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Abstract: Reported is the study of 11 catch tanks in the 200-East area and the 7 catch tanks in the 200-West Area listed as active. The location, capacity, material of construction, annual total accumulation, annual rain intrusion, waste transfer rate, and access for chemical injection in these tanks are documented. The present and future utilization and isolation plans for the catch tanks are established.

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LETTER REPORT

CATCH TANKS INHIBITOR ADDITION 200-EAST AND 200-WEST AREAS

Prepared for

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Prepared by

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LETTER REPORT

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LETTER REPORT

CATCH TANKS INHIBITOR ADDITION 200-EAST AND 200-WEST AREAS

1.0 INTRODUCTION

The purpose of this report is to describe the current status of catch tanks and to propose actions required to protect the tanks from deterioration caused by internal corrosion. The report documents location, capacity, material of construction, annual total accumulation, annual rain intrusion, waste transfer rate, and tank content chemistry for the catch tanks. Internal corrosion inhibitor treatments and means of chemical addition are also described in this report.

1.1 SCOPE

This report is restricted to active catch tanks located in 200-East and 200-West Areas on the Hanford Site. The catch tanks that are still used to collect waste are considered as active and are listed in the Waste Tank Summary Report (Hanlon 1996). The active catch tanks in 200-East and 200-West Areas are shown in Tables 3-1 and 3-2, respectively. (All tables are in Appendix A.)

This report does not address the inactive catch tanks that are part of the Inactive Miscellaneous Underground Storage Tanks (IMUSTs) and are no longer receiving waste transfers (Hanlon 1996). The IMUST tanks are under a separate Tank Waste Remediation System (TWRS) Plant Management Plan (Dechter 1995). The tank farm IMUST catch tanks in 200-East and 200-West Areas are listed in Table 3-3 and 3-4, respectively. The lists of IMUST catch tanks are included for information only.

The catch tanks should be protected from both internal and external corrosions. The direct buried catch tanks were painted only for external corrosion protection before installation. The catch tanks are not protected by any installed active corrosion protection method such as cathodic protection. A discussion of the external corrosion protection is not in the scope of this report.

1.2 CONSTRAINTS

The design, operation, and maintenance of the catch tanks are affected by State and Federal regulations, agreements, DOE Orders, and Westinghouse requirements. However, these catch tanks were installed and in service more than 30 years ago and may not have been designed and constructed to meet all current code or regulatory body requirements. Achieving strict compliance to these requirements would be cost prohibitive, possibly involving total replacement.

The TWRS Life Management/Aging Management Program was established to assess the tank systems ability to maintain the structural stability for the duration of the TWRS mission (Shogren et al, 1994). The Double-Shell Tank (DST) Integrity Assessment Program and the Corrosion Monitoring and Corrosion Control Program are incorporated into the Life Management Program. The corrosion inhibition method and corresponding means of chemical adjustments proposed in this report are part of the TWRS Life Management Plan and are intended to extend the service life of the catch tanks while providing acceptable continued facility operation.

2.0 SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

2.1 SUMMARY

This report examines the 11 catch tanks in the 200-East Area and the 7 catch tanks in the 200-West Area listed as active in the Waste Tank Summary Report (Hanlon 1996). The location, capacity, material of construction, annual total accumulation, annual rain intrusion, waste transfer rate, and access for chemical injection in these tanks are documented. The present and future utilization and isolation plans for the catch tanks are established.

The following chemicals are considered suitable for the corrosion inhibition treatment of catch tanks accumulations:

- Dilute Sodium Nitrite Solution
- Dilute Caustic Solution
- Dearborn 545, Grace Dearborn
- Dearcide 733, Grace Dearborn

The location, capacity, material of construction, total accumulation, effluent accumulation, rain intrusion, and amount of chemicals required for treatment are summarized in Tables 3-1 and 3-2 for the 200-East and 200-West Areas catch tanks, respectively.

2.2 CONCLUSIONS

The active catch tanks with stagnant accumulations are constructed out of carbon steel, or concrete with carbon steel liner, or bare concrete. The tanks should be protected against corrosion-related degradations. These tanks are listed under section 2.3 below. Accumulations in these tanks should be stabilized at least by the addition of sodium nitrite and sodium hydroxide solutions commonly used on the Hanford Site. Compatibility and cost permitting, proprietary chemicals, described under section 3.5, should be tried as superior alternatives to the commonly used chemicals.

2.3 RECOMMENDATIONS

- Provide chemical injection, in accordance with an existing or a newly prepared operating procedure, to stabilize the tank accumulations in the following catch tanks:

  - 200-East Area: 241-A-302-A
  - 200-West Area: 241-TX-302C, 241-U-301B, 241-UX-302A, 241-S-304

- Provide a removable weather protection cover for each individual box to eliminate the problem of rain intrusions into the catch tanks.

3.0 APPROACH/EVALUATION

3.1 BACKGROUND

Catch tanks receive waste drained from diversion boxes, valve pits, diverter stations, and other DST equipment. Condensate from various systems routinely drains into some of the catch tanks. Line flush solutions also can drain into the tanks during jumper changes. Rain water intrusions through defective weathertight valve pits drain into the tanks and contribute to the annual volume accumulations of liquid in these tanks. The tanks form part of the secondary containment system and are used for interim underground storage. The function of a catch tank is to prevent any migration of wastes or accumulated liquid into the soil. Many of the catch tanks are direct buried whereas newly built tanks are housed in sub-surface concrete pits called vaults. The tanks have pumping or jet systems to pump collected liquid from the catch tanks to the DSTs through associated diversion boxes.

The volume of a catch tank is controlled administratively to a predetermined level in accordance with the tank farm operating specifications OSD-T-151-00015 (Reberger 1995). The majority of the accumulations in the catch tanks, such as condensate collection, are expected. Rain intrusions form the bulk of the unexpected accumulations. Stagnant rain water in the tanks accelerates corrosion of the tank walls and should be inhibited by the chemical treatment. The following discussions specifically relate to the treatment of rain water intrusions into the catch tanks.

3.2 CORROSION MECHANISMS

Catch tanks are subject to many of the same corrosion mechanisms that threaten Hanford Site DSTs, single-shell tanks (SST), and transfer line systems. These mechanisms include uniform corrosion, pitting corrosion, crevice corrosion, and microbiologically induced corrosion.

3.2.1 Uniform Corrosion

The term "corrosion" refers to the dissolution of a metal into an aqueous environment. The term "uniform corrosion" is used to describe a relatively uniform dissolution process across a metallic surface. The internal surface of the carbon steel catch tanks is subject to uniform corrosion as a result of rain intrusions. Additionally, the corrosion rate of carbon steel is often accelerated if the water is slightly acidic. This is of interest since rain water is typically slightly acidic due to natural reactions between the rain water and atmospheric carbon dioxide, sulfates, and nitrates.

3.2.2 Pitting Corrosion

Pits result from a highly localized corrosion process that produces small diameter holes in a solid metal structure. Given enough time, complete penetration of a component with attendant leakage is possible. Pits usually initiate at MnS (manganese sulfide) precipitates which are prevalent in carbon steels. Once the pit initiates, the localized chemistry in the pit develops in an autocatalytic manner to sustain the high corrosion rate. The severity of pitting is strongly dependent upon the identity and concentration of the aggressive ions in solution. Chloride ions are one of the most potent of these species but other halide ions are also aggressive. Many substances also can act as pitting inhibitors for carbon steels. Sulfate, nitrate, nitrite, carbonate, hydroxyl, and ammonium ions act as pitting inhibitors. There is a complex interrelationship between the concentrations of the aggressive ion and the concentration of the inhibiting species that determines at what rate pitting will actually take place.

3.2.3 Crevice Corrosion

Crevices are formed whenever a gap is present between the underlying metal and an overlaying structure which are exposed to an aqueous solution. Examples of crevice-formers are bolted flanges, gaskets, weld splatter, grinding laps, salt crusts, and the meniscus region of a vapor/liquid interface. Crevice corrosion shares many similarities with pitting. In particular, the propagation stages are believed to be alike. Consequently, environments that result in pitting are also likely to result in crevice corrosion.

3.2.4 Microbiologically Induced Corrosion

Microbiologically induced corrosion (MIC) is characterized by colonies of microorganisms (bacteria and fungi) that attach to a metallic surface. Their locally-produced metabolic products act as anodic depolarizers, cathodic depolarizers or both to produce pitting or crevice corrosion types of attack. One of the most infamous bacterium is the anaerobic sulfate-reducing bacterium (SRB) that reduces sulfate to sulfide. The sulfide is particularly damaging to carbon steels, and the SRB damage is characterized by paths of irregular pits containing a black sulfide deposit. However, there are many other types of bacteria, and often they co-exist in colonies. Control of MIC is usually accomplished through the use of biocides; such as, ozone, chlorine, hydrogen peroxide or surfactants.

3.3 CORROSION INHIBITION

The corrosion rate of iron in contact with an aqueous solution is affected by the solution pH value. The most effective way to reduce catch tank internal wall surface corrosion is through pH control. Waste stored in the catch tanks should be alkaline with a minimum pH value of 8.0 (Vail 1995). The corrosion rate decreases substantially between the pH values of 10 to 13 (Perry 1984). The prescribed pH limitation for the transferred waste in the Project W-314, "Tank Farm Restoration and Safe Operations" is the range of 11 to 14 (Hesketh et al, 1995 Draft).

The catch tanks are required to hold flushing fluid in addition to the liquid waste. Current practice is to use raw or treated water for transfer lines flushing purposes. The treated water generally has a pH value of 9 to 10 at the source (Tucker 1995). Raw water used for flushing transfer lines after each waste transfer typically has a pH value lower than 7 and needs chemical additions to increase its pH value for corrosion control. Sodium hydroxide and sodium nitrite can be added for this purpose. The corrosivity decision rules developed under the Tank Farm Waste Compatibility Program (Fowler 1995) requires that 0.01 M hydroxide ion and 0.011 M nitrite ion minimum concentrations be maintained for dilute solutions for $NO_3 \leq 1.0$ M at normal operating temperature $\leq$ 100 °C (212 °F) to inhibit general corrosion and are stipulated in DST operating specification documents (Harris 1995, Schofield 1994).

3.4 CHEMICAL ADJUSTMENT SYSTEM

Corrosion control of tank walls requires maintaining chemical properties of catch tanks accumulations within acceptable limits specified in respective operating procedures. Chemical adjustment solutions are prepared and the required volume of adjustment solution is added directly into the catch tank. The two chemical adjustment compounds commonly used on the Hanford Site are as follows:

- Dilute Sodium Nitrite Solution
- Dilute Caustic Solution

Control of the waste chemical properties before a transfer is performed in accordance with the corresponding operating procedure. Concurrent with the transfer of waste to the tank farms, the waste is treated, as necessary, with caustic soda (NaOH) and sodium nitrite ($NaNO_2$) to meet the DST waste composition specifications.

An analysis has been performed to determine the required volumes of sodium hydroxide and sodium nitrite solutions to be added to catch tank accumulations for corrosion inhibition purpose. The criteria of the desired pH values and hydroxide and nitrite ion concentrations, as detailed in section 3.3 have been used in the calculations. The untreated accumulations are considered to be slightly acidic rain water. The analysis is attached under Appendix D. The volumes of sodium hydroxide and sodium nitrite solutions required for the catch tanks detailed under section 2.3 are tabulated in Tables 3-1 and 3-2.

3.5 Proprietary Chemicals

The undermentioned proprietary chemicals are considered suitable, by the manufacturer of the chemicals, for treatment of accumulations in the catch tanks when the principal constituent is rain water. Material safety data sheets for these chemicals are in Appendix C. Reference to the specific commercial products does not constitute or imply their recommendation in this report. Further study to evaluate the compatibility of these chemicals with respect to the primary tank contents needs to be evaluated before any treatment with these chemicals is undertaken. In addition, a life cycle cost analysis and an alternative generation and analysis are required to be performed before a formal recommendation can be made.

3.5.1 Dearborn 545

This chemical compound is a molybdate formulation combined with an organic component morpholine which is an excellent buffering agent. Morpholine has the ability to neutralize carbonic acid caused by carbon dioxide being absorbed into stagnant water exposed to ambient conditions. It is superior to strong alkali like sodium hydroxide with elevated pH level that sometimes causes caustic attack and embrittlement on carbon steel. The molybdate in Dearborn 545 is a powerful anodic corrosion and pitting inhibitor that forms a protective molybdate oxide film over metal surface. The recommended dose is 1 gal for every 100 gal of water treated. For the catch tanks detailed under section 2.3, the volumes of Dearborn 545 to be added for corrosion inhibition purposes are tabulated in Tables 3-1 and 3-2.

3.5.2 Dearcide 733

Dearcide 733 is a 45% glutaraldehyde based microbiological control agent, nonfoaming, noncorrosive, and compatible with corrosion inhibitors and surfacants. The compound forms a crosslink with primary amines present in the cell walls of all bacteria, fungus, and algae. The crosslinks alter the permeability of the cell wall and, thus, prevent the metabolic activities of the microorganisms. This compound has a broad spectrum capability on all species of bacteria and controls colony growth and microbiological attack on the system metallurgy. The compound works on low doses, is effective over a wide pH range, and is not affected by the presence of organics and hydrogen sulfides. The recommended dose is 1 gal for every 1,000 gal of water treated.

3.6 200-EAST AREA FACILITIES DESCRIPTIONS

There are 11 active catch tanks in the 200-East Areas (Hanlon 1996): 7 receive drainage from waste transfer line diversion boxes and 4 are used as temporary storage of liquid waste during transfer from one tank to another. The location, configuration, accumulation, access for chemical injection, and future utilization/ isolation plan for these tanks are described below and summarized in Table 3-1.

3.6.1 241-A-302A Catch Tank

The 241-A-302A catch tank is located within the A Farm at the south side of the PUREX Plant, near the east end, in the 200-East Area. The tank was installed in 1954 and receives drainage from the 241-A-151 diversion box. The tank is direct buried and not mechanically ventilated.

The catch tank consists of a horizontal cylindrical vessel made of carbon steel and a pump pit above the tank (drawing H-2-71644). (All drawings are located in Appendix E.) The general configuration of the catch tank is shown in Figure 3-1. (All figures are located in Appendix B.) The concrete pump pit inside dimensions are 1.52 m long by 1.52 m wide by 1.32 m deep (5 ft by 5 ft by 4 ft 4 in.). The pump pit has a coverblock on top. The catch tank is made of 14.29 mm (9/16 in.) carbon steel all welded, 2.90 m (9 ft 6 in.) inside diameter and 5.03 m (16 ft 6 in.) long. The interior of the tank is unpainted whereas the exterior has a coal-tar enamel coating.

The catch tank has a maximum holding capacity of 31 941 L (8,438 gal), but is administratively controlled to a volume of 25 552 L (6,750 gal) (Ryan 1994). The total annual accumulation comprising only of rain intrusion is estimated to be 1 211 L (320 gal) (Tiffany 1995). The catch tank is provided with a submersible pump and pump out capabilities to the 241-A-151 diversion box.

