steps. Therefore, inadequate laboratory support can directly impact facility attainment. With the recent shift in site focus from a production to a waste management mission, it is unclear at this point whether laboratory services will be available on site as needed. WSRC is currently investigating the availability of qualified personnel, needed laboratory equipment, and location of the labs relative to work sites.

Funding Availability - One way to manage funding variations is to adjust the planned attainment of the HLW system. This allows costly repetitive projects, such as Waste Removal equipment design or installation or Saltstone vaults, to be delayed. However, this approach ultimately increases the life cycle costs of the HLW system.

The available funding is projected to be \$646 million in FY94, \$678 million in FY95, and escalated at 3.5% per year thereafter. The actual funding can vary significantly from projected.

VI. Waste Removal Description/Definition

Provided in Appendix B is the projected schedule for removal from service of the old-style waste tanks (1-15, 17-24). Due to the lack of actual operating experience for new treatment processes and due to the combination of other interacting factors such as budget and changes to production plans, there is a significant degree of uncertainty inherent in this long range schedule. SRS is continuously evaluating the uncertainties in the overall waste removal plan and prioritizing improvements that can be made to enhance the confidence in the planning and scheduling program. It is the intent of the SRS to refine and update the current plan and schedule after each significant perturbation. This update will make use of improved process experience and revisions to funding levels and will include strategies developed in an effort to increase the overall waste removal rate and appropriate revision to tank sequencing.

The current sequencing of waste removal from the HLW tanks is per the following generalized priority:

- 1) Control tank chemistry including radionuclide and fissile material inventory
- 2) Maintain adequate emergency space
- 3) Provide adequate salt receipt space to maintain evaporator systems on line, which is necessary to process the waste and support waste removal activities
- 4) Maintain adequate available tank space (surge capacity) to handle the large volume waste transfers and waste removal processing cycle streams including DWPF recycle.
- 5) Remove waste from tanks with a history of leakage.
- 6) Remove waste from tanks which do not meet secondary containment requirements.
- 7) Ensure blending of processed waste to meet the Saltstone and Vitrification feed criteria
- 8) Maintain continuity of radioactive waste feed to the DWPF
- 9) Provide adequate receipt space for fresh waste
- 10) Remove waste remaining in the tanks after Steps 3 and 4 above.

It is important to realize that, while the principal driver for the HLW Plan is the removal of waste from the older style tanks, it is necessary to first remove waste from some of the Type III tanks to support waste removal from the older style tanks. Removal of waste from new tanks is required to maintain the evaporator systems on-line and to provide space as required to receive large transfers involved with the ESP process and DWPF recycle.

For the purposes of this plan, removal from service is defined as:

- as much high level waste (salt, sludge and/or supernate) as practical is removed from the tank primaries and any annulus that has received waste via mechanical agitation (slurry pumps and eductor jets)
- all tank primaries and any annulus that has received waste will be washed with inhibited water and as much waste as practical is removed via installed systems (eductor jets and pumps)

Upon further evaluation, it may be decided that an additional chemical cleaning step may occur on some tanks as necessary. Nevertheless, when waste removal is complete, as defined above, a closure plan will be developed per State Regulation R61-82, Proper Closeout of Wastewater Treatment Facilities, and submitted to SCDHEC for review and approval. Upon approval, it is anticipated that the tank system / component will be turned over to the RCRA/CERCLA Program (and insertion into the applicable Appendix of the FFA) for decommissioning.

It may also be necessary to maintain a heel of inhibited water in some waste tanks to prevent structural damage to the tank bottom caused by upward groundwater pressure.

WASTE GENERATORS
(CANYONS/RBOF)

WASTE STORAGE/TRANSFER
(TANKS/EVAPORATORS)

H-AREA TANK FARM
F-AREA TANK FARM

WASTE VOLUM
(BASED ON LI)

- 1 RBOF/RRF
- 2 F & H CANYONS (COMBINED)
- 3 DMPF SALTSTONE (DECONTAMINATED FILTRA
- 4 DMPF VITRIFICATION (PRECIPITATE & SLUDGE)
- 5 DMPF RECYCLE

WASTE PREPARATION (ESP/ITP)

WASTE PROCESSING (DWPF/CIF/ETF/SALT STONE FACILITY)

WASTE DISPOSALS (STREAM/STORAGE VAULT/DEPOSITORY)

CONCENTRATE

DECONTAMINATED FILTRATE

LATE WASH (FUTURE)

RECYCLE

RECYCLE

AUX PUMP PIT

LOW POINT PUMP PIT

LATE WASH (FUTURE)

