70-3091

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 16, 1997

MEMORANDUM TO: Robert C. Pierson, Chief
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards

THRU: Michael Tokar, Section Leader
TWRS Section
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards

R. Shewmaker to M Tokar

FROM: Robert E. Shewmaker
TWRS Section
Special Projects Branch
Division of Fuel Cycle Safety and Safeguards

SUBJECT: TRIP REPORT OF MINI-TEAM VISIT TO HANFORD SITE ON NOVEMBER 20 AND 21, 1996

A small team of four TWRS Section personnel visited the Hanford Site on November 20 and 21, 1996 to meet with the current personnel functioning as the Regulatory Unit (RU) of the Department of Energy (DOE) over the work to be performed by two privatization contractors. The work the contractors will be performing for DOE is related to pilot waste cleanup demonstration activities for the Hanford tank farms waste materials. The purpose of the site visit included meetings and discussions of several elements necessary for the proper functioning of the technical assistance activities so that NRC can provide the results to DOE. Elements related to the Tank Waste Remediation Project (TWRS) that were addressed included such items as additional discussions on the Memorandum of Understanding (MOU) that is in the process of being finalized between DOE and NRC, organizational matters, distribution of documents, document control, schedules and the working relationship between DOE and NRC. For familiarization with the site, the members of the team toured the site to get an overview of the east and west tank farm areas, as well as to obtain specific information on certain aspects of the existing facilities. Also included in the site tour were those facilities that are under construction or renovation by DOE in preparation for providing stock waste feed to the privatization contractors during Phase I. Portions of the existing facilities that will be used during Phase I were also seen during the tour. A short video tape was made of portions of the tour completed on November 20, 1996, with major portions of the video taken during a briefing on the data acquisition, control and operation of Tank Farm SY consisting of 3 double shell tanks built in 1977, each with a volume capable of storing 1.16 million gallons of waste.

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During the tour of the 200 East and West areas of the tank farms, the process that DOE is going through to put the tank farms into a more stable and temporary environmentally acceptable condition was explained, including interim stabilization. The process operates as a three-step process and is known as the Controlled, Clean, and Stable (CCS) process. Handouts were made available to show the overall plan of the 200 Area and to provide the status

of the 149 single shell tanks (see attachments). The interim stabilization condition is reached when the tank pump out rate is less than 0.05 gpm. Of the 149 single shell tanks, 116 have reached the interim stabilization condition. The current program of operating and maintaining the tank farms in a safe condition uses four safety levels from Priority 1 (the highest safety concern) to Priority 4 for tanks on the Watch List. There are 28 tanks at Hanford on the Watch List out of the total of 30 tanks DOE has as a total on the Watch List throughout all its installations.

The following areas were seen during the tour as a drive-by from the bus or viewed from the bus while stopped. The various types of tanks are shown on the attachments as well as well as a typical crib that was used for leaching. The tour began in the 200 West Area.

* The SY-Tank Farm of 3 double shell tanks that were built in 1977 with two of them being monitored for flammable gases.

* The Cribbing Site for the T-Tank Farm which was a septic tank type arrargement with a leach field.

* The TX-Tank Farm with 18 single shell tanks with all the tanks in the interim stabilization condition and the farm in a Controlled, Clean, and Stable (CCS) Category.

* The TY-Tank Farm with 6 single shell tanks with all tanks in the interim stabilization condition and the farm in a CCS Category.

* The T-Tank Farm with 16 single shell tanks with one tank currently being pumped, one not pumped and the other 14 in the interim stabilization condition.

Upon return to the SY-Tank Farm, the tour included exiting the bus, viewing the tank farm from the boundary fence, and going into the data acquisition center system trailer where the monitoring results and operational controls are located for the three tanks in this farm. A briefing was provided to the team regarding the operations conducted at this tank farm. Two of the tanks in this area are being monitored for flammable gases. In addition, various above ground components of the farm were pointed out such as the center pump pit, the exhauster, the temperature thermocouple assembly penetration, the liquid observation well penetration, and the tank annulus vent that are generally associated with each tank. The attachments contain diagrams for the double shell and single shell tanks and the related equipment associated with the tanks. Each farm has associated with it, additional components that allow the farm to be functional in transferring material within the farm as well as to other farms. This includes the associated piping that is buried as well as above ground, the valving, and instrumentation and controls used in operations and monitoring. The diversion boxes, for example, serve as the point of control for directing the flows within the tank farm between tanks, as well as flows into and out of the tank farm. Ball valves that are located within this concrete box are hand-operated from above with T-handles. At the time of the visit a new pipeline connecting the East and West tank farm was being

connected into a diversion box to provide for a new line and provide redundancy for cross transfers from the east to the west tank farms and the reverse. At the present time there is only one operable line between the two 200 areas. Tank SY-101 at this tank farm had in the past experienced a turnover of its contents because of the buildup of gas below some of its more solid or sludge-like layers. In order to prevent recurrence of these hiccup events, in July of 1993 a mixer control pump was installed to draw suction from the center at the bottom of the tank and discharge through spray nozzles onto the solid/sludge volume in order to mix it into a more homogeneous material and to release much of the entrapped gases that can then be vented and filtered through the exhauster system. The gases that are monitored for concentration are hydrogen, ammonia and nitrogen oxide. The operation and control stations within the trailer contain the data being collected as well as monitor the equipment operation such as the pumping/mixing system. For example, the pressure at the discharge nozzles, the pump inlet pressure, the oil temperature of the pump motor, the amperage and voltage at the motor, the moisture level at the motor and the rpm of the pump are monitored. Sufficient operational experience has been developed so that an operational program has been formalized that sets several variables and then monitors and adjusts the variables to optimize the release of hydrogen, for example. Within this tank farm only SY-102 is an active tank, meaning it is currently in use for receiving or handling waste.

The tour then continued to the 200 East Area where the Canister Storage Building construction site was observed along with the B-Plant and then some of the 200 East Area tank farms were toured by the bus.

* The B-Tank Farm consisting of 16 single shell tanks with all in the interim stabilization condition and the entire farm nearly ready to go into the CCS Category.

* The BX-Tank Farm with 12 single shell tanks and the entire farm in the CCS Category.

* The AP-Tank Farm with 8 double shell tanks that had previously been associated with the Hanford Grout Facility as the source of the waste being processed with cement. This tank farm was the most recent construction of all the tank farms and was put into service in 1986.

* The 242A Evaporator that will be used in the liquid reduction effort was also seen from the outside during the tour.

* A view to the area set aside for the two pilot privatization facilities was provided during the tour. Currently there are two 10-acre parcels set aside for the pilot facilities.