Chemicals can be injected directly into the catch tank via a 6 in. riser that is flanged at grade level (drawing H-2-71644). Alternatively, the chemicals can be injected into the 241-A-151 diversion box through the coverblock opening. The diversion box drains into the catch tank. The carbon steel tank should be protected against corrosion related degradations. Therefore, the tank content is recommended for chemical adjustment.

Secondary low level waste from PUREX is transferred to the 241-AW Tank Farm via the 241-A-151 diversion box which drains into the catch tank 241-A-302A. Deactivation of PUREX will be completed by the end of the FY 1997. It is assumed that all waste transfers from PUREX to the DST system will cease once deactivation has been completed (Strode 1994). There is no plan to utilize the 241-A-302A catch tank for future waste transfer in support of SST/DST retrieval.

3.6.2 241-ER-311 Catch Tank

The 241-ER-311 catch tank is located south and slightly west of B Plant, in the 200-East Area. The tank was installed in 1954 and receives drainage from the 241-ER-151 and 241-ER-152 diversion boxes. The tank is direct buried and not mechanically ventilated.

The catch tank consists of a horizontal cylindrical vessel made of stainless steel and a pump pit above the tank (drawings H-2-71670 and H-2-2542). The general configuration of the catch tank is shown in Figure 3-2. The concrete pump pit inside dimensions are 1.52 m long by 1.52 m wide by 1.32 m deep (5 ft by 5 ft by 4 ft 4 in.). The pump pit has a coverblock on top. The catch tank is made of stainless steel all welded, 2.74 m (9 ft) inside diameter and 10.97 m (36 ft) long. The interior of the tank is unpainted whereas the exterior has a coal-tar enamel coating.

The catch tank has a maximum holding capacity of 66 934 L (17,682 gal), but is controlled administratively to a volume of 53 545 L (14,145 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 6 435 L (1,700 gal) of which 5 110 L (1,350 gal) can be attributed to rain intrusion (Tiffany 1995). The catch tank is provided with a submersible pump and pump out capabilities to the 241-ER-151 diversion box.

Chemicals can be injected directly into the catch tank via a 4 in. riser that is flanged at grade level (drawing H-2-71670). Alternatively, the chemicals can be injected into the 241-ER-151 diversion box through the coverblock opening (drawing H-2-43036). The diversion box drains into the catch tank. However, chemical adjustment of tank content is not recommended as the tank is constructed with stainless steel.

The catch tank receives drainage from the 241-ER-151 and 241-ER-152 diversion boxes which are connected to the salt well pumping and the present cross-site transfer lines. The B Farm pumping is scheduled to be completed by FY 2000 (Strode 1994). The project W-058 cross-site transfer system will bypass the diversion boxes upon completion in FY 1997. The catch tank will become inactive beyond FY 2000.

3.6.3 241-AX-152 Catch Tank

The 241-AX-152 catch tank is located within the AX Farm, between the 241-AY and 241-AX Tank Farms, in the 200-East Area. The tank was installed in 1962 and is used as a drainage receiver for the 241-A Tank Farm complex. The tank receives drainage from A- and B- diverter cell floor drains, AY-501 valve pit floor drain, 241-AX-155 diversion box floor drain, PUREX transfer line V-714 encasement drain, 110 seal loop drain, K1-5-1 deentrainers, and 702-A seal pot overflow line. The catch tank is connected to the 702-A mechanical ventilation system.

The catch tank is a rectangular concrete vault with two rectangular pits, a pump pit, and a diverter cell on top (drawing H-2-44683). The general configuration of the catch tank is shown in Figure 3-3. The catch tank concrete walls are lined with 3.18 mm (1/8 in.), stainless steel. The pump pit inside dimensions are 1.83 m long by 1.83 m wide by 2.41 m deep (6 ft by 6 ft by 7 ft 11 in.). The diverter pit inside dimensions are 1.63 m long by 2.44 m wide by 3.81 m deep (5 ft 4 in. by 8 ft by 12 ft 6 in.). Both pits have coverblocks on top.

The catch tank has a maximum holding capacity of 41 640 L (11,000 gal), but is controlled administratively to a volume of 33 312 L (8,800 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 31 794 L (8,400 gal). The exact amount of rain intrusions is not available (Tiffany 1995). The accumulated waste from the catch tank is pumped back through the diverters to the AY/AZ farms. The catch tank is equipped with a water jet for moving accumulated waste solutions to an underground primary storage tank.

The chemical injection access into the catch tank can be made through the 1-in. liquid level access above grade (drawing H-2-44683). However, chemical adjustment of tank content is not recommended as the concrete tank wall is lined with stainless steel.

The catch tank will be receiving only the floor drain from the 241-AX-155 diversion box after completion of the PUREX terminal cleanout and the ventilation upgrade under Project W-030, "Tank Farm Ventilation Upgrades," scheduled to be completed in FY 1997. Therefore, the need for this catch tank is dependent on the use of the 241-AX-155 diversion box in the future.

3.6.4 241-AZ-151 Catch Tank

The 241-AZ-151 catch tank is located within the AZ Farm, west of the 241-AZ-152 sluice transfer box, in the 200-East Area. The tank receives drainage from the 241-AZ-101 and -102 vent header seal loops, AZ Tank Farm leak detection pits, 241-AZ-801A instrumentation building floor drain, and 241-AZ-152 sluicing transfer box floor drain. The tank is not mechanically ventilated.

The catch tank concrete vault is L-shaped, consists of a pump pit on the upper section and a reservoir in the lower section (drawing H-2-68316). The general configuration of the catch tank is shown in Figure 3-4. The pump pit inside dimensions are 1.83 m long by 1.83 m wide by 3.33 m deep (6 ft by 6 ft by 10 ft 11 in.). The reservoir area is 7.32 m long by 1.83 m wide by 3.35 m deep (24 ft by 6 ft by 11 ft). The concrete wall is 0.30 m (12 in.) thick all around. The pump pit has a coverblock on top. The inside surfaces of the lower section are lined with 3.4 mm (10 gauge) carbon steel. The reservoir floor slopes towards a sump located at one end.

The catch tank has a maximum holding capacity of 45 046 L (11,900 gal), but is controlled administratively to a volume of 36 037 L (9520 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 119 228 L (31,500 gal), of which 5 678 L (1,500 gal) can be attributed to rain intrusion (Tiffany 1995). The 241-AZ-151 transfer pump intake extends down into the sump and the catch tank is capable of being pumped below floor level.

The chemical injection access into the catch tank can be made by opening the monitor plug on the coverblock (drawing H-2-68316). The injection drains, through the pump pit, into the catch tank located below the pit. Although the concrete tank wall is lined with carbon steel, the liquid in the tank is pumped out at regular intervals. Therefore, chemical adjustment of tank content is not recommended.

The catch tank will continue to receive drainage from AZ Tank Farm. In addition, the tank will receive the waste condensate from the upgraded ventilation system under project W-030.

3.6.5 241-AZ-154 Catch Tank

The 241-AZ-154 catch tank is located within the AZ Farm, south of tank 241-AZ-101, and west of Canton Avenue, in the 200-East Area. The tank is used to collect condensate from the 241-AY and 241-AZ in-tank steam heating coils. The coils have not been in operation for years and daily liquid level monitoring in the 241-AZ-154 catch tank reveals zero reading. The tank is not mechanically ventilated.

The condensate catch tank vault is rectangular box-shaped and consists of two sections (drawing H-2-68315). The general configuration of the catch tank is shown in Figure 3-5. The upper area is the pump pit containing a transfer pump and the lower area serves as the holding tank. The pump pit inside dimensions are 1.52 m long by 1.52 m wide by 2.30 m deep (5 ft by 5 ft by 7 ft 6-1/2 in.). The reservoir area is 1.52 m long by 1.52 m wide by 1.52 m deep (5 ft by 5 ft by 5 ft). The concrete wall is 0.46 m (18 in.) thick all around. The pump pit has a coverblock on top. The inside surfaces of the lower section are lined with 3.4 mm

(10 gauge) carbon steel. The reservoir floor slopes towards a sump located at one end.

The catch tank has a maximum holding capacity of 3 290 L (869 gal), but is controlled administratively to a volume of 2 631 L (695 gal) (Ryan 1994). The condensate accumulation and rain intrusion are considered nonexisting (Tiffany 1995). The 241-AZ-154 transfer pump intake extends down into the sump and the catch tank is capable of being pumped below floor level. The accumulation is arranged for being pumped from the 241-AZ-154 catch tank to the 241-A-417 catch tank.

The chemical injection access into the catch tank can be made by opening the monitor plug on the coverblock (drawing H-2-68315). The injection drains, through the pump pit, into the catch tank located below the pit. Although the concrete tank wall is lined with carbon steel, there is no accumulation in the tank. Therefore, chemical adjustment of tank content is not recommended.

The 241-AZ-151 steam condensate pump pit and the catch tank are scheduled for isolation upon completion of the project W-030 in 1996 (Apolinario 1996).

3.6.6 244-BX-TK/SMP DCRT Catch Tank

The 244-BX DCRT catch station, constructed in 1981, is located east of tank 241-BX-102, within the BX Complex. The DCRT is used in salt well pumping from the 241-B, 241-BX, and 241-BY Tank Farm complexes. The catch tank is connected to the 244-BX DCRT mechanical ventilation system. The fresh air intake is normally seepage through risers and transfer lines.

The 244-BX DCRT catch station consists of three sections: a tank vault, a pump pit, and a filter pit. The tank vault is a rectangular concrete vault with two rectangular pits, a pump pit, and a filter pit on top. The general configuration of the catch tank is shown in Figure 3-6. The tank vault inside dimensions are 4.88 m long by 13.41 m wide by 4.88 m high (16 ft by 44 ft by 16 ft). The pump pit inside dimensions are 5.18 m long by 5.79 m wide by 3.51 m deep (17 ft by 19 ft by 11 ft 6 in.). The filter pit inside dimensions are 3.35 m long by 5.18 m wide by 3.51 m deep (11 ft by 17 ft by 11 ft 6 in.). Both pits have coverblocks on top. The 244-BX DCRT catch tank located in the vault is a horizontal, cylindrical vessel with convex ends. The dimensions of the cylindrical portion of the tank are 3.66 m (12 ft) outside diameter by 10.67 m (35 ft) long. The 0.91 m (3 ft) deep convex heads on each end of the tank give the tank a total length of 12.5 m (41 ft) at the axis. The tank is made of 6.4 mm (1/4 in.) carbon steel.

The catch tank has a maximum holding capacity of 117 347 L (31,000 gal). However, the maximum operating capacity is limited to 98 420 L (26,000 gal) (Ryan 1994). The accumulation in the catch tank is caused only through planned waste transfers with no evidence of rain intrusion (Tiffany 1995). The Transfer Pump P-244-BX-1, located inside the catch tank TK-244-BX, transfers waste from the DCRT to the DSTs through the 241-ER-151 diversion box.

The chemical injection can be made by removing the flush pit cover and discharging the chemical into the pit. This will ensure low dose exposure. The flush pit drains into the catch tank. Although the tank is constructed with carbon steel, all the accumulations are part of planned transfers. Therefore, chemical adjustment of tank content is not recommended.

The DCRT catch tank is part of the salt well pumping activities involving the tank farms described earlier in this section. The pumping is scheduled to be completed by FY 2000 (Strode 1994) after which time the need for the DCRT will not exist.

3.6.7 244-A-TK/SMP DCRT Catch Tank

The 244-A DCRT is the tank vault at the 244-A lift station located within the A Complex, south of C Farm, and west of the 241-AN Tank Farm, in the 200-East Area. The vault was constructed in 1975 and provides interim storage for waste leakage from the 241-ER-153 diversion box and the 241-A-A and 241-A-B valve pits. 241-ER-153 receives waste routed through the 241-ER-151 and 241-ER-152 diversion boxes which includes 200-West Area cross-site waste; 241-B, 241-BX, 241-BY, and 241-C SST waste; and waste transferred from B Plant. The project

W-058 cross-site transfer system is proposed to connect the 241-SY Tank Farm at 241-SY-A and -B valve pits in 200-West Area with 200-East Area tank farms at the 244-A Lift station (Kalia 1994). The catch tank is connected to the 244-A DCRT mechanical ventilation system.

The DCRT lift station consists of an underground concrete structure that contains a filter pit, pump pit, and a vault in which the catch tank TK-244-A is installed. The tank is made of stainless steel. The tank vault is a cylindrical concrete structure with two rectangular pits, a pump pit, and a filter pit on top (drawing H-2-38203). The general configuration of the catch tank is shown in Figure 3-7. The tank vault inside dimensions are 5.2 m diameter by 8.3 m length (17.1 ft by 27.23 ft) and is lined with 6.4 mm (1/4 in.) carbon steel. The pump pit inside dimensions are 4.6 m long by 4.0 m wide by 3.0 m deep (15.1 ft by 13.1 ft by 9.8 ft). The filter pit inside dimensions are 3.4 m long by 3.4 m wide by 1.7 m deep (11.2 ft by 11.2 ft by 5.6 ft). Both pits have coverblocks on top.

The catch tank has a holding capacity of 61 620 L (16,280 gal) (Ryan 1994). The total annual accumulation consisting of process drain, and rain intrusion is estimated to be 10 598 L (2,800 gal) of which 4 921 L (1,300 gal) can be attributed to rain intrusion (Tiffany 1995). The waste transfer pump P-244-A-1 is located inside the catch tank and has pump out capabilities to the 241-A-A and -B valve pits.

The chemical injection can be made by removing the instrument opening cover on the 6-in. square opening on the filter pit coverblock (drawing H-2-38206). This will ensure low dose exposure. The filter pit drains into the catch tank. Chemical adjustment of tank content is not recommended as the tank is constructed with stainless steel.

244-A DCRT is an integral part of the current DST operations and is expected to play a major role in future SST and DST retrieval. The lift station is the termination point of the new project W-058 cross site transfer line and is expected to operate until the year 2030 supporting TWRS mission. At present, there is no upgrade plan for the lift station and the catch tank.

3.6.8 204-AR TK-1 Catch Tank

The catch tank is part of the 204-AR Waste Unloading Facility, within the AY Farm, in the 200-East Area and is installed in a tank vault beneath the floor of the 204-AR unloading area. The stainless steel tank was constructed in 1981 and is used for catching potential railcar leaks through the floor drain system. The tank is mechanically ventilated by the facility ventilation system (drawing H-2-70705). The general configuration of the catch tank is shown in Figure 3-8.

The catch tank has a maximum holding capacity of 5 678 L (1,500 gal), but is controlled administratively to a volume of 4 542 L (1,200 gal) (Ryan 1994). The catch tank is routinely used for 204-AR operations, located indoors, and does not have any rain intrusion. Catch tank accumulations are pumped by either transfer pump P1-A or P1-B through the 241-A-A valve pit to any DST on a batch basis.