BENZENE & RADIOACTIVE LIQUID WASTE

FROM CANYONS LLLW

SEE SOLID WASTE PROCESSING FLOW DIAGRAM FOR DETAILS

LEGEND

- CIF CONSOLIDATED INCINERATION FACILITY
- CRC CESIUM REMOVAL COLUMNS
- CTS CONCENTRATE TRANSFER SYSTEM
- DWPF DEFENSE WASTE PROCESSING FACILITY
- ESP EXTENDED SLODGE PROCESSING
- FDB F AREA DIVERSION BOX
- GDL GRAVITY DRAIN LINE
- HDB H AREA DIVERSION BOX
- HHW HIGH HEAT WASTE
- HPP PUMP PIT (H AREA)
- IAL INTER-AREA LINE
- ITP IN TANK PRECIPITATION
- LHW LOW HEAT WASTE
- LLLW LIQUID LOW LEVEL WASTE
- NWTF NEW WASTE TRANSFER FACILITY
- OOS OUT OF SERVICE
- RBOF RECEIVING BASIN FOR OFFSITE FUEL
- RHLWE REPLACEMENT HIGH LEVEL WASTE EVAPORATOR
- RRF RESIN REGENERATION FACILITY
- ST SODIUM TITANATE
- STPB SODIUM TETRA PHENYL BORATE

TANK FARMS

TYPE OF TANK	TANK NO.S	AREA
TYPE I TANK (720,000 GALLONS)	1-8 9-12	F AREA H AREA
TYPE II TANK (1,030,000 GALLONS)	13-16	H AREA
TYPE III TANK (1,300,000 GALLONS)	25-28 29-32 33-34 35-43 44-47 48-51	F AREA H AREA F AREA H AREA F AREA H AREA
TYPE IV TANK (1,300,000 GALLONS)	17-20 21-24	F AREA H AREA

TANKS WITH CRACKS

GENERAL NOTES

1. DOTTED LINE SHOWS FACILITY OR PROCESSES CURRENTLY NOT IN OPERATION.
2. WHEN REPLACEMENT HIGH LEVEL WASTE EVAPORATOR IS PLACED IN SERVICE, TANK 32 WILL BECOME THE FEED TANK AND THE EVAPORATOR AND TANK 13 WILL BE TAKEN OUT OF SERVICE. FURTHER, TANKS 35 AND 36 WILL SWITCH FUNCTIONS.
3. IT IS WASTE MANAGEMENT'S OBJECTIVE TO EMPTY ALL TYPE I, II, & IV TANKS AND REMOVE THEM OUT OF SERVICE AS EARLY AS POSSIBLE.
4. THERE ARE MANY DIVERSION BOXES NOT SHOWN HERE WHICH HELP TO ROUTE WASTE TO VARIOUS TANKS TO COPE WITH THE LEVEL AND TYPE OF WASTE IN THE TANKS.
5. WASTE CONTENTS ARE SHOWN BY COLORED SEGMENTS PROPORTIONAL FOR EACH TANK ACCORDING TO ITS INDIVIDUAL OPERATING LIMIT. EXCEPT FOR WASTE REMOVAL TANKS (TANKS 1-12, 14-20, AND 24) WHICH ARE SHOWN ACCORDING TO THEIR MAXIMUM FILL LIMITS. THE DATA IS BASED ON HIGH LEVEL WASTE ENGINEERING RECORD (WSRC-RP-93-78-78) DATED SEPTEMBER 1, 1993. THE CONTENTS ARE COLOR HATCHED AS SHOWN BELOW.
6. F-AREA WILL BE PROCESSING HIGH HEAT WASTE IN THE FUTURE.

E INPUT DETAILS (LIVID WASTE FORECAST)

- 0.6 MILLION GAL/YEAR
- 0.75 MILLION GAL/YEAR
- 5-7.5 MILLION GAL/YEAR
- 0.2-0.5 MILLION GAL/YEAR
- 1.5-3.5 MILLION GAL/YEAR

NOTE

Use this flow diagram for INFORMATION only.

HIGH LEVEL WASTE LIQUID WASTE PROCESSING FLOW DIAGRAM

DATE: OCTOBER 20, 1993

PREPARED BY: ASOKA PILLAI

DRAWN BY: KAREN A. BARLEY

Appendix A - Process Logic Diagram

Appendix B - Type I, II and IV Tank Waste Removal Schedule

FY	94-95	96-97	98-99	00-01	02-03	04-05	06-07	08-09	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-25	26-27	28-29
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- start of sludge removal
- start of salt removal
- start of salt/sludge removal (mixed tank)
- completion of waste removal, water washing, annulus cleaning and transition to D&D

Based on projected funding of \$646 million in FY94, \$678 million in FY95 and escalated at 3.5% per year thereafter.

Appendix B - Type I, II and IV Tank Waste Removal Schedule

DATE

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END