During the travel within and between the East and West Areas, the construction underway for the new cross-tie pipeline was viewed. The attachments provide a cut-away view of the double-wall pipe that is being used to meet EPA requirements due to the hazardous materials. Out of the six original cross-tie pipelines only one is functional today. The old lines operated at 60 gpm

and the new line will operate at 140 gpm at 175 psi. One of the critical control parameters in maintaining the line operational is the temperature so that precipitation does not occur. The new line is insulated but has no capability for heat input. Sections of this pipe had been placed on the ground awaiting burial in the designed bedding material.

Discussions were then held back at the Richland Office with personnel working in the Regulatory Unit and a representative of DOE Headquarters relative to the current draft version of the MOU which reflect the comments of the EDO. It was apparent that DOE was not willing to accept the version that had been developed by NRC staff after the EDO had provided comments. The need for further discussions on the MOU was noted.

Discussions were also held on such topics as the organization of the Regulatory Unit at Richland and how the group would function. Current personnel working as temporary members of the RU discussed the current status of positions being created for the unit as well as the status of offers, acceptances etc. in achieving permanent staffing for the group. Currently the RU is functioning with personnel assigned for temporary duty from other DOE installations, other groups at the Hanford Site, or contractors. For example, the Quality Assurance Guidance document for use on the TWRS project was developed by three contractor personnel and one DOE staff person.

The consideration of documents for proprietary classification and items for public disclosure was also discussed and the associated NRC policies were explained to members of the RU. Some of the contractual restraints on DOE that apparently exist because of the already existing contracts also became evident during the discussions.

Since the above discussions were basically information exchanges, no specific decisions were reached, but areas of needed future discussion were identified which includes all of the above areas.

On November 21, 1996, three members of the team observed a meeting between the Regulatory Unit and the Senior Expert Review Panel that is apparently currently acting in an advisory capacity to the RU. The agenda for the meeting addressed the following topics.

* Status of Recruiting for RU
* Status of MOU between DOE and OSHA for TWRS
* Status of Coordination/Relationship with NRC
* Status of Items with the Defense Nuclear Facilities Safety Board (DNFSB) Relative to TWRS
* Views of Privatization Contractors with Respect to the RU
* Licensing Framework for Facilities and Operations

The NRC did not observe the continuation of the meeting during which time the the last agenda item was addressed which was identified as "SER Business Discussions."

A copy of the video made during the tour is available from the TWRS files maintained by A. Hoadley.

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Attachments:
1. Plan of 200 Area
2. Status for 149 Single-Shell(SS) Tanks
3. Tank Types
4. SS and DS Tank Instrumentation and Equipment
5. Typical Leach Crib
6. New Cross-Tie Line Details

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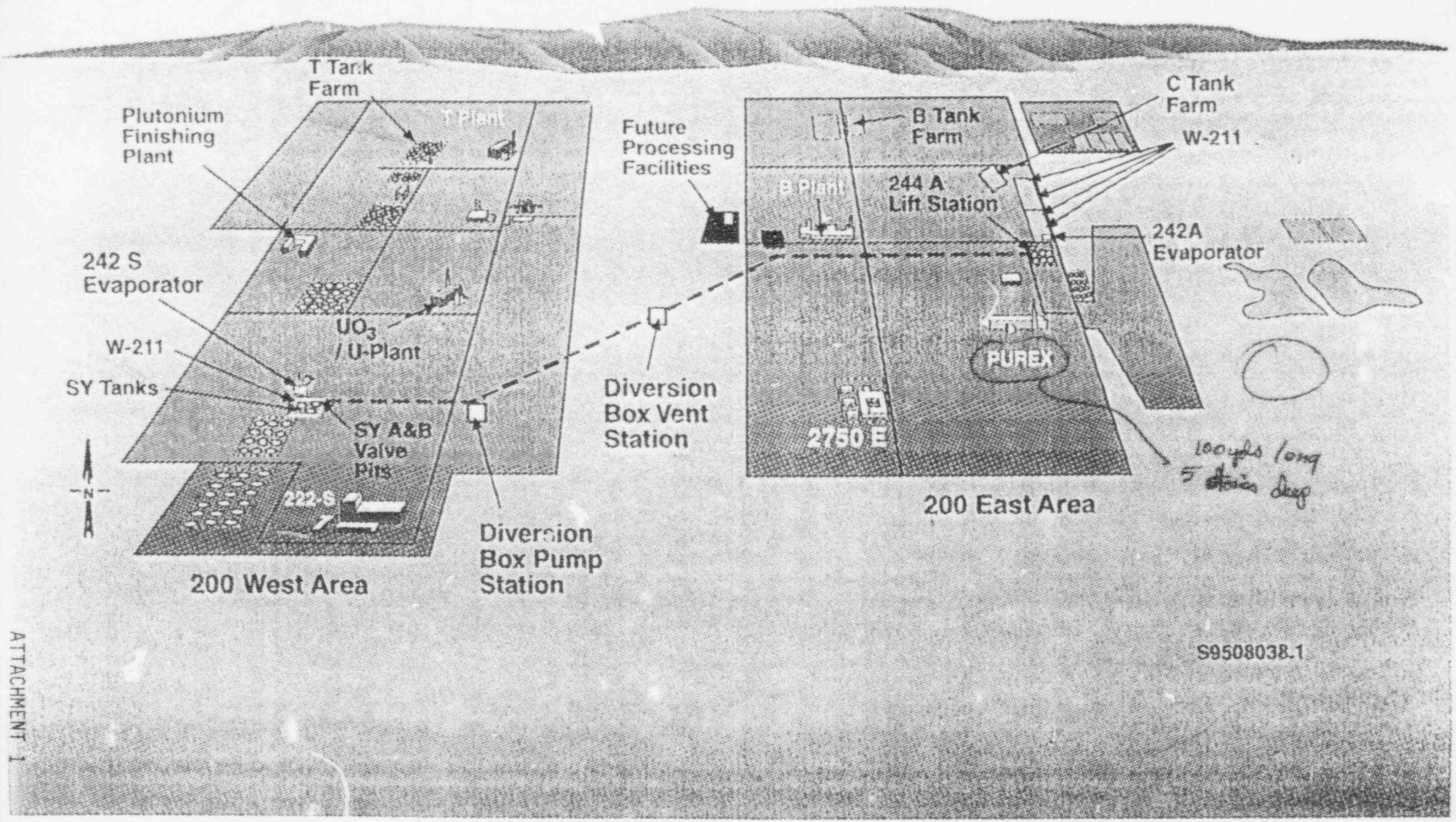
01/15/97		01/15/97		01/16/97			