The facility has the system for adding chemicals into the catch tank in accordance to operating procedure TO-290-052, "Internal Transfers in 204-AR." Chemical adjustment of tank content is not recommended as the tank is constructed with stainless steel.

The catch tank will continue to be in use during the operation of the 204-AR Waste Unloading Facility in the 200-East Area. There is no isolation plan for the tank.

3.6.9 241-A-417 Catch Tank

The 241-A-417 catch tank is located, within the A Farm, south of 241-AX Tank Farm, in the 200-East Area. The tank is used as a receiving vessel for 241-A complex condensate and drainage system. The tank receives process condensate from 702-A and three surface condensers (E-413, E-414, E-415) along with the condenser seal loops drains, the VH extension seal loop drain, and the 241-AX-501 valve pit drain. The 241-AY/AZ steam coil condensate from

241-AZ-154 steam condensate pit is also routed to the 241-A-417 tank. The tank is serviced by the 702-A ventilation system.

The catch tank is a cylindrical concrete vault with two rectangular pits, a pump pit, and a valve pit on top (drawing H-2-56800). An all welded 9.52 mm (3/8 in.) carbon steel liner, 7.47 m (24 ft 6-1/4 in.) in diameter and 4.17 m (13 ft 8 in.) long, extends to within 12.70 cm (5 in.) of the vault roof. The pump pit inside dimensions are 4.88 m long by 2.44 m wide by 3.66 m deep (16 ft by 8 ft by 12 ft). The valve pit inside dimensions are 1.63 m long by 2.44 m wide by 3.66 m deep (5 ft 4 in. by 8 ft by 12 ft). Both pits have coverblocks on top.

The accumulation from 241-A-417 is pumped to one of the 241-AY or 241-AZ tanks by one of the two pumps located in the pump pit in accordance with operating procedure TO-200-464. The catch tank has a maximum capacity of 167 315 L (44,200 gal) (Ryan 1994). The total annual accumulation is calculated to be 643 450 L (170,000 gal) (Tiffany 1995).

The chemical injection access into the catch tank can be made by opening the monitor plug on the coverblock on top of the pump pit (drawing H-2-56800). The injection drains, through the pump pit, into the catch tank located below the pit. Although the concrete tank wall is lined with carbon steel, the liquid in the tank is pumped out at regular intervals. Therefore, chemical adjustment of tank content is not recommended.

The catch tank retains condensate mostly from the 241-A-702 ventilation system for the aging-waste tanks, which will cease to flow upon completion of project W-030 in FY 1997. The 241-AY/AZ steam coils currently are not operational and there is no future plan to use them. However, the tank will remain in service for the 241-AX-501 valve pit drain with greatly reduced accumulation rate.

3.6.10 241-A-350 DCRT Catch Tank

The 241-A 350 is the catch tank installed in the tank vault at the 241-A-350 DCRT lift station. The lift station is located within the A Farm, southeast of tank 241-A-106, in the 241-A Tank Farm, in the 200-East Area. The lift station was built in 1978 and receives drainage from the 241-A Tank Farm complex through 241-A-A and -B valve pits and 241-A cleanout boxes. The lift station also provides for routing 207-A retention basin waste to tank 241-AW-102, the 242-A Evaporator feed tank, if the waste is out of specification for B Pond discharge limits. The tank is interconnected to the vent header for the 241-A Tank Farm. The vent header is in turn connected to a portable exhauster.

The lift station has a pump pit over a vault containing the 241-A-350 catch tank (drawing H-2-70318). The general configuration of the catch tank is shown in Figure 3-9. The vault consists of a 2.44 m (8 ft) diameter, 4.88 m (16 ft) high corrugated steel caisson installed on concrete floor. The pump pit inside dimensions are 2.74 m long by 2.74 m wide by 2.84 m deep (9 ft by 9 ft by 9 ft 4 in.) with a coverblock on top. The stainless steel catch tank is vertical with an inside diameter of 1.35 m (4 ft 5-1/4 in.).

The catch tank has a holding capacity of 2 937 L (776 gal) (Ryan 1994). The total annual accumulation consisting primarily of rain intrusions is estimated to be 2 801 L (740 gal) (Tiffany 1995). The waste transfer pump P-350-1 is located inside the catch tank and has pump out capabilities to the 241-A-350 tank.

The chemical injection can be made through the 1-in. diameter raw water line hose connection provided above grade. The line connects to a spray ring with access into the catch tank. No chemical adjustment of tank content is recommended as the tank is constructed with stainless steel.

The catch tank will continue to receive 241-A Tank Farm complex drainage through the 241-A-A and -B valve pits. The waste from the 204-AR catch tank accumulations is sent through 241-A-A valve pit via line LIQW-702. The facilities, S-Plant, T-Plant, 300 Area, and the Waste Sampling and Characterization Facility, will continue to transfer waste through the 241-A-A valve pit via the 204-AR (Hesketh et al, 1995 Draft).

3.6.11 244-CR-003-TK/SMP DCRT Catch Tank

The 244-CR-TK 003 is the catch tank, installed in the tank vault at the 244-CR-DCRT. The vault was built in 1952 and is located within the C Farm, south of the 241-C Tank Farm, and north of 7th street, in the 200-East Area. The tank is used as a DCRT for the interim storage of salt well waste from 241-C Tank Farm.

The DCRT is part of a two-level multi-cell underground concrete structure that houses four underground tanks (CR-011, CR-001, CR-002, and CR-003) in separate vaults. The part that supports CR-003 contains a pump pit above a vault in which the 244-CR-TK 003 catch tank is installed. The general configuration of the catch tank is shown in Figure 3-10. The catch tank is vertical and made of 9.5 mm (3/8 in.) stainless steel. The tank vault inside dimensions are 4.88 m long by 6.10 m wide by 5.79 m high (16 ft by 20 ft by 19 ft). The pump pit has a coverblock on top.

The catch tank has a maximum holding capacity of 56 781 L (15,000 gal) with an operating capacity of 51 103 L (13,500 gal) (Ryan 1994). All of the accumulations are part of the planned transfer and no annual accumulation data are applicable (Tiffany 1995). The P-CR-003 waste transfer pump is located inside the catch tank and has pump out capabilities to the TK-102-AY Tank via the 241-152-AX diverter station in accordance with operating procedure TO-250-700.

The 244-CR vault has capacity to add chemicals to the tank contents. Alternatively, the chemical injection can be made through the hose connections provided at the water drip system enclosure and discharging the chemical into the catch tank. Chemical adjustment of tank content is not recommended as the tank is constructed with stainless steel.

The catch tank receives drainage from 241-C Farm. With the exceptions of C-103 and C-106, all the tanks have been stabilized. C-106 waste transfer is scheduled to take a different route under project W-320, "Tank 241-C-106 Waste Retrieval," but waste transfer from C-103 will continue to use the 244-CR-003 pump pit and the catch tank. The catch tank will become inactive beyond FY 2000 after the completion of the salt well pumping activities.

3.7 200-WEST AREA FACILITIES DESCRIPTIONS

There are seven active catch tanks in the 200-West Areas (Hanlon 1996): five receive drainage from waste transfer line diversion boxes and two are used as temporary storage of liquid waste during transfer from one tank to another. The location, configuration, accumulation, and access for chemical injection in these tanks are described below and summarized in Table 3-2.

3.7.1 241-TX-302C Catch Tank

The 241-TX-302C catch tank is located east of T Plant near the middle of the building in the 200-West Area and receives drainage from the 241-TX-154 diversion box. The tank is direct buried and not mechanically ventilated.

The catch tank consists of a horizontal cylindrical vessel made of carbon steel and a pump pit above the tank (drawing H-2-71660). The general configuration of the catch tank is shown in Figure 3-11. The pump pit is a 1.52 m (5 ft) inside diameter, galvanized, corrugated metal pipe 1.37 m (4 ft 6 in.) deep with a coverblock on top. The catch tank is made of 14.29 mm (9/16 in.) carbon steel all welded, 2.71 m (8 ft 10-7/8 in.) inside diameter and 12.19 m (40 ft) long. The interior of the tank is unpainted, whereas, the exterior has a coal-tar enamel coating.

The catch tank has a maximum holding capacity of 66 930 L (17,681 gal), but is controlled administratively to a volume of 53 545 L (14,145 gal) (Ryan 1994). The total annual accumulation comprising only of rain intrusion is estimated to be 3 785 L (1,000 gal) (Sutey 1996). The catch tank is provided with a submersible pump and pump out capabilities to the 241-TX-154 diversion box.

The chemicals can be injected into the 241-TX-154 diversion box through the coverblock opening (drawing H-2-71660). The diversion box drains into the catch tank. The carbon steel tank should be protected against corrosion related degradations. Therefore, the tank content is not recommended for chemical adjustment.

3.7.2 241-U-301B Catch Tank

The 241-U-301B catch tank is located in the southwest corner of the 241-U Tank Farm in the 200-West Area and receives drainage from the 241-U-151, 241-U-152, and 241-U-153 diversion boxes. The tank is direct buried and not mechanically ventilated.

The catch tank is an unlined cylindrical concrete vault with a rectangular pump pit directly above the tank (drawing H-2-71653). The general configuration of the catch tank is shown in Figure 3-12. The pump pit inside dimensions are 1.52 m (5 ft) in diameter and 1.52 m (5 ft) deep and is made of 14 gage galvanized corrugated pipe with a coverblock on top. The catch tank is 6.10 m (20 ft) inside diameter and 4.58 m (15 ft) deep at the maximum liquid level.

The catch tank has a maximum holding capacity of 113 530 L (35,275 gal), but is controlled administratively to a volume of 106 824 L (28,220 gal) (Ryan 1994). The total annual accumulation comprising only of rain intrusion is estimated to be 1 893 L (500 gal) (Sutey 1996). The catch tank is provided with permanent, underground pump out capabilities to the 244-U DCRT.

The chemical can be injected into the catch tank by opening the floor drain access plug on the pump pit coverblock (drawing H-2-71643). Alternatively, the chemicals can be injected into one of the 241-U-151, 241-U-152, and 241-U-153 diversion boxes through the coverblock opening. Each diversion box drains into the catch tank. The catch tank has bare concrete wall and the tank content is recommended for chemical adjustment.

3.7.3 241-UX-302A Catch Tank

The 241-UX-302A catch tank is located just east of U Plant near the middle of the building in the 200-West Area. The tank receives drainage from the 241-UX-154 diversion box, 291-U stack and encasement precipitations. The tank is direct buried and not mechanically ventilated.

The catch tank consists of a horizontal cylindrical vessel made of carbon steel and a pump pit above the tank (drawing H-2-71665). The general configuration of the catch tank is shown in Figure 3-13. The pump pit is a 1.52 m (5 ft) inside diameter, galvanized, corrugated metal pipe 1.37 m (4 ft 6 in.) deep with a coverblock on top. The catch tank is made of 14.29 mm (9/16 in.) carbon steel all welded, 2.71 m (8 ft 10-7/8 in.) inside diameter and 12.19 m (40 ft) long. The interior of the tank is unpainted, whereas, the exterior has a coal-tar enamel coating.

The catch tank has a maximum holding capacity of 66 934 L (17,682 gal), but is controlled administratively to a volume of 53 545 L (14,145 gal) (Ryan 1994). The total annual accumulation comprising only of rain intrusion is estimated to be 4 921 L (1,300 gal) (Sutey 1996). The catch tank is provided with a submersible pump and pump out capabilities to the 241-UX-154 diversion box.

The chemicals can be injected into the diversion box 241-UX-154 through the coverblock opening (drawing H-2-71665). The diversion box drains into the catch tank. Alternatively, the chemicals can be injected directly into the catch tank via a 4-in. spare riser on the tank that is flanged at grade level. The carbon steel tank content is recommended for chemical adjustment.

3.7.4 241-S-304 Catch Tank

The 241-S-304 is the catch tank, installed in a tank vault built in 1991, and is located east of the 241-SX Tank Farm next to Camden Avenue in the 200-West Area. The tank receives drainage from the 241-S-151 diversion box.

The vault is part of a two-level underground concrete structure that contains a pump pit above the vault in which the 241-S-304 catch tank is installed. The general configuration of the catch tank is shown in Figure 3-14. The catch tank is vertical and made of 15.88 mm (5/8 in.) carbon steel. The tank has an inside diameter of 2.71 m (8 ft 10-3/4 in.) and is 4.57 m (15 ft) high. The interior of the tank is unpainted, whereas, the exterior has an enamel coating. The pump pit inside dimensions are 3.05 m long by 3.05 m wide by 1.78 m deep (10 ft by 10 ft by 5 ft 10 in.) with a coverblock on top.

The catch tank has a maximum holding capacity of 23 848 L (6,300 gal) but is controlled administratively to a volume of 19 078 L (5,040 gal) (Ryan 1994). The total annual accumulation comprising only of rain intrusion is estimated to be 568 L (150 gal) (Sutey 1996).

The chemical injection can be made through the 2-in. diameter raw water line hose connection provided above grade. The line connects to a spray ring with access into the catch tank. Alternatively, the chemicals can be injected directly into the catch tank via a 4-in. spare riser on the tank that is flanged at grade level. The carbon steel tank content is recommended for chemical adjustment.

3.7.5 244-S-TK/SMP DCRT Catch Tank

The 244-S DCRT is the tank vault, constructed in 1978 at the 244-S DCRT catch station, located south of the 241-SY Tank Farm and east of 13th Street in the 200-West Area. The DCRT receives salt well pumping from the 241-S and 241-SX Tank Farms and serves as an interim storage area for the following wastes: PFP, U Plant, T Plant, and cross-site transfer drain. The catch tank is connected to the 244-S DCRT mechanical ventilation system.

The DCRT catch station consists of an underground concrete structure that contains a filter pit, pump pit, and a vault in which the TK-244-S catch tank is installed. The tank vault is a cylindrical concrete structure with two rectangular pits, a pump pit, and a filter pit on top (drawing H-2-71052). The general configuration of the catch tank is shown in Figure 3-15. The tank vault inside dimensions are 6.10 m diameter by 6.48 m deep (20 ft by 21 ft 3 in.) and is lined with 6.4 mm (1/4 in.) carbon steel. The pump pit is a 6.1 m (20 ft) cylinder, 3.73 m (12 ft 3 in.) high. The upper 3.05 m (10 ft) portion of the pump pit is 6.1 m (20 ft) square inside dimensions. The filter pit is 3.35 m (11 ft) square inside by 3.35 m deep (11 ft). Both pits have coverblocks on top. The carbon steel catch tank is vertical with an inside diameter of 4.57 m (15 ft) and 4.72 m (15 ft 6 in.) high.

The catch tank has a holding capacity of 72 570 L (19,171 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 382 285 L (101,000 gal) of which 3 785 L (1,000 gal) can be attributed to rain intrusion (Sutey 1996). The P-244-S-1 waste transfer pump is located inside the catch tank and has pump out capability to the 241-SY Tank Farm through the 241-SY-A valve pit.

The chemical injection can be made by removing the 4-in. riser flange cover located by the side of the filter pit coverblock (drawing H-2-71052). Although the tank is constructed of carbon steel, the liquid in the tank is pumped out at regular intervals. Chemical adjustment of tank content is not recommended.

3.7.6 244-TX-TK/SMP DCRT Catch Tank

The 244-TX-TK/SMP DCRT catch station, constructed in 1981, is located north of the 241-TX Tank Farms. The DCRT is used in salt well pumping from the 241-T Tank Farm and for receiving waste from the PFP and T Plant. The catch tank is connected to the 244-TX DCRT mechanical ventilation system. The fresh air intake is normally seepage through risers and transfer lines.

The 244-TX DCRT catch station consists of three sections: a tank vault, a pump pit, and a filter pit. The tank vault is a rectangular concrete vault with two rectangular pits, a pump pit, and a filter pit on top (drawing H-2-73789). The general configuration of the catch tank is shown in Figure 3-6. The tank vault inside dimensions are 4.88 m long by 13.41 m wide by 4.88 m high (16 ft by 44 ft by 16 ft). The pump pit inside dimensions are 5.18 m long by 5.79 m wide by

3.51 m deep (17 ft by 19 ft by 11 ft 6 in.). The filter pit inside dimensions are 3.35 m long by 5.18 m wide by 3.51 m deep (11 ft by 17 ft by 11 ft 6 in.). Both pits have coverblocks on top. The 244-TX catch tank, located in the vault, is a horizontal, cylindrical vessel with convex ends. The dimensions of the cylindrical portion of the tank are 3.66 m (12 ft) outside diameter by 10.67 m (35 ft) long. The 0.91 m (3 ft) deep convex heads on each end of the tank give the tank a total length of 12.5 m (41 ft) at the axis. The tank is made of 6.4 mm (1/4 in.) carbon steel.

The catch tank has a maximum holding capacity of 117 347 L (31,000 gal). The maximum operating capacity limited by liquid level interlock with pump is 98 420 L (26,000 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 380 393 L (100,500 gal) of which less than 757 L (200 gal) can be attributed to rain intrusion (Sutey 1996). The P-244-TX-1 transfer pump, located inside the TK-244-TX catch tank, transfers waste from the DCRT to the 241-SY Tank Farm, through the 241-TX-152 diversion box and the 244-S DCRT.

The chemical injection can be made by removing the flush pit cover and discharging the chemical into the pit. This will ensure low dose exposure. The flush pit drains into the catch tank. Although the tank is constructed of carbon steel, the liquid in the tank is pumped out at regular intervals. Chemical adjustment of tank content is not recommended.

3.7.7 241-EW-151 Catch Tank

The 241-EW-151 catch tank is the tank vault at the 241-EW-151 vent station located between 200-East and 200-West Areas, approximately 1,500 ft south of the 200 Area's fire station, Building 609-A, in the 600 Area. The catch tank was constructed in 1955 and is an integral part of the east-west transfer/vent station and is used to collect liquids that might enter the cross-site transfer vent lines. The catch tank is not mechanically ventilated.

The catch tank vault is rectangular box-shaped and consists of two sections (drawing H-2-43148). The general configuration of the catch tank is shown in Figure 3-16. The upper area is the nozzle pit containing the transfer and vent lines and the lower area serves as the tank vault. The nozzle pit inside dimensions are 2.44 m long by 1.83 m wide by 1.12 m deep (8 ft by 6 ft by 3 ft 8 in.). The tank vault is 2.59 m long by 2.44 m wide by 2.54 m deep (8 ft 6 in. by 8 ft by 8 ft 4 in.). The nozzle pit has a coverblock on top. The stainless steel catch tank is vertical with an inside diameter of 1.35 m (4 ft 5-1/4 in.).

The catch tank has a maximum holding capacity of 2 937 L (776 gal) (Ryan 1994). The total annual accumulation consisting of process drain and rain intrusion is estimated to be 1 136 L (300 gal) of which 946 L (250 gal) can be attributed to rain intrusion (Sutey 1996). One transfer pump installed in the tank transfers liquids from the catch tank to the line V360 and the liquid drains both east and west by gravity.

The chemical injection access into the catch tank can be made by removing the 3-in. riser flange cover located by the side of the nozzle pit coverblock (drawing H-2-43148). No chemical adjustment of tank content is recommended as the tank is constructed with stainless steel.

3.8 Intrusion Prevention System

A major problem of accumulations in the catch tanks is the rain water that leaks through the coverblocks. The rain intrusions and condensate primarily make up the accumulations in catch tanks. The condensate is released from the primary containment system and the quantity is accurately documented. Localized areas of rainfall make the climatological data on average rainfall for the Hanford Site unreliable.

Minimization of the rain infiltrations into the catch tanks is essential and achievable by sealing the access points of the rain intrusions. Flexible membranes made of chlorosulfonated polyethylene are ideal for use as weather covers for placements in the vaults and pits. The general configuration of the weather cover is shown in Figure 3-17 (Ambalam 1996).

4.0 UNCERTAINTIES AND RECOMMENDATION FOR FURTHER STUDY

4.1 UNCERTAINTIES

The present physical condition of the existing catch tanks causes major uncertainties inherent in the evaluation, conclusions, and recommendations of this report. The advance age of the tanks and possible corrosion are considered key factors of the technical risk involved in an extended use of these facilities.

4.2 RECOMMENDATIONS FOR FURTHER STUDY

Perform an engineering study to incorporate the following:

- Optimize the DST ancillary components under the TWRS mission for the next 35 years and identify the associated catch tanks and diversion boxes for decommissioning and isolation.

- Evaluate the compatibility of commercially available corrosion inhibiting chemicals with respect to the primary tank contents.

- Perform a life cycle cost analysis and an alternative generation and analysis (AGA) for the proprietary chemicals and the basic chemicals presently being used at the Hanford Site for corrosion inhibition purposes.

5.0 REFERENCES

1. Ambalam, T., "Synthetic Membranes for Intrusion Protection Systems, 200-East and 200-West Areas," prepared by ICF Kaiser Hanford Company, Document No. KH-SD-WM-ES-391, Rev. 0, April 1996.

2. Apolinario, B.M., "241-A-702 Ventilation System Deactivation Plan," prepared by Westinghouse Hanford Company, Document No. WHC-SD-WM-PLN-116, Rev. 0, March 18, 1996.

3. Dechter, S.J., "TWRS Plant Management Plan for Hanford 200 Area Inactive Miscellaneous Underground Storage Tanks (MUST)," prepared by Westinghouse Hanford Company, February 6, 1995.

4. Fowler, K.D., "Tank Farm Waste Transfer Compatibility Program," prepared by Westinghouse Hanford Company, Document No. WHC-SD-WM-OCD-015, Rev. 1, April 24, 1995.

5. Hanlon, B.M., "Waste Tank Summary Report for Month Ending November 30, 1995," prepared by Westinghouse Hanford Company, Document No. WHC-EP-0182-92, Rev. 0, February 1996.

6. Harris, J.P., "Operating Specifications for the 241-AN, AP, AW, AY, AZ & SY Tank Farms," prepared by Westinghouse Hanford Company, Document No. OSD-T-151-00007, Rev. H-12, June 29, 1995.

7. Hesketh, P., Huang, S.N., Jain, R.D., Palit, A.N., Salzano, T.B., "Transfer Waste," prepared by Westinghouse Hanford Company, Document No. WHC-SD-W314-ES-017, Rev. 0, September 1995 (Draft).

8. Kalia, J., "Replacement of Cross-Site Transfer System, Project W-058 Functional Design Criteria," prepared by Westinghouse Hanford Company, Document No. WHC-SD-W058-FDC-001, Rev. 2, August 1994.

9. Perry, R.H., "Perry's Chemical Engineers' Handbook," McGraw Hill International Edition, 1984.

10. Reberger, D.W., "Operating Specifications for Miscellaneous Facilities," prepared by Westinghouse Hanford Company, Document No. OSD-T-151-00015, Rev. B-6, April 1995.

11. Ryan, G.W., "Operational Summaries for Auxiliary Facilities," prepared by Westinghouse Hanford Company, Document No. WHC-SD-WM-SAAR-008, Rev. 0, May 17, 1994.

12. Schofield, J., "Operating Specifications for the Saltwell Receiver Vessels," prepared by Westinghouse Hanford Company, Document No. OSD-T-151-00011, Rev. C-1, September 27, 1994.

13. Shogren, C.E., Sindelar, R.L., "Plan for the Tank Waste Remediation System Life Management/Aging Management Program," prepared by Westinghouse Hanford Company, Document No. WHC-SD-WM-PLN-068, Rev. 0, June 1994.

14. Strode, J.N., "Operational Waste Volume Projection," prepared by Westinghouse Hanford Company, Document No. WHC-SD-WM-ER-029, Rev. 21, September 12, 1995.

15. Sutey, M.J., Don't Say It--Write It to T.A. Erickson, "West Area Catch Tank Accumulations," prepared by Westinghouse Hanford Company, May 16, 1996.

16. Tiffany, M.S., Don't Say It--Write It to R.A. Dodd, "Catch Tanks Accumulations," prepared by Westinghouse Hanford Company, May 9, 1995.

17. Tucker, R.P., "Tank Farm Plant Operating Procedure - Raw Water Surveillance and Usage," prepared by Westinghouse Hanford Company, Document No. TO-040-540, Rev. C-16, June 14, 1995.

18. Vail, T.S., "Criticality Prevention Specification," prepared by Westinghouse Hanford Company, Document No. CPS-T-149-00010, Rev. G-0, October 23, 1995.

APPENDIX A

Tables

Table 3-1. 200-East Area Active Catch Tanks

Catch Tank	Location	Material of Construction	Capacity (gallons)	Accumulation w/o Rain (gallon)	Rain Accumulation (gallon)	Total Accumulation (gallon)	Inhibitor Addition for Rain Intrusions		
							Sodium Hydroxide (gallon)*	Sodium Nitrite (gallon)*	Proprietary Chemicals Dearborn 545 (gallon)
241-A-302A	A Farm	CS	8,438	0	320	320	11	1	3
241-ER-311	B Plant	SS	17,682	350	1,350	1,700	-	-	-
241-AX-152	AX Farm	Con w/SS	11,000	no data	no data	8,400	-	-	-
241-AZ-151	AZ Farm	Con w/CS	11,900	30,000	1,500	31,500	-	-	-
241-AZ-154	AZ Farm	Con w/CS	869	0	0	0	-	-	-
244-BX-TK/SMP	BX Complex	CS	31,000	Planned Transfer	0	Planned Transfer	-	-	-
244-A-TK/SMP	A Complex	SS	16,280	1,500	1,300	2,800	-	-	-
204-AR TK-1	AY Farm	SS	1,500	Planned Transfer	0	Planned Transfer	-	-	-
241-A-417	A Farm	Con w/CS	44,200	170,000	no data	170,000	-	-	-
241-A-350	A Farm	SS	776	0	740	740	-	-	-
244-CR-003-TK/SMP	C Farm	SS	15,000	Planned Transfer	0	Planned Transfer	-	-	-

* Based on initial NO_2 in tank =0.01M, final pH value 12.5, and prorated for volumes. See calculation summary in Appendix D

CS - Carbon Steel
SS - Stainless Steel
Con w/CS - Concrete with Carbon Steel Liner
Con w/SS - Concrete with Stainless Steel Liner

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Table 3-2. 200-West Area Active Catch Tanks

Catch Tank	Location	Material of Construction	Capacity (gallons)	Accumulation w/o Rain (gallon)	Rain Accumulation (gallon)	Total Accumulation (gallon)	Inhibitor Addition for Rain Intrusions		
							Sodium Hydroxide (gallon)*	Sodium Nitrite (gallon)*	Proprietary Chemicals Dearborn 545 (gallon)
241-TX-302C	TX Farm	CS	17,681	0	1,000	1,000	33	4	10
241-U-301B	U Farm	Concrete	35,275	0	500	500	16	2	5
241-UX-302A	U Plant	CS	17,682	0	1,300	1,300	43	5	13
241-S-304	S Farm	CS	6,300	0	150	150	5	0.5	2
244-S-TK/SMP	S Farm	CS	19,171	100,000	1,000	101,000	-	-	-
244-TX-TK/SMP	TX Farm	CS	31,000	100,000	500	100,500	-	-	-
241-EW-151	Vent Station 600 Area	SS	776	50	250	300	-	-	-

* Based on initial NO_2 in tank =0.01M, final pH value 12.5, and prorated for volumes. See calculation summary in Appendix D

CS - Carbon Steel
SS - Stainless Steel
Concrete - Concrete with No Liner

Table 3-3. 200-East Area IMUST Catch Tanks (Dechter 1995)

Catch Tank	Location	Status	Nominal Tank Capacity (gallons)	Sludge Volume (gallon)	Liquid Volume (gallon)	Total Volume (gallon)
241-A-302-B	A Farm	Interim Stabilized in 1990	13,500	no data	no data	3,600
241-B-301-B	B Farm	Isolated in 1985	36,000	21,660	590	22,250
241-B-302-B	B Farm	Isolated in 1985	17,684	690	4,240	4,930
241-BX-302-A	BX Farm	Isolated in 1985	17,684	840	0	840
241-BX-302-B	BX Farm	Isolated in 1985	11,389	950	90	1,040
241-BX-302-C	BX Farm	Isolated in 1985	11,378	640	230	870
241-C-301-C	C Farm	Isolated in 1985	36,000	9,000	1,470	10,470
241-CX-70	Hot Semi-Works	Out of service in 1957	30,000	0	0	0
241-CX-72	Hot Semi-Works	Grouted in 1986	2,300	650	0	650
244-AR VAULT *	A Complex	Final clean-out is in progress	43,148	no data	no data	no data
244-BXR-TK/SMP-001	BX Farm	Interim Stabilized in 1985	50,000	7,200	0	7,200
244-BXR-TK/SMP-002	BX Farm	Interim Stabilized in 1985	15,000	1,800	380	2,180
244-BXR-TK/SMP-003	BX Farm	Interim Stabilized in 1985	15,000	1,450	360	1,810
244-BXR-TK/SMP-011	BX Farm	Interim Stabilized in 1985	50,000	7,000	100	7,100
361-B-TANK	B Plant	Interim Stabilized in 1985				

* 244-AR Vault is inactive but not a part of IMUST tanks.