Hanford 200 Areas



ATTACHMENT 1

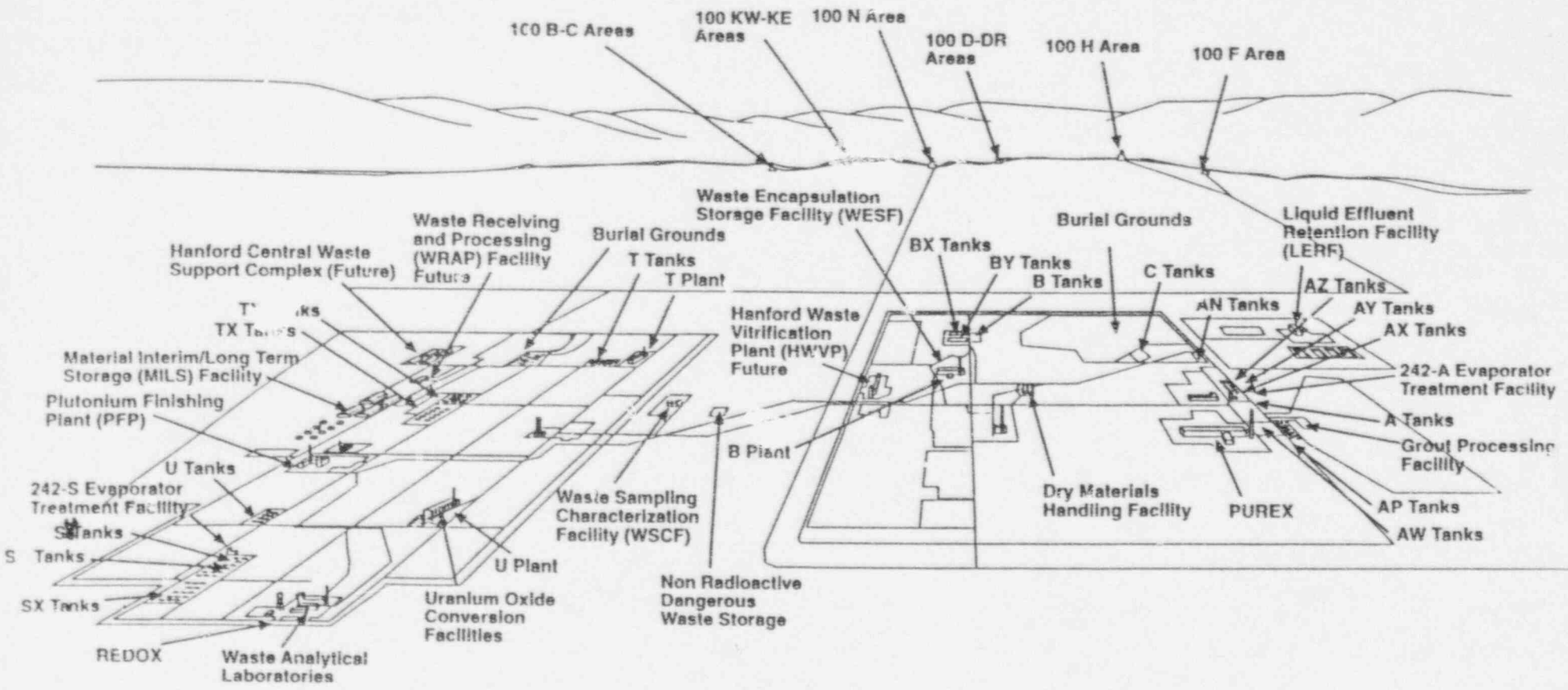


Figure D-4. Storage and Disposal Operations - 200 Area Facilities

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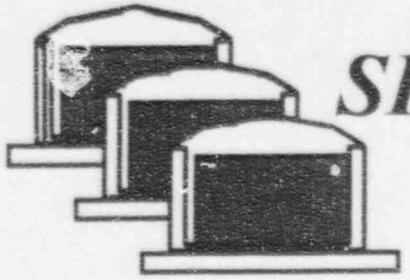
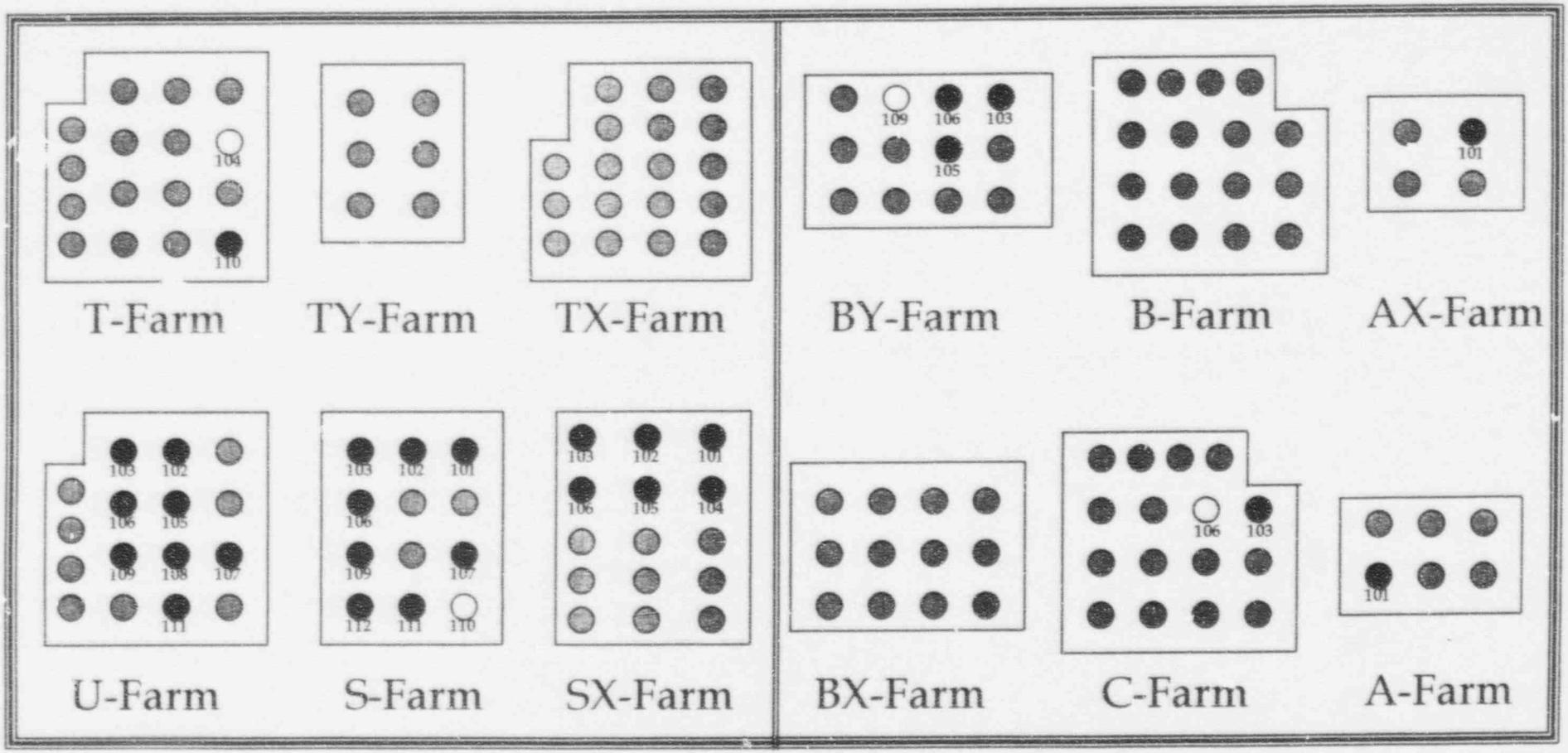


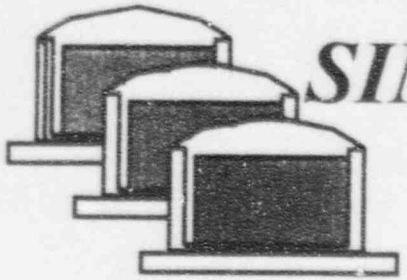
SINGLE SHELL TANK FARMS

Interim Stabilization Status

Interim Stabilized	116
Pumping	3
Retrieval	1
Not Pumped	29
TOTAL SSTs	149



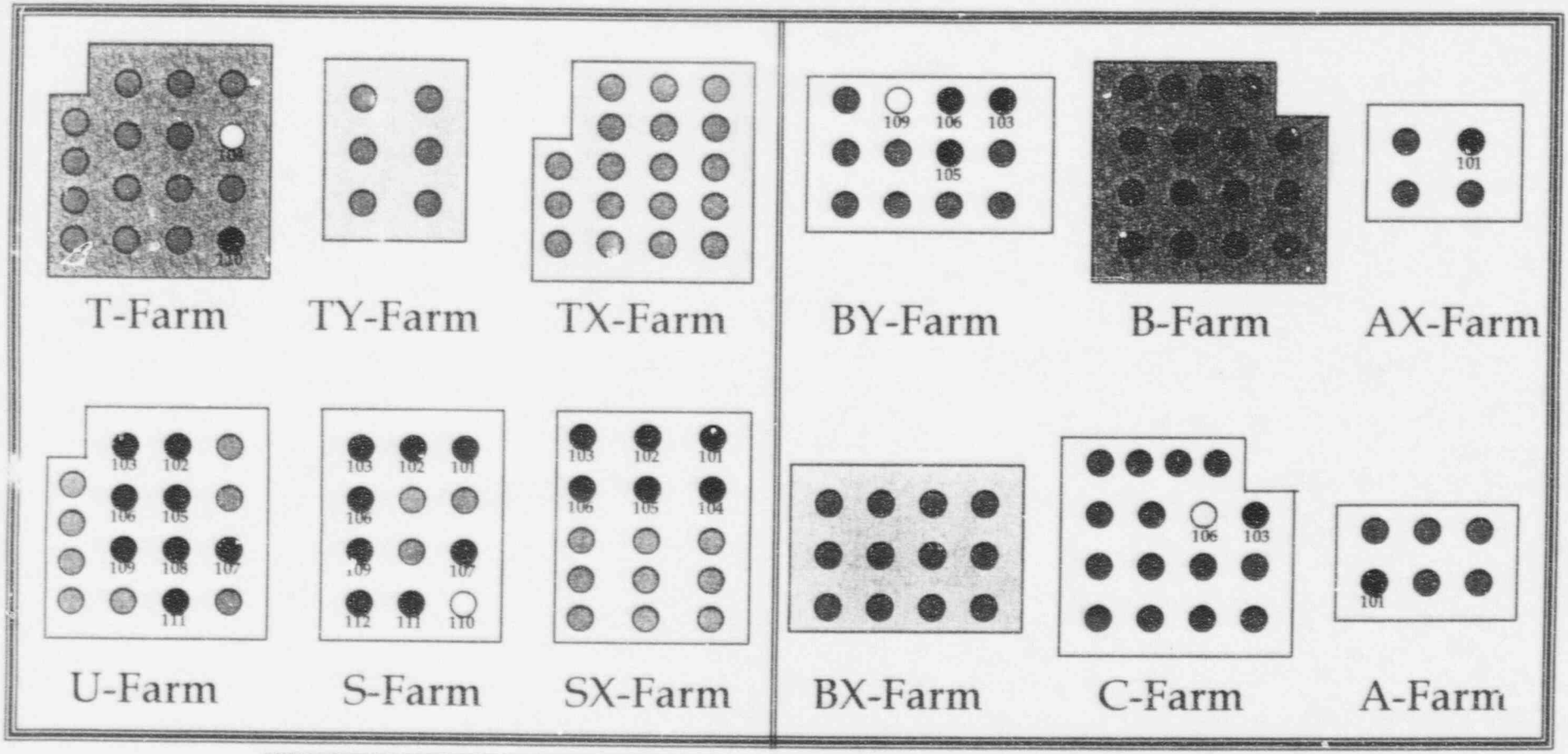
ATTACHMENT 2



SINGLE SHELL TANK FARMS

CONTROLLED, CLEAN, & STABLE

Single Sheli Tank Farms		
Controlled, Clean, & Stable		3
FY97/98	B-Farm	1
	T-Farm	1
FY99	BY-Farm	1