Table 3-4. 200-West Area IMUST Catch Tanks (Dechter 1995)

Catch Tank	Location	Status	Nominal Tank Capacity (gallons)	Sludge Volume (gallon)	Liquid Volume (gallon)	Total Volume (gallon)
240-S-302	S Farm	Out of service in 1987	17,684	no data	no data	2,276
241-S-302-A	S Farm	Isolated in 1991	17,684	no data	no data	5,130
241-S-302-B	S Farm	Isolated and Stabilized in 1985	14,314	0	0	0
241-SX-302	SX Farm	Isolated and Stabilized in 1984	17,684	1,050	300	1,350
241-TX-302A	TX Farm	Isolated and Stabilized in 1984	17,684	2,450	30	2,480
241-TX-302X	TX Farm	Isolated and Stabilized in 1985	14,314	110	250	360
241-TX-302B	TX Farm	Isolated and Stabilized in 1954	17,684	no data	no data	1,320
241-TY-302A	TY Farm	Isolated and Stabilized in 1985	17,684	450	0	450
241-TY-302B	TY Farm	Isolated and Stabilized in 1981	14,314	0	0	0
244-U-TK/SMP*	U Farm	Not yet in service	31,000	no data	no data	no data
244-TXR-TK/SMP-001	TX Farm	Isolated and Stabilized in 1984	50,000	2,300	50	2,350
244-TXR-TK/SMP-002	TX Farm	Isolated and Stabilized in 1984	15,000	2,950	0	2,950
244-TXR-TK/SMP-003	TX Farm	Isolated and Stabilized in 1984	15,000	6,500	0	6,500
241-T-361	T Plant	Isolated and Stabilized in 1985	36,000	24,500	0	24,500
241-U-361	U Plant	Isolated and Stabilized in 1985	36,000	27,700	100	27,800