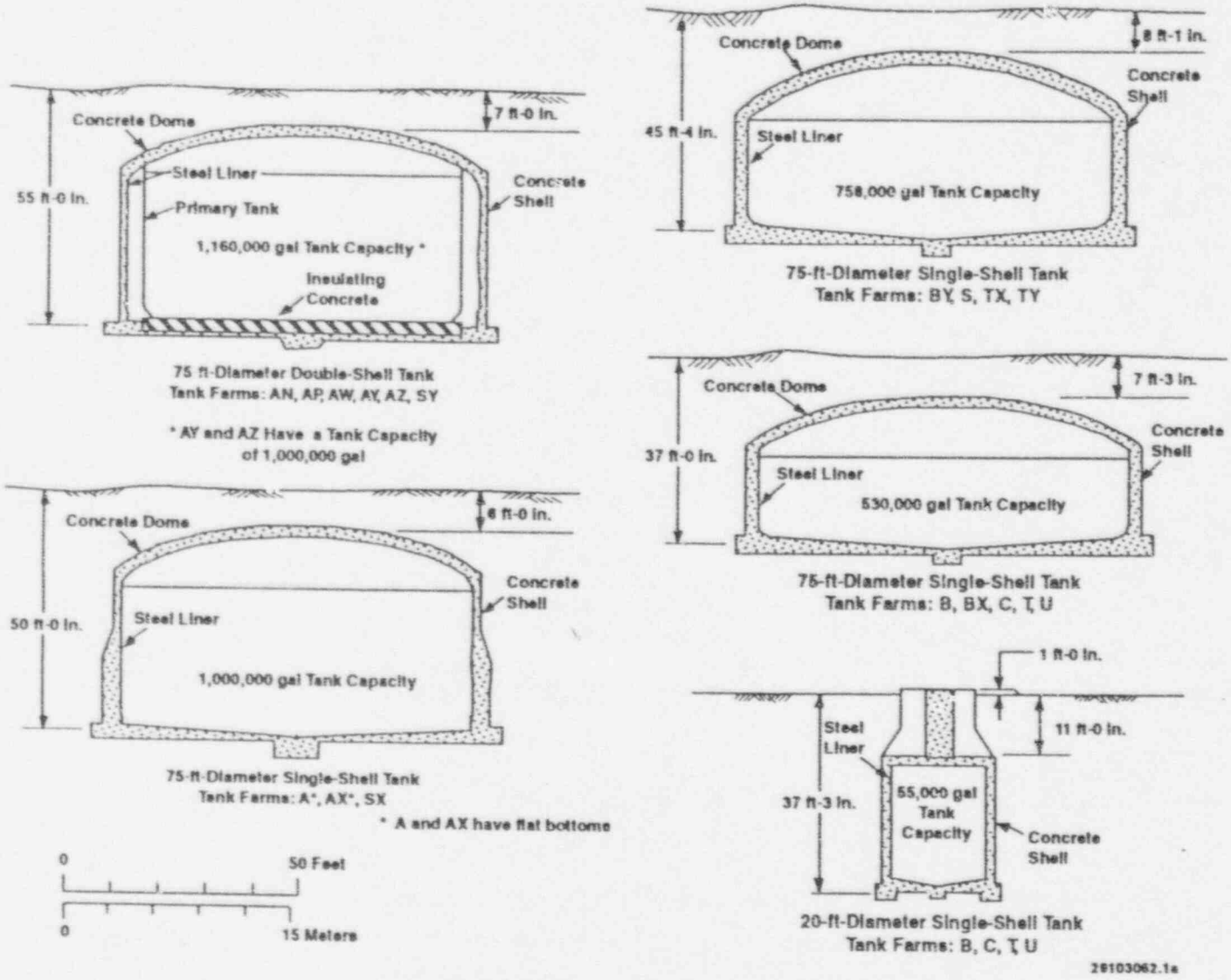


FIGURE D-1. HIGH-LEVEL WASTE TANK CONFIGURATION

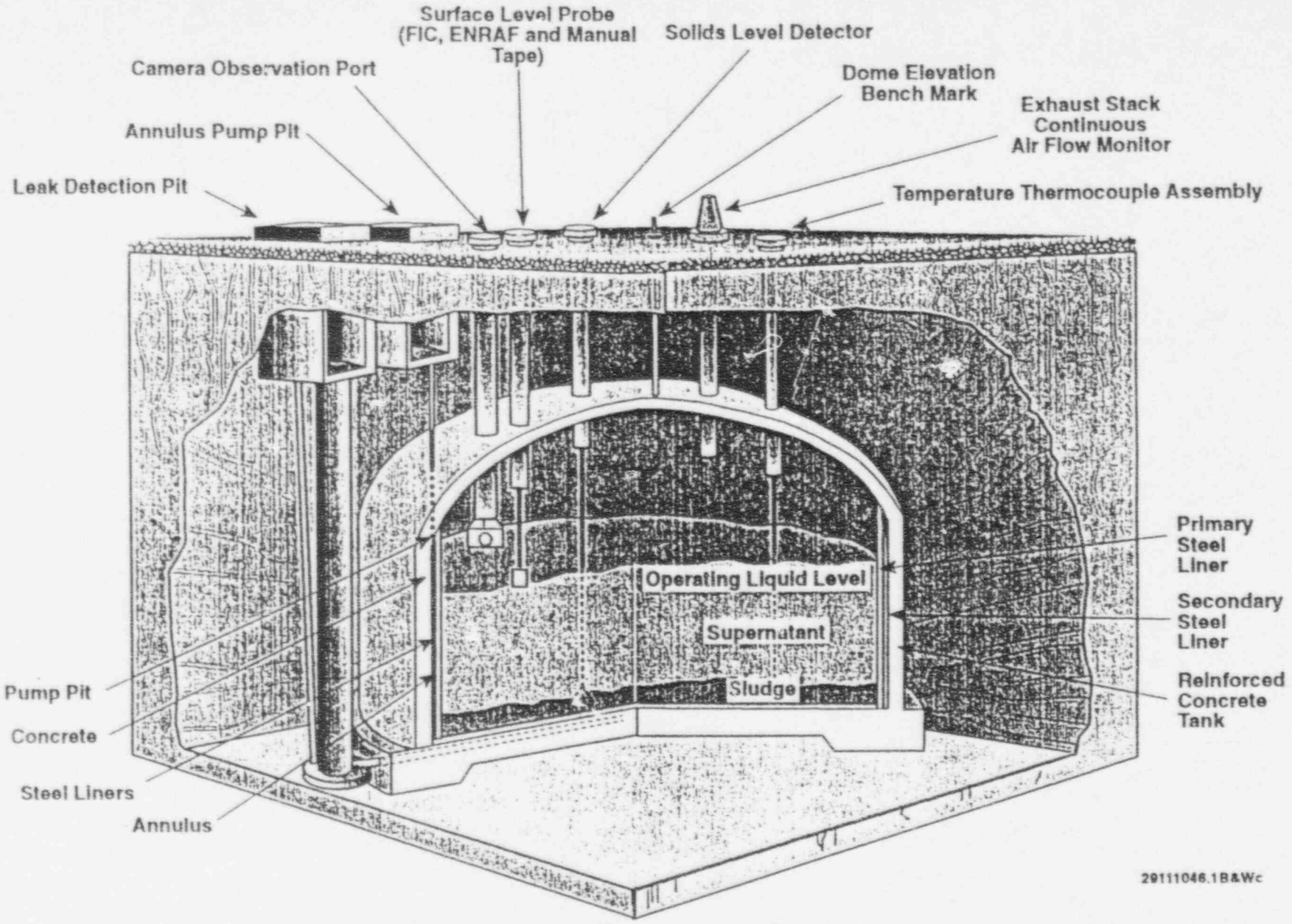


FIGURE D-2. DOUBLE-SHELL TANK INSTRUMENTATION CONFIGURATION