* 244-U Vault is inactive but not a part of IMUST tanks

APPENDIX B

Figures

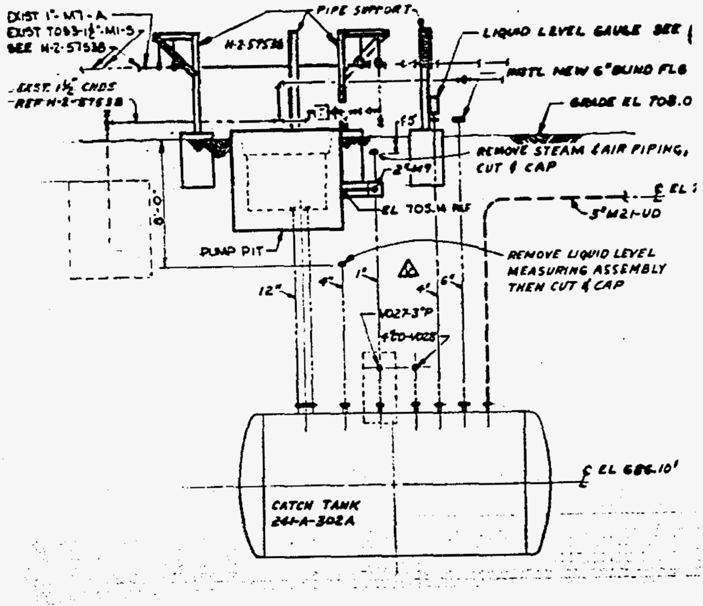

Figure 3-1. 241-A-302A Catch Tank

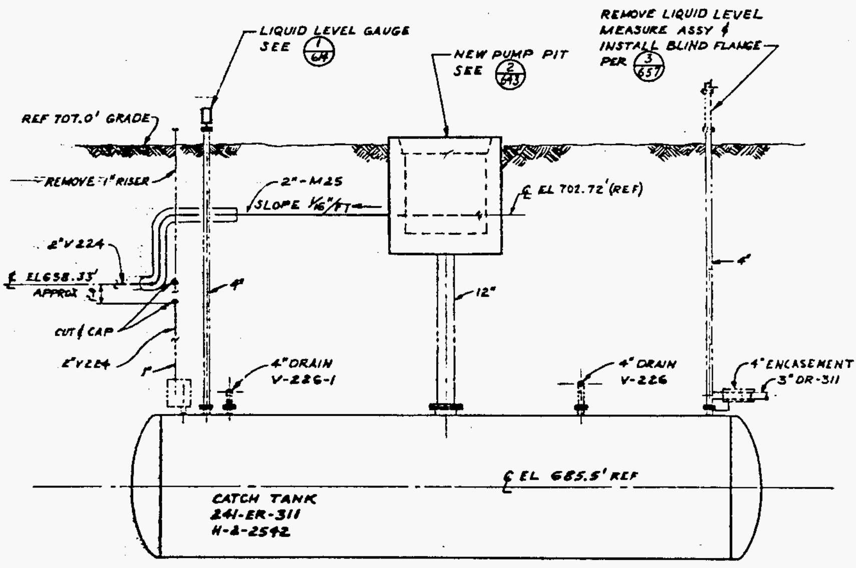

Figure 3-2. 241-ER-311 Catch Tank

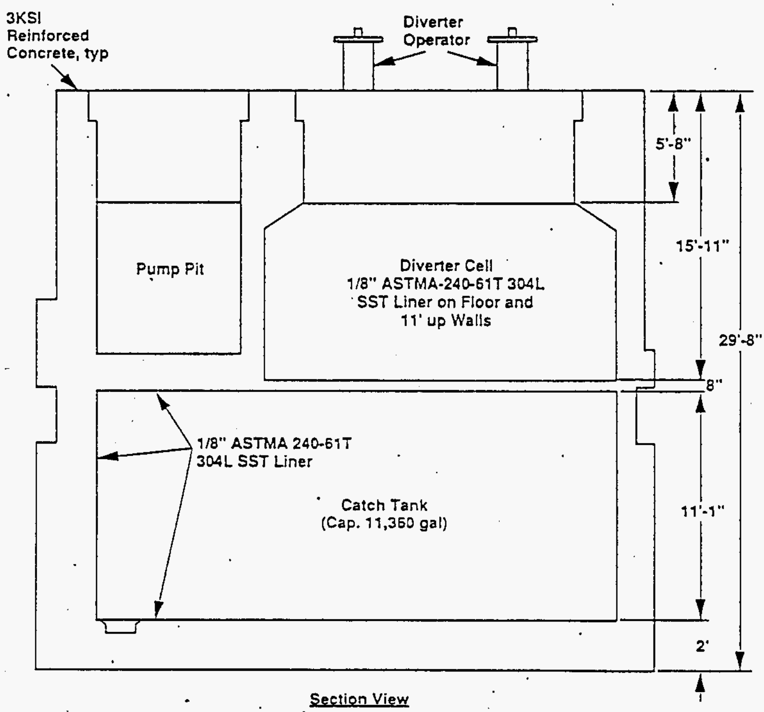

Figure 3-3. 241-AX-152 Diverter Station

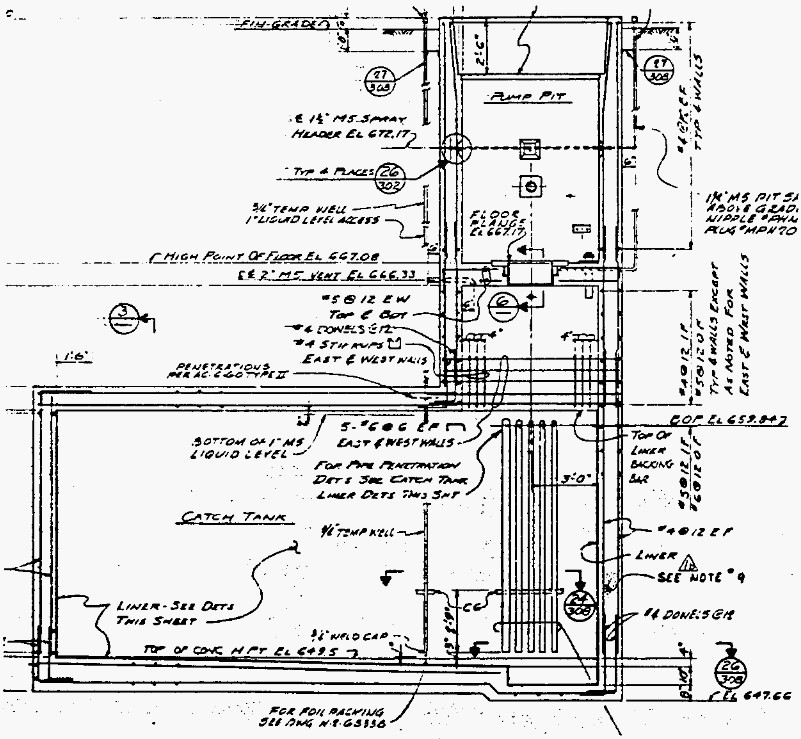

Figure 3-4. 241-AZ-151 Catch Tank

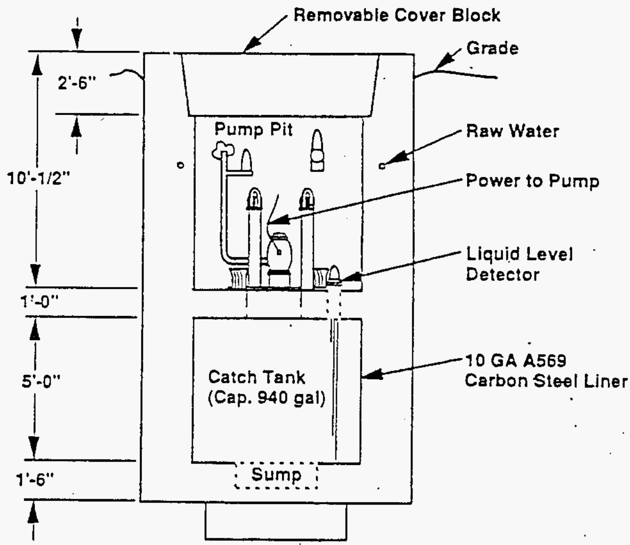

Figure 3-5. 241-AZ-154 Catch Tank

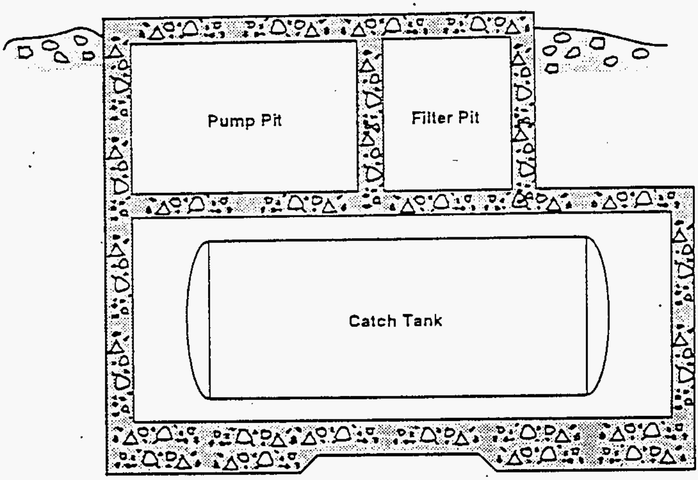

Figure 3-6. 244-BX and 244-TX DCRT Configuration

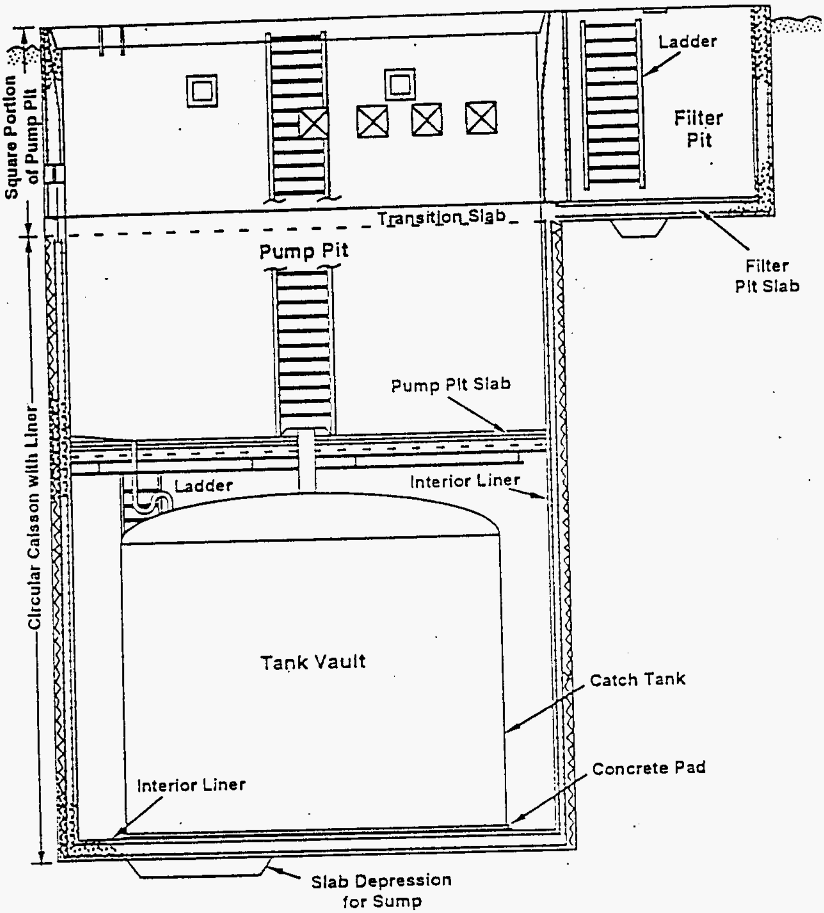

Figure 3-7. 244-A DCRT Configuration

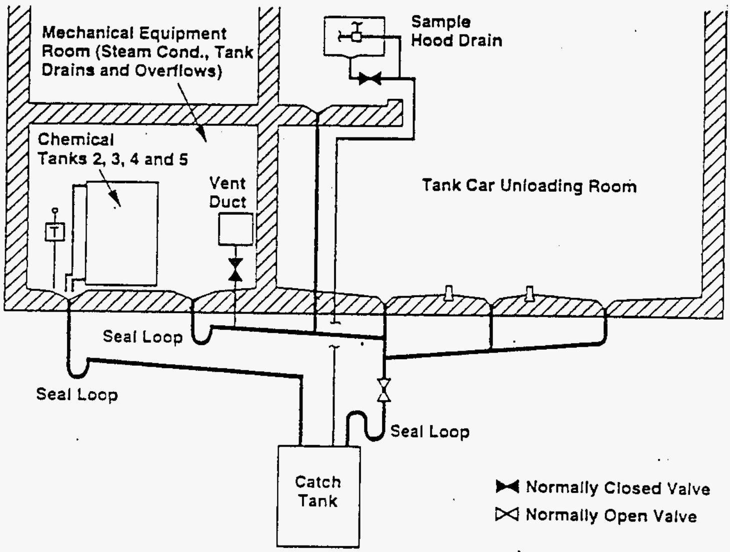

Figure 3-8. AR-204-TK-1 Catch Tank Drainage

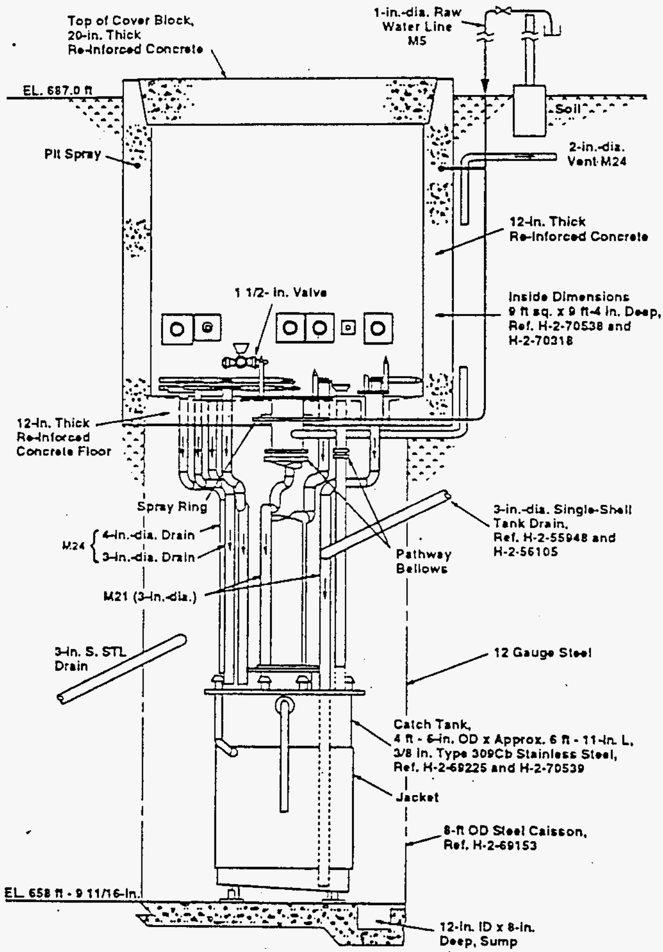

Figure 3-9. 241-A-350 DCRT Drainage Lift Station

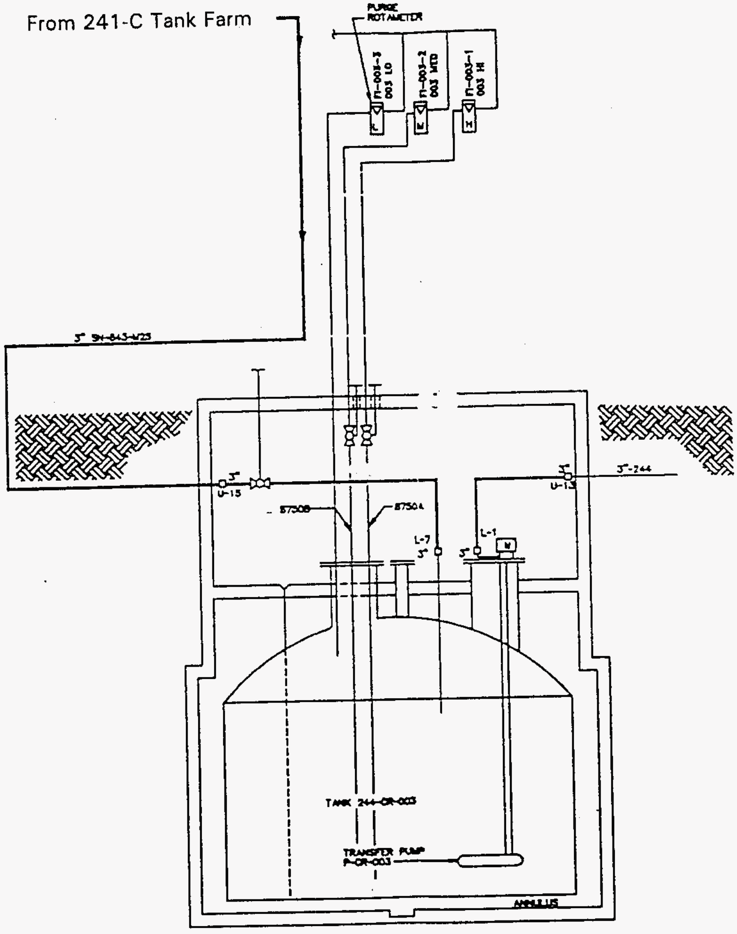

Figure 3-10. 244-CR DCRT Vault

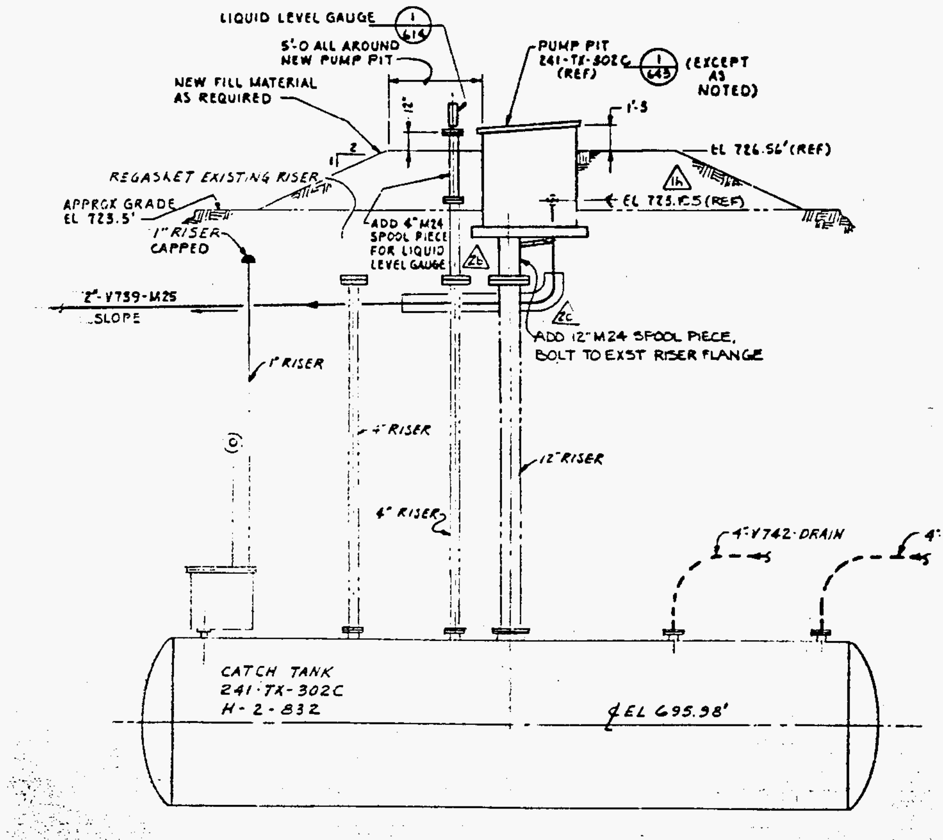

Figure 3-11. 241-TX-302C Catch Tank

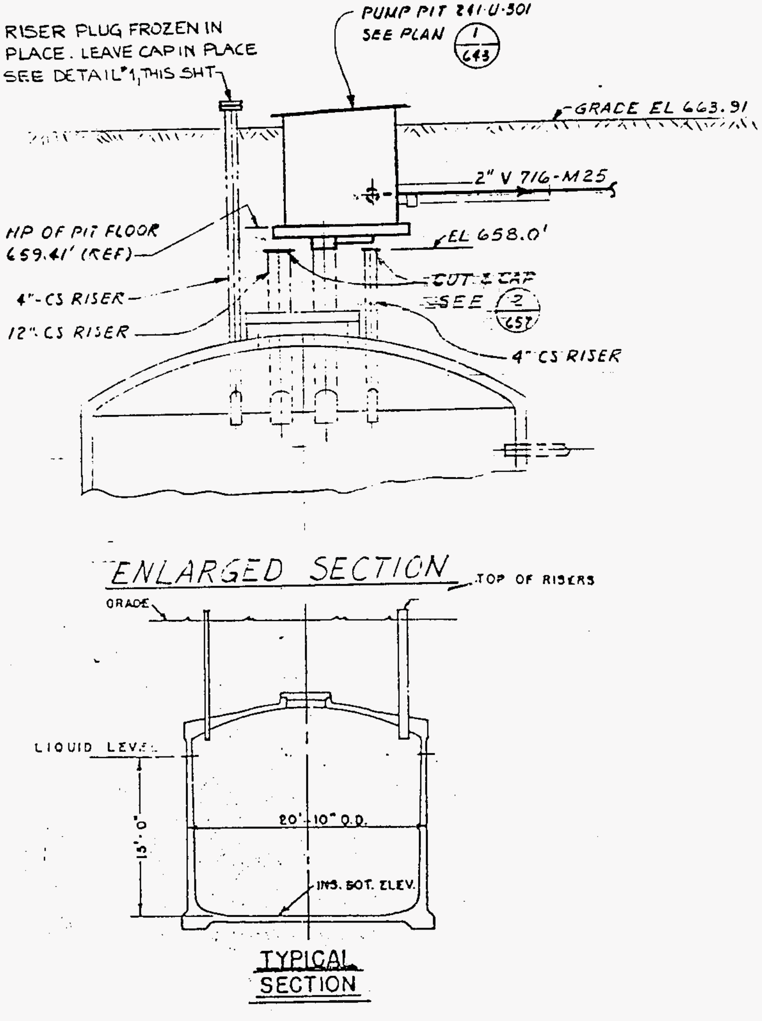

Figure 3-12. 241-U-301B Catch Tank

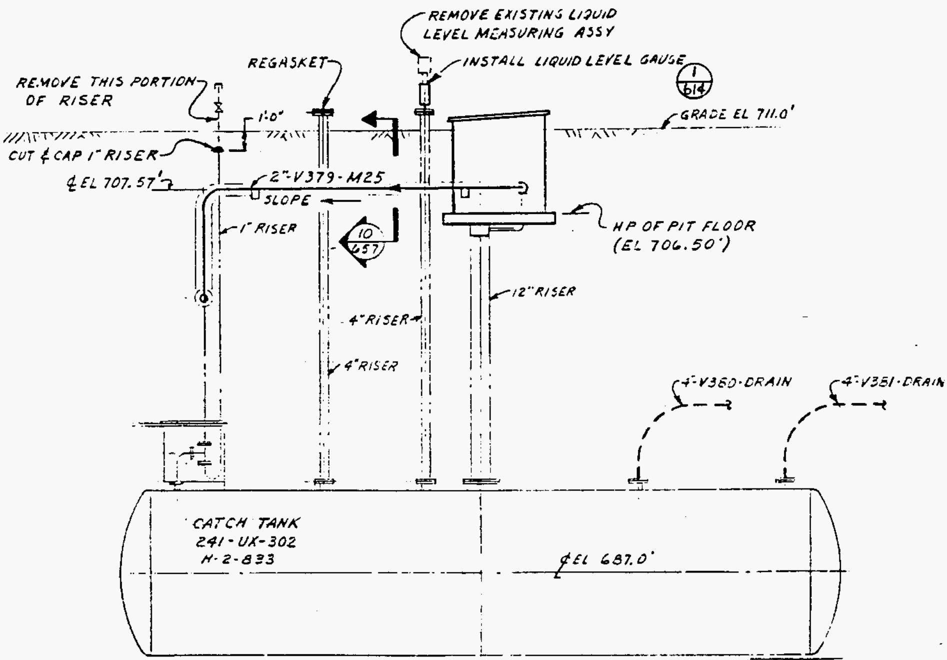

Figure 3-13. 241-UX-302A Catch Tank

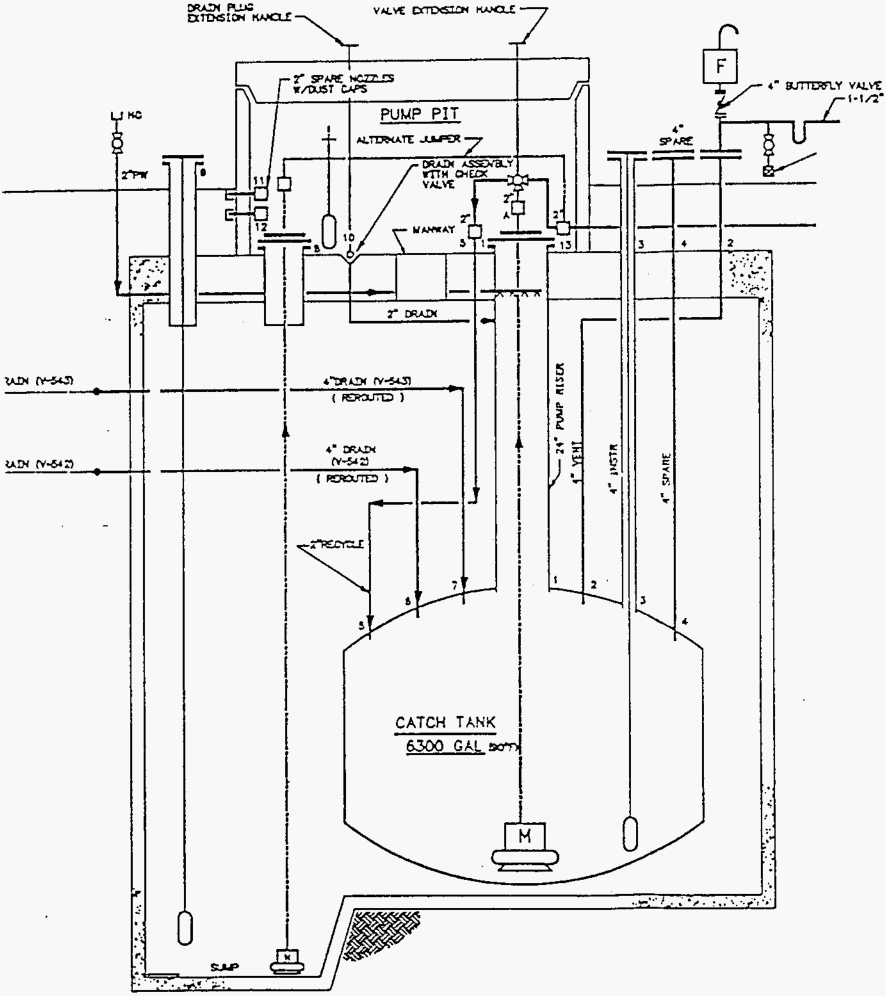

Figure 3-14. 241-S-304 Catch Tank

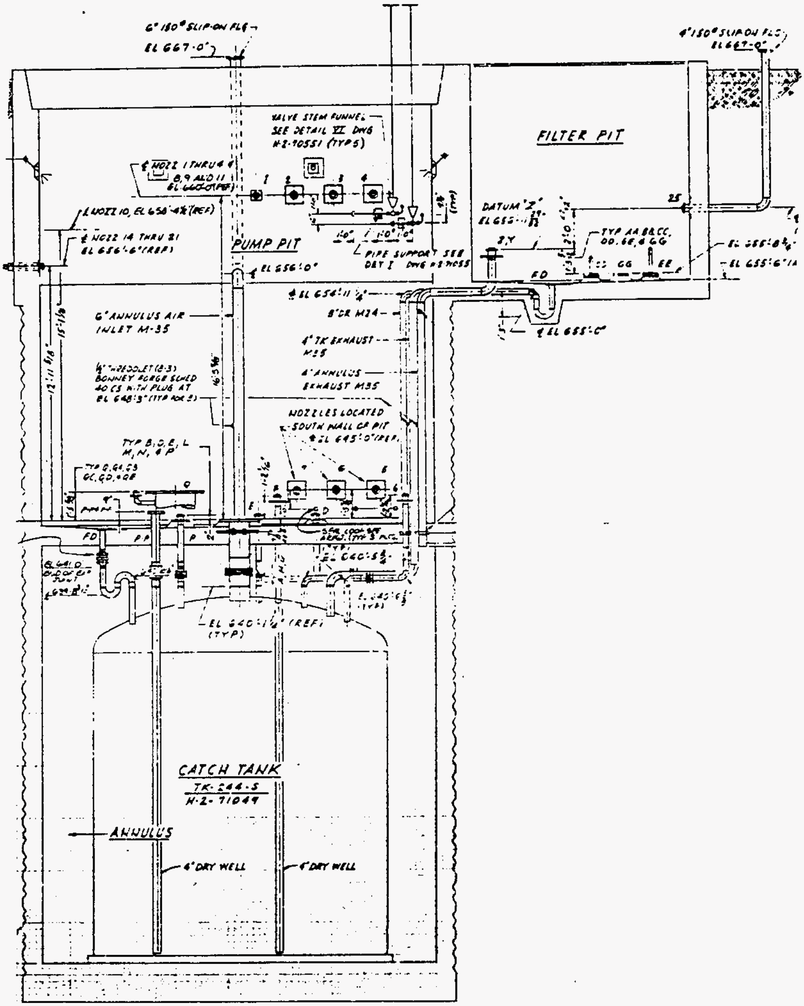

Figure 3-15. 244-S DCRT Configuration

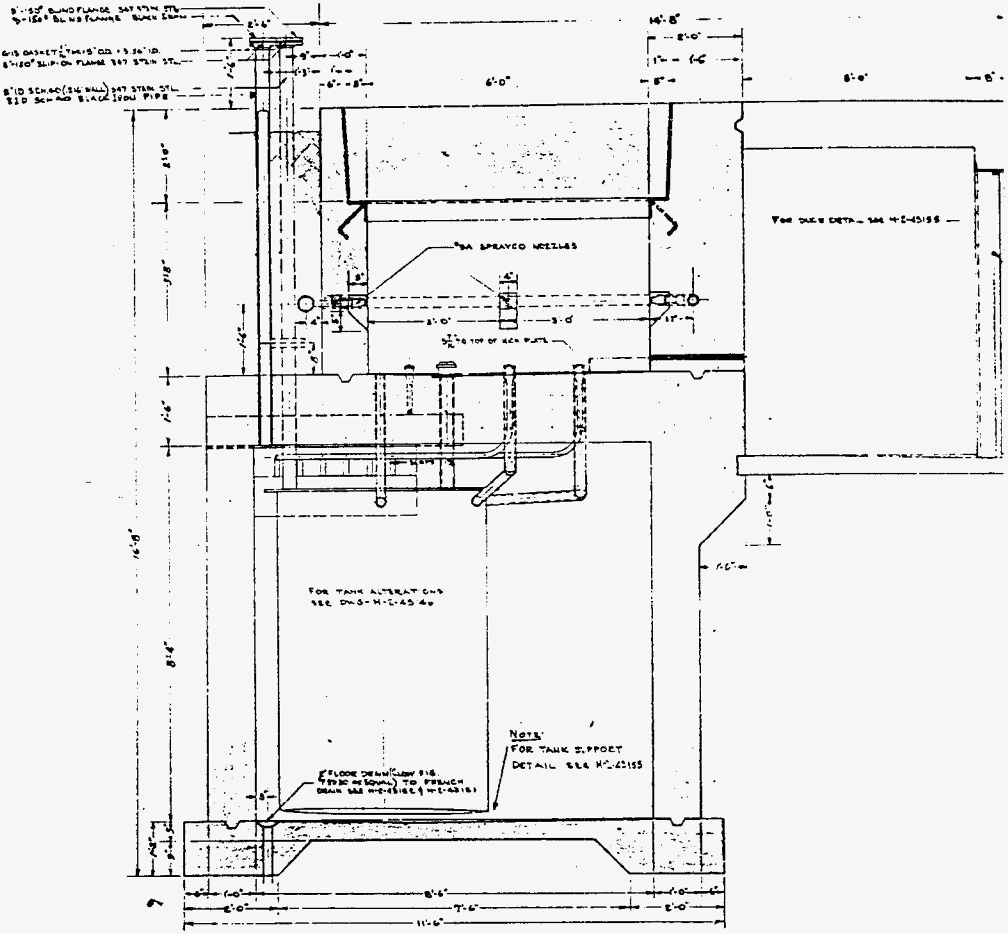

Figure 3-16. 241-EW-151 Vent Station Configuration

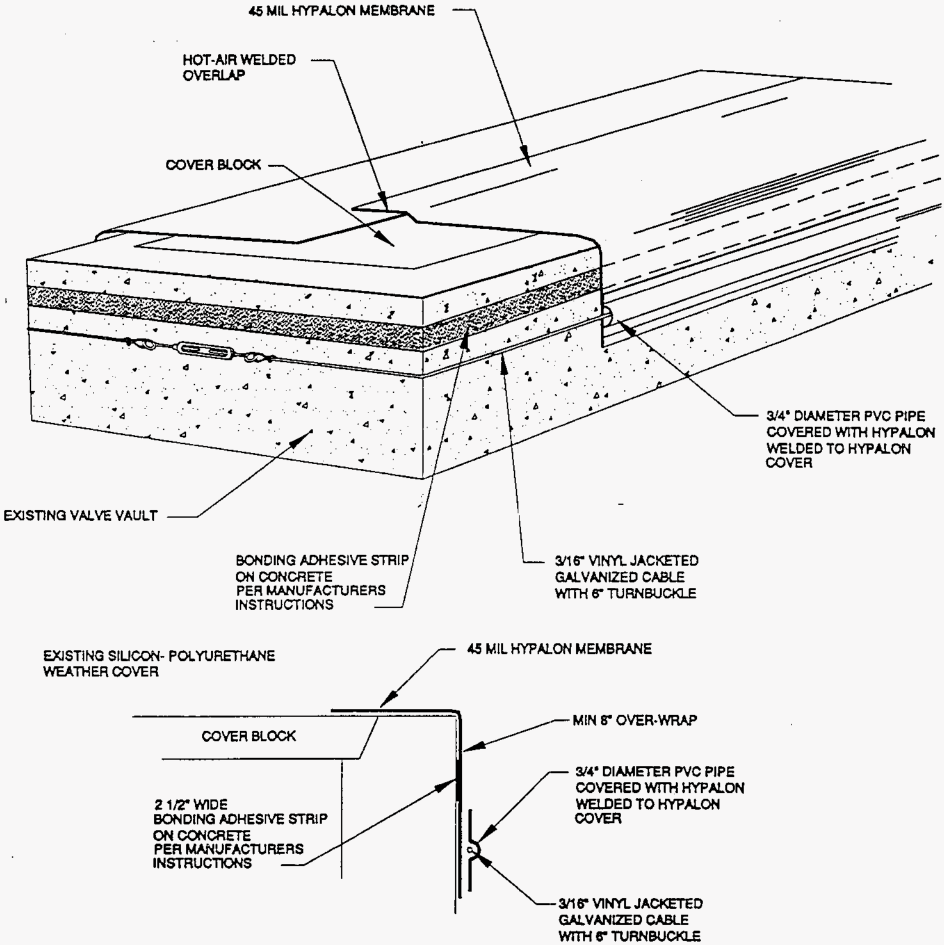

Figure 3-17. Weather Cover for Concrete Structures

APPENDIX C

Material Safety Data Sheets

(Vendor-furnished Information)

DEARBORN® 545

Corrosion and Scale Inhibitor for Closed Heating and Cooling Systems

Cooling Water Treatment

Application: DEARBORN® 545 non-polluting cooling water treatment provides superior corrosion and scale protection in chill water circuits, hot water heating systems and other closed systems containing ferrous and non-ferrous metals. DEARBORN 545 contains a complete corrosion inhibitor system that protects both yellow metals and iron, or steel.

The closed systems scale inhibitor in DEARBORN 545 prevents scale in systems that must use hard water as make-up. Prevention of scale results in improved heat transfer for improved production rates and reduced energy consumption.

The non-toxic, non-polluting characteristics of DEARBORN 545 minimize waste treatment costs and eliminate skin irritation in maintenance personnel.

Benefits:

- **Prevents corrosion for extended equipment life.**
- **Prevents scale to minimize maintenance expense.**
- **Non-toxic properties protect maintenance personnel.**
- **Not susceptible to biological degradation.**
- **Low solids extends pump seal life expectancy.**
- **Compatible with antifreeze solutions.**
- **Easy to apply and control.**

Directions For Use: Premixed solutions of DEARBORN 545 and softened make-up are desirable to assure adequate treatment levels in your system. DEARBORN 545 can be added directly, as received, to your closed heating or cooling system. In systems using soft water (less than 100 ppm total hardness), DEARBORN 545 should be dosed at a rate of 1 quart per 100 gallons of system volume. Systems using hard water will require somewhat higher dosages. Your Dearborn consultant will determine the optimum dosages based on your system's requirements.

Product Data:

- **Appearance: Clear liquid**
- **Weight: 8.9 lbs/gal (1.07 kg/L)**
- **pH: 10-11**
- **Freeze Point: 18°F (-8°C)**
- **Flash Point: None**
- **Odor: Mildly ammoniacal**

Limitations and Handling: Do not take internally. Not for potable water. Avoid contact with skin, wash throughly with water. If eyes are contacted, flush with water and get medical attention. Keep container closed when not in use. Does not deteriorate with age.

Available Packaging: 5 gallon pails - Approximately 44 lbs net (20 kg)
30 gallon drums - Approximately 263 lbs net (120 kg)
55 gallon drums - Approximately 482 lbs net (219 kg)
180 gallon Dear-Pak II® - Approximately 1,600 lbs net (724 kg)
350 gallon Dear-Pak® - Approximately 3,112 lbs net (1414 kg)