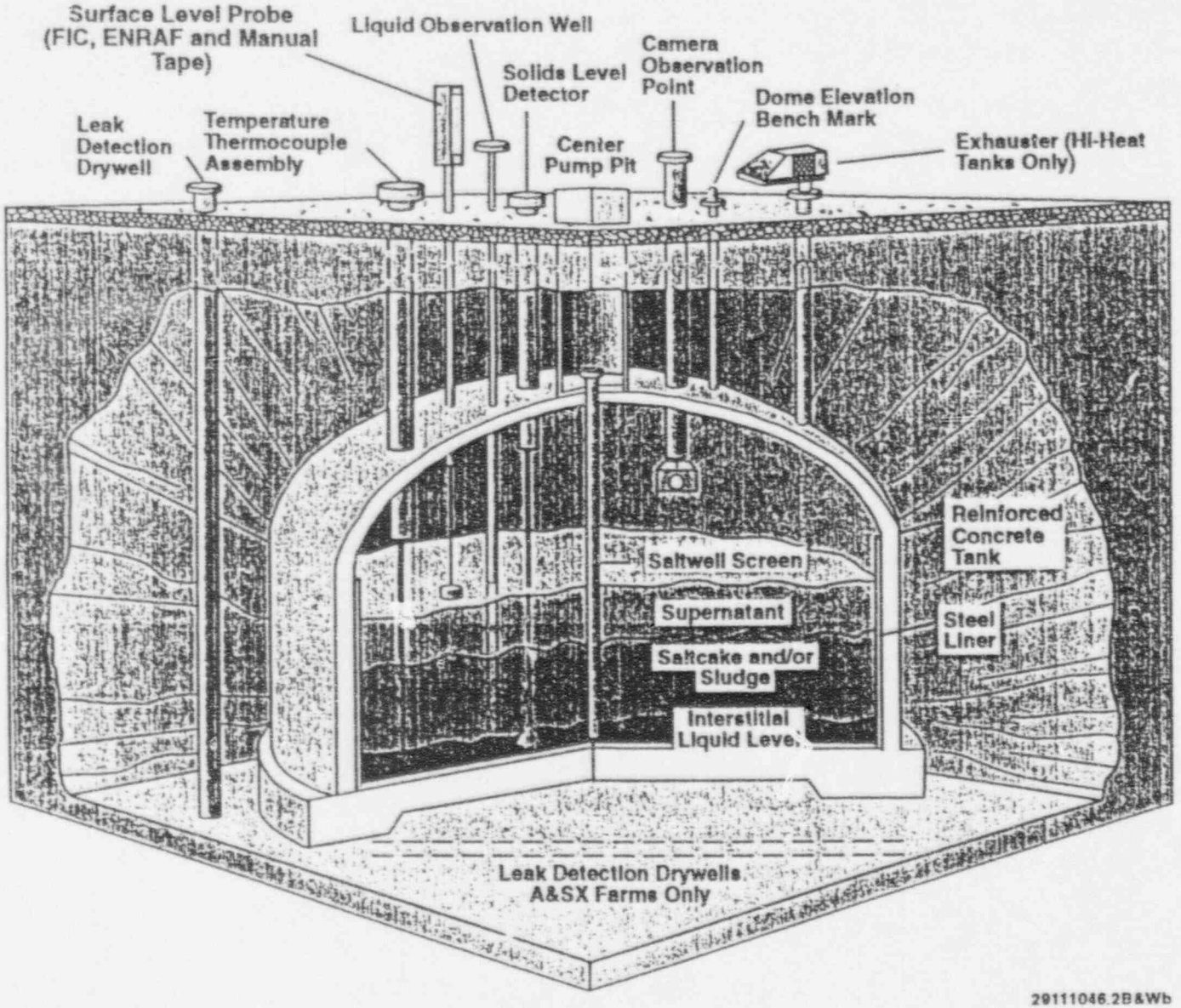
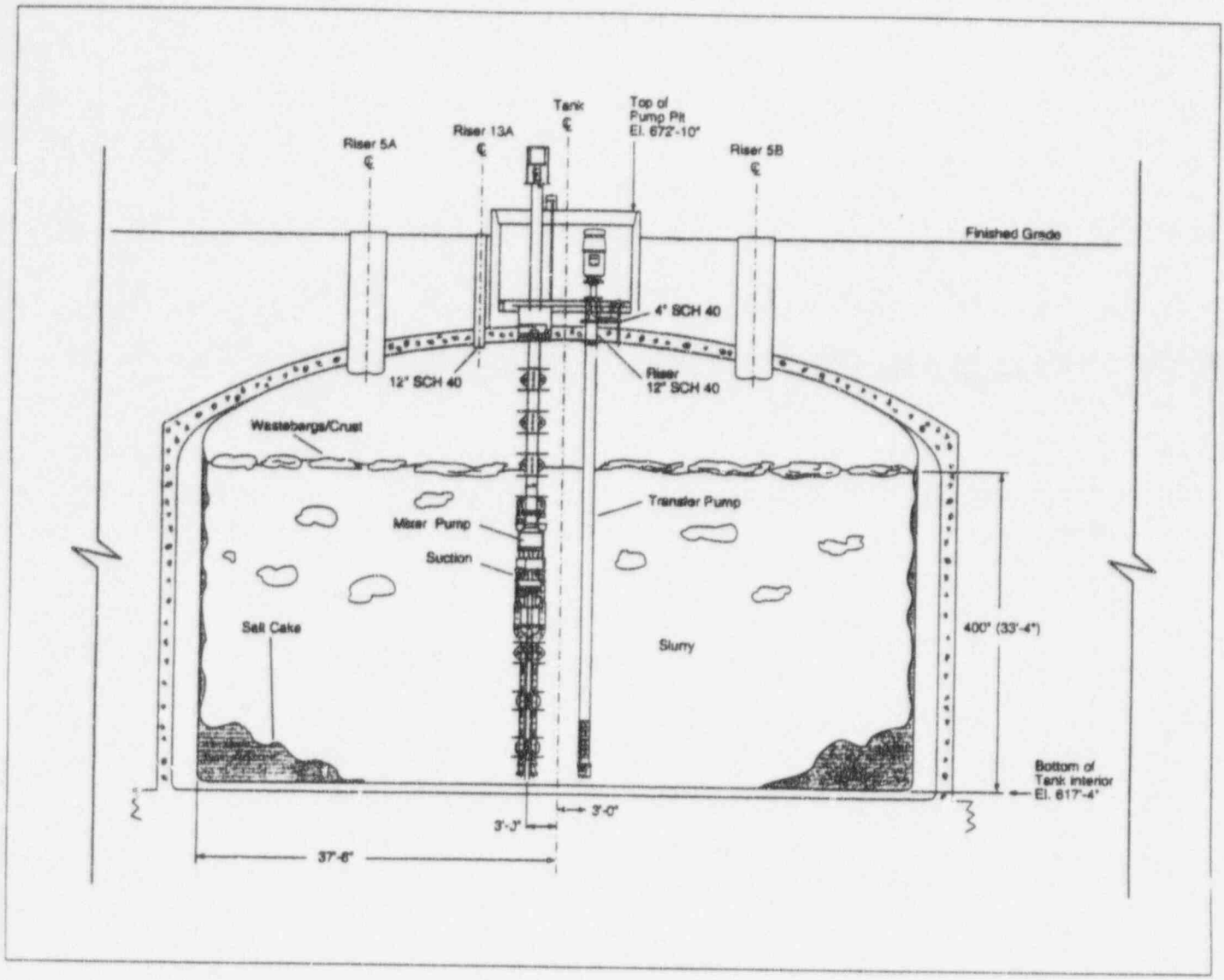
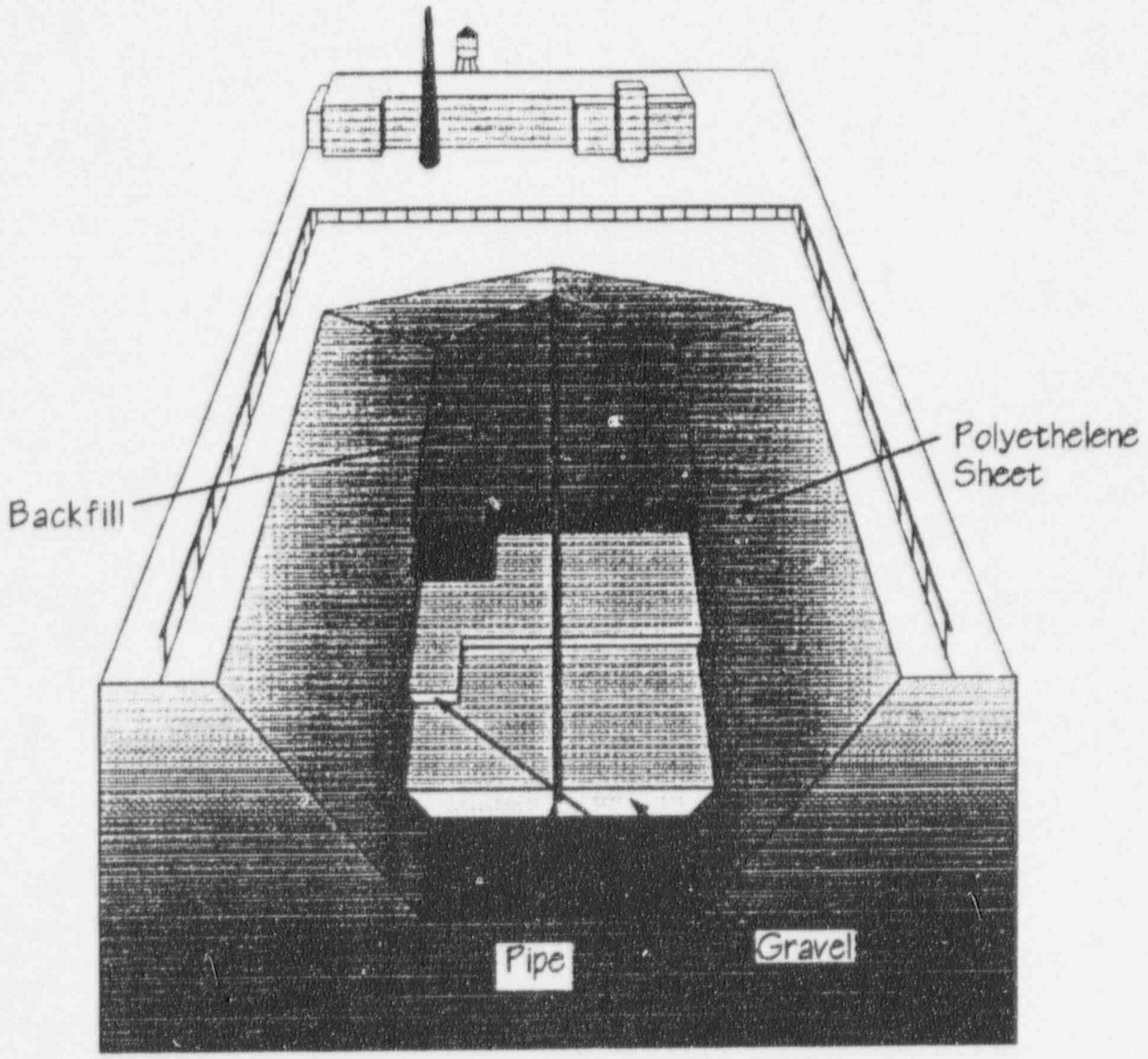