Bulk delivery available

This product is on the USDA Authorized List of Chemical Compounds for use in official meat, egg and poultry processing establishments.

GRACE Dearborn
W. R. Grace & Co. - Conn., 300 Genesee Street, Lake Zurich, IL 60047-2458

9121

Material Safety Data Sheet

Emergency Phone
708-438-1800

Section 1 Product Identification

TRADE NAME	PRODUCT TYPE	CODE IDENT.
DEARBORN 545	Cooling Water treatment	11-832

DOT SHIPPING NAME

Compound Industrial Process Water Treatment, Liquid

Section 2 Hazardous Ingredients

	CAS NUMBER	%	EXPOSURE CRITERIA
Morpholine	110-91-8	< 12	TWA: 70 mg/m3 (skin)
Sodium Molybdate	7631-95-0	< 10	TWA: 5 mg/m3 as Mo

HMIS 1-0-0

Section 3 Physical Data

BOILING POINT, 760 mm Hg	> 212 F	MELTING POINT	NA
FREEZING POINT	19 F	VAPOR PRESSURE	ND
SPECIFIC GRAVITY (H_2O=1)	1.07	SOLUBILITY IN H_2O	Appreciable
VAPOR DENSITY (AIR=1)	ND	EVAPORATION RATE (Bu Ac=1)	< 1
% VOLATILES BY VOLUME	ND	pH	10 - 11

APPEARANCE & ODOR

Amber liquid, characteristic odor.

Section 4 Fire & Explosion Hazard Data

FLASH POINT (& METHOD USED)	FLAMMABLE LIMITS IN AIR % BY VOLUME LOWER	UPPER	AUTO IGNITION TEMPERATURE
NA, water-based product	NA	NA	NA

EXTINGUISHING MEDIA: WATER FOG FOAM CO2 DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES:

Keep drums cool with water spray. Firefighters should wear full protective gear including self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None known

Section 5 Reactivity Data

STABILITY (NORMAL CONDITIONS)	CONDITIONS TO AVOID
Stable	Extreme heat

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition products may include oxides of carbon and nitrogen.

HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
Will not occur	Not applicable

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Section 6 Health Hazard Information

TOXICITY INFORMATION:

Exposure level not established for product. See Section 2 for component information.

EFFECTS OF OVEREXPOSURE:

INHALATION: Inhalation of mist may irritate respiratory passages.

INGESTION: May be harmful if swallowed.

SKIN CONTACT: Prolonged or frequent skin contact may cause irritation.

EYE CONTACT: May cause irritation upon direct contact with product.

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove affected person to fresh air and treat symptoms.

INGESTION: If conscious, give water to dilute and contact physician immediately.

SKIN CONTACT: Wash with soap & water. Remove contaminated clothing and wash before reuse.

EYE CONTACT: Flush with water for 15 minutes and seek medical attention.

Section 7 Special Protection Information

VENTILATION REQUIREMENTS

Use adequate mechanical ventilation

RESPIRATORY PROTECTION (SPECIFY TYPE)

None special

EYE PROTECTION

Chemical goggles

GLOVES

Impervious (Rubber recommended)

OTHER PROTECTIVE CLOTHING AND EQUIPMENT

Long sleeve work shirt and pants

Section 8 Spill or Leak Procedures

STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED

Wear protective clothing. Dike spill and soak up on an inert absorbent material. Flush area of spill with water.

WASTE DISPOSAL METHOD

Dispose of in accordance with federal, state and local regulations.

This product is not formulated with chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40CFR 372.

Ingredients classified as EPA hazardous waste under 40 CFR 261: None

Product does not contain ingredients with CERCLA reportable quantities.

Section 9 Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Store drums closed, away from extreme temperatures.

OTHER PRECAUTIONS

FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.

PREPARED BY: R. Ruthe DATE: 7/19/93

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DEARCIDE® 733

Non-oxidizing Microbicide for the Control of Aerobic and Anaerobic Microganisms

Micro-Biological Treatment

Application: DEARCIDE® 733 *is a broad spectrum* microbicide designed to control slime forming bacteria, sulfate reducing bacteria and algae in recirculating cooling water systems, closed loops, air washers and pasteurizers.