FIGURE D-3. SINGLE-SHELL TANK INSTRUMENTATION CONFIGURATION

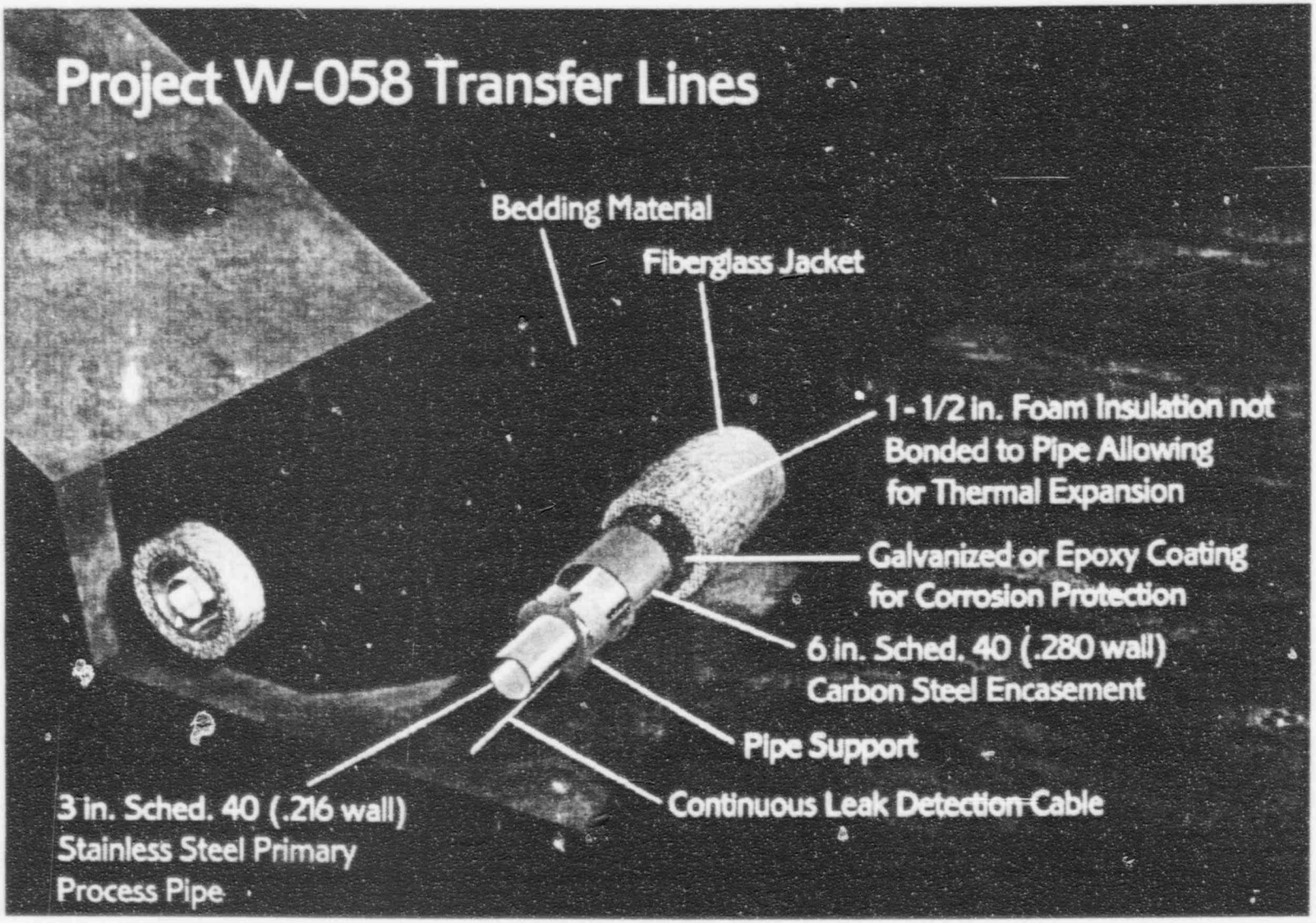


Not to Scale

Figure 3-24. Probable Tank Conditions at the Beginning of Retrieval Operations



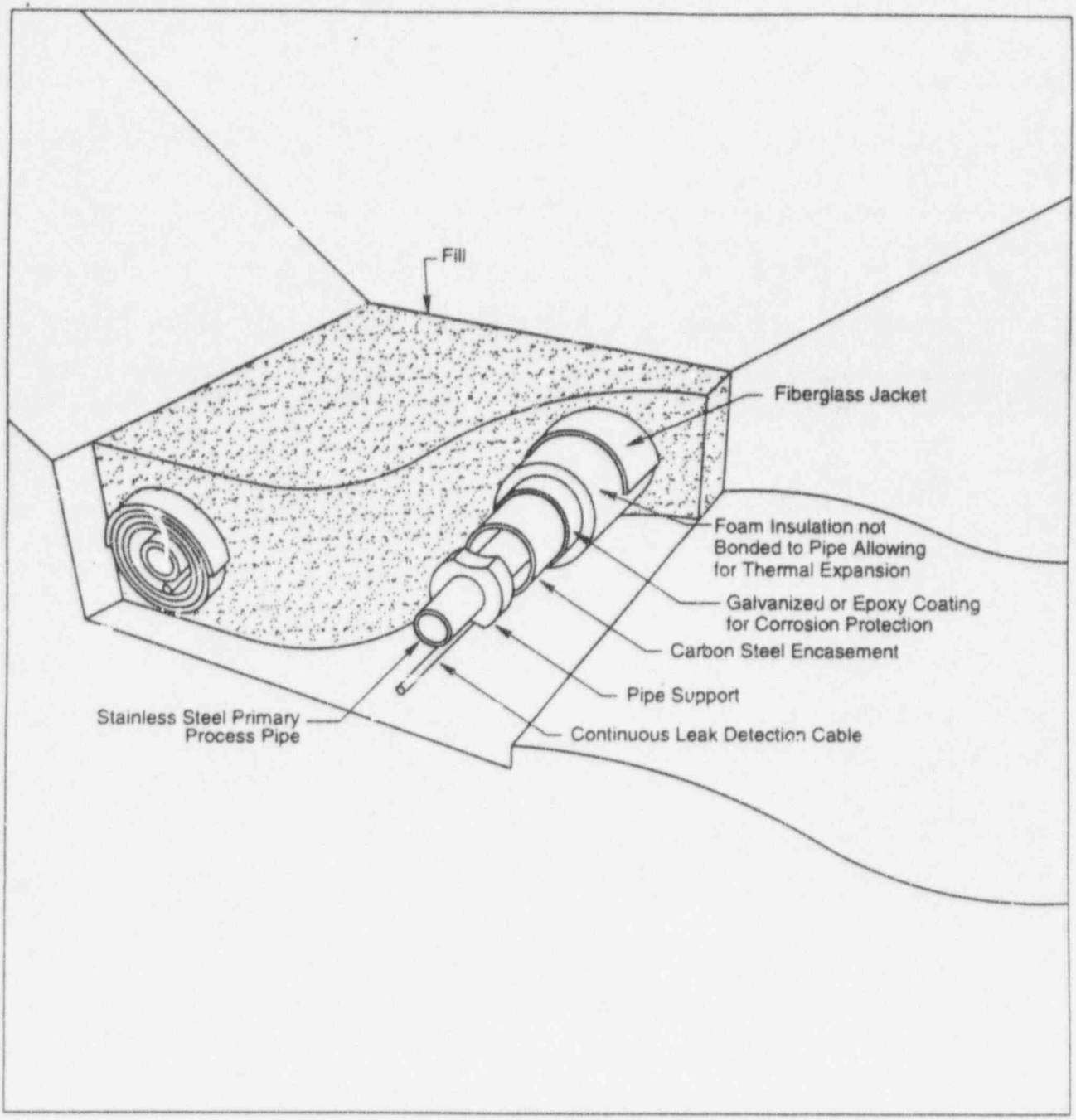
Typical Crib
Figure 5-2



No 4e

175psi transfer psi
140psi max
60 gpm

ATTACHMENT 6



Not to Scale

Cross Transfer Piping System

Figure 3-5. Cross-Section of the RCSTS