Benefits:

- **Effective at removing established biofilms**
- **Broad spectrum activity for controlling aerobes and anaerobes - including sulfate reducing bacteria**
- **Insensitive to pH and temperature fluctuations**
- **Active ingredients can be field measured at concentrations as low as 1 ppm**
- **Compatible with scale and corrosion inhibitor programs**
- **Non-foaming**
- **Non-corrosive**
- **Synergy with oxidizing and non-oxidizing microbicides**
- **Does not persist in environment**

Directions For Use: **Intermittent (Slug dose) Method:** *Initial Dose:* When system is noticeably fouled, apply 2.7 - 25.5 fluid ounces (100 - 200 ppm) of DEARCIDE 733 per 1000 gallons of system capacity. When possible, blowdown should be discontinued for up to 24 hours. Repeat until control is achieved.
Subsequent Dose: When microbial control is evident, add 5.1 - 12.7 fluid ounces (40 - 100 ppm) of DEARCIDE 733 weekly per 1000 gallons of water system capacity, or as needed to maintain control.

Continuous Feed Method: *Initial Dose:* When system is noticeably fouled, apply 12.7 - 25.5 fluid ounces (100 - 200 ppm) of *DEARCIDE 733 per 1000 gallons of system capacity.*
Subsequent Dose: Maintain a continuous feed of 2.6 - 12.7 fluid ounces (20 - 100 ppm) per day of DEARCIDE 733 per 1000 gallons of system capacity.

Feed Equipment: Stainless steel, polypropylene, polyethylene, viton, and teflon are recommended. Avoid iron, brass, copper, aluminum and neoprene.

Product Data:

- **Form: Liquid**
- **Odor: Aldehyde**
- **Density: 9.31 lbs/gal at 68°F (20°C)**
  1.12 kg/liter at 68°F (20°C)
- **Color: Clear**
- **Flash Point: None**
- **Freeze Point: -2°F (-17°C)**
- **pH at 25°C: 3.5- 4.5**

Limitations and Handling: DANGER - KEEP OUT OF REACH OF CHILDREN. FOR INDUSTRIAL USE ONLY.
If in eyes - Immediately flush with water for at least 15 minutes; get immediate medical attention. *If on skin* - Wash with soap and water; get immediate medical attention.
If swallowed - DO NOT induce vomiting. DO NOT give anything to drink. Give immediate medical attention. *If inhaled* - remove to fresh air. If breathing is difficult, administer oxygen. If symptoms persist, call physician. Note to physician: Probable mucosal damage may contraindicate use of gastric lavage. Please consult Material Safety Data Sheet for further details.

continued on back

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9064

Available Packaging: 5 gallon pail - Approximately 46 lbs net (21 kg)
30 gallon drums - Approximately 279 lbs net (127 kg)
55 gallon drums - Approximately 504 lbs net (229 kg)
180 gallon Dear-Pak II® - Approximately 1,681 lbs net (762 kg)
350 gallon Dear-Pak ® - Approximately 3,270 lbs net (1,483 kg)
Bulk delivery available

U.S. EPA Registration No. - 10352-22

Emergency Phone
708-438-1800

Material Safety Data Sheet

Section 1 Product Identification

TRADE NAME DEARCIDE 733 | PRODUCT TYPE Biocide | CODE IDENT. 14-733

DOT SHIPPING NAME CORROSIVE LIQUID, ACIDIC, ORGANIC, NOS (CONTAINS GLUTARALDEHYDE) XXX

Section 2 Hazardous Ingredients

	CAS NUMBER	%	EXPOSURE CRITERIA
Actives:			
Glutaraldehyde	111-30-8	45	Ceiling: 0.2 ppm (see Section 6)
Inerts:			
Water	7732-18-5	55	None established
Methanol	67-56-1	< 0.1	200 ppm (skin)

XXX 8, UN 3265, PG II

HMIS 3-0-0 EPA REGISTRATION NO. 10352-22-4643

Section 3 Physical Data

BOILING POINT, 760 mm Hg	215.7F	MELTING POINT	NA
FREEZING POINT	-2 F	VAPOR PRESSURE	14.7 mm Hg
SPECIFIC GRAVITY (H_2O=1)	1.12	SOLUBILITY IN H2O	Complete
VAPOR DENSITY (AIR=1)	> 1	EVAPORATION RATE (Bu Ac=1)	0.88
%VOLATILES BY VOLUME	100	pH	3.5-4.5

APPEARANCE & ODOR

Clear liquid; sharp aldehyde odor

Section 4 Fire & Explosion Hazard Data

FLASH POINT (& METHOD USED): NA, water-based product

FLAMMABLE LIMITS IN AIR % BY VOLUME: LOWER NA; UPPER NA

AUTO IGNITION TEMPERATURE: NA

EXTINGUISHING MEDIA: WATER FOG FOAM CO2 DRY CHEMICAL

SPECIAL FIRE FIGHTING PROCEDURES:

Firefighters should wear full protective gear including self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARD:

None known

Section 5 Reactivity Data

STABILITY (NORMAL CONDITIONS): Stable | CONDITIONS TO AVOID: Extreme heat

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong alkalies and acids catalyze an aldo-type condensation. This reaction is exothermic-generates heat-but is not expected to be violent.

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition products may include carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION: Will not occur | CONDITIONS TO AVOID: Temperatures above the boiling point.

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Section 6 Health Hazard Information

TOXICITY INFORMATION:
Glutaraldehyde manufacturer recommends 0.1 ppm ceiling.
Glutaraldehyde is intensely irritating; thus the effects outlined below.
Product toxicity not established--see section 2 for component information.

EFFECTS OF OVEREXPOSURE:
INHALATION: Vapor is irritating to the respiratory tract.
INGESTION: Moderately toxic. May cause moderate to marked irriation or burns to the mouth, throat, esophagus and stomach.
SKIN CONTACT: Brief contact will cause itching, redness and swelling. Prolonged contact may cause severe redness & swelling with ulceration and tissue destruction. May be absorbed through the skin.
EYE CONTACT: Liquid will cause severe and persistent conjunctivities. Severe corneal injury may develop. Vapors will cause irritation/tearing.

EMERGENCY AND FIRST AID PROCEDURES
INHALATION: Remove affected persons to fresh air and treat symptoms.

INGESTION: DO NOT INDUCE VOMITING--Do not give anything to drink. Contact physician immediately.

SKIN CONTACT: Wash immediately with soap and water. Remove contaminated clothing and wash before reuse. Consult physician if irritation occurs.

EYE CONTACT: Immediately and contiunely flush with water for at least 15 minutes. Seek medical attention immediately.

Section 7 Special Protection Information

VENTILATION REQUIREMENTS
Use adequate mechanical ventilation to remain below exposure criteria.

RESPIRATORY PROTECTION (SPECIFY TYPE)
NIOSH/MSHA approved organic vapor respirator if exposure criteria exceeded.

EYE PROTECTION
Chemical goggles and face shield

GLOVES
Impervious (Neoprene recommended)

OTHER PROTECTIVE CLOTHING AND EQUIPMENT
Long sleeve work shirt and pants, chemical-protective apron
Eye-wash and chemical shower should be near.

Section 8 Spill or Leak Procedures

STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED

Wear protective clothing including NIOSH/MSHA approved respirator. A self-contained breathing apparatus may be required for large spills. Dike spill and soak up with absorbant material. Flush area of spill with large quantities of water. Refer to product label regarding product spills.

It may be possible to decontaminate small spills with ammonium hydroxide or sodium bisulfite. CAUTION: reaction that producte heat and gas will result.

WASTE DISPOSAL METHOD

Dispose of in accordance with federal, state and FIFRA regulations.

This product is not formulated with chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40 CFR 372.

Refer to product label statements regarding disposal of product and container.

Section 9 Special Precautions

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Avoid skin contact; prolonged skin contact may cause darkening or "tanning" of the skin.

OTHER PRECAUTIONS
FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN. SHELF LIFE: 1 Year
Glutaraldehyde vapors may be irritating at about 0.3 ppm in air. (TLV is 0.2 ppm ceiling) Thus, if vapors are concentrated enough to be irritating, the TLV if problably being exceeded.

PREPARED BY: R. Ruthe DATE: 11/30/95

GRACE Dearborn

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APPENDIX D

Chemical Adjustment Solutions Calculations

		Calc. No.
		Revision 0
DESIGN ANALYSIS		Page No. 1 of 5
Client WHC	WO/Job No.	
Subject Volumes of Chemical Adjustment Solutions Required for Corrosion Inhibition of Catch Tank Liquids	Date 4/17/1996	By Charles T. Li
	Checked 5/9/1996	By Dennis A. Lauhala
Location 200 Area	Revised	By

OBJECTIVE

To determine the require volumes of sodium hydroxide solution and sodium nitride solution to be added to catch tanks for corrosion inhibition purpose.

DESIGN INPUTS

- Criteria & Source:

The pH of the liquid in the catch tank should be adjusted to a range of 11 to 14 before the liquid in the catch tank can be pumped to the primary tank.

The concentration of hydroxide ion should be 0.01 M and nitrite ion should be 0.011 M before the liquid in the catch tank can be pumped to the primary tank.

- Given / Know Data:

Sodium hydroxide solution to be used for pH adjustment has a pH of 14 (or 1 M)

The concentration of sodium nitrite solution to be used for nitrite ion adjustment is 0.4 M

- Assumptions:

Liquid in the catch tank has the same composition as the acid rain (acidified rain) water. The rain has a pH range of 4 to 7. Three nitrite ion concentrations, 0.0001 M, 0.001 M and 0.01 M have been studied in this analysis.

Four volumes of liquid in the catch tank, 300, 600, 900, 1200, and 1500 gallons, have been studied. Note that these are the liquid volumes not the catch tank volume.

Method Used:

The ion balance method was used.

References:

WHC-SD-WM-ER-573, page 2, 3, and 4

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DESIGN ANALYSIS

Client WHC

Subject Volumes of Chemical Adjustment Solutions Required for Corrosion Inhibition of Catch Tank Liquids

Location 200 Area

WO/Job No.

Date 4/17/1996 By Charles T. Li *Charles T Li*

Checked 5/9/1996 By Dennis A. Lauhala

Revised By

CALCULATION

Introduction:

Liquid collected in catch tanks mainly contains acid rain. Without any chemical adjustment, the liquid will corrode the primary tank where the liquid will be stored.

The corrosivity decision rules developed under the Tank Farm Waste Compatibility Program requires that 0.01 M hydroxide ion and 0.011 M nitrite ion concentrations be maintained for dilute solutions to inhibit general corrosion and are stipulated in DST operating specification documents. It is also desired that the pH of the solution to be pumped to the primary tank should be kept in a range of 11 to 14. Since the desired pH range, from 11 to 14, covers the required hydroxide concentration of 0.01 M as mentioned previously, in this report pH values between 11 to 14 will be used.

To chemically adjust the liquid in the catch tank dilute sodium hydroxide solution having a pH of 14 and sodium nitrite solution have a concentration of 0.4 M will be used.

In the following, volumes of sodium hydroxide and sodium nitrite solutions will be determined by a ion balance method.

Calculation:

Hydroxide balance

$$[V_c \times (OH)_c + V_{OH} \times (OH)_d] / [V_c + V_{OH} + V_{NO2}] = G_{OH} \qquad (1)$$

Nitrite balance

$$[V_c \times (NO_2)_c + V_{NO2} \times (NO_2)_d] / [V_c + V_{OH} + V_{NO2}] = G_{NO2} \qquad (2)$$

Where

V_c = volume of liquid in catch tank, liters

V_{OH} = volume of sodium hydroxide required, liters

V_{NO2} = volume of sodium nitrite required, liters

$(OH)_c$ = concentration of hydroxide ion in catch tank, M

$(OH)_d$ = concentration of hydroxide ion in the solution to be used for pH adjustment, M

$(NO_2)_c$ = concentration of nitrite ion in catch tank, M

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$(NO_2)_d$ = concentration of nitrite ion in the solution to be used for nitrite adjustment, M

G_{OH} = OH^- concentration of the pH adjusted liquid before being pumped back to the primary tank, M

G_{NO2} = NO_2 concentration of the nitrite ion adjusted liquid before being pumped back to the primary tank, M

Equations (1) and (2) can be rewritten as

$$[(OH)_d - G_{OH}] \times V_{OH} - G_{OH} \times V_{NO2} = [G_{OH} - (OH)_c] \times V_c \quad (3)$$

$$G_{NO2} \times V_{OH} - [(NO_2)_d - G_{NO2}] \times V_{NO2} = [(NO_2)_c - G_{NO2}] \times V_c \quad (4)$$

Let

$a_1 = [(OH)_d - G_{OH}]$

$b_1 = - G_{OH}$

$c_1 = [G_{OH} - (OH)_c] \times V_c$

$a_2 = G_{NO2}$

$b_2 = - [(NO_2)_d - G_{NO2}]$

$c_2 = [(NO_2)_c - G_{NO2}] \times V_c$

$V_{OH} = X$ and $V_{NO2} = Y$

Equations (3) and (4) become

$a_1 X + b_1 Y = c_1$

$a_2 X + b_2 Y = c_2$

Solving these two equation simultaneously to obtain X and Y as

$X = (c_1b_2 - c_2b_1) / (a_1b_2 - a_2b_1)$

$Y = (a_1c_2 - a_2c_1) / (a_1b_2 - a_2b_1)$

These calculation were performed in a spread sheet shown in Appendix.

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Location 200 Area	Revised	By

FINDINGS & CONCLUSIONS

Results of calculations are documented in Appendix and they are summarized in the following table (see next page).

It was found that the pH of the liquid in the catch tank (the acid rain water) was not sensitive to volumes of sodium hydroxide and sodium nitrite solutions used for chemical adjustment.

Varying the pH of the adjusted liquid (the final pH), concentration of NO_2 ion of solution used for adjustment, and volume of liquid in the catch tank were used for calculating the required volumes of sodium hydroxide and sodium nitrite solutions.

Note that, in the calculation, the volume of liquid collected in the catch tank (not the volume of the catch tank), was used. Therefore, before the required NaOH and $NaNO_2$ solutions for chemical adjustment are added, the available catch tank volume should be checked to assure that there is enough catch tank capacity for adding the required solutions.

Summary of Results of Calculations

Final		Cat. Tank	Cat. Tank	NaOH required		NaNO2 required		Total	Min. catch
pH	NO2, M	NO2, M	Liquid, gal	liters	gallons	liters	gallons	gallons	tank, gal.
11.0	0.011	0.0001	300	1.17	0.31	31.85	8.41	8.72	308.72
			600	2.34	0.62	63.70	16.83	17.45	617.45
			900	3.51	0.93	95.55	25.24	26.17	926.17
			1200	4.67	1.23	127.40	33.66	34.89	1234.89
			1500	5.84	1.54	159.25	42.07	43.62	1543.62
11.5	0.011	0.0001	300	3.70	0.98	31.92	8.43	9.41	309.41
			600	7.41	1.96	63.84	16.87	18.82	618.82
			900	11.11	2.94	95.77	25.30	28.24	928.24
			1200	14.81	3.91	127.69	33.74	37.65	1237.65
			1500	18.52	4.89	159.61	42.17	47.06	1547.06
12.0	0.011	0.0001	300	11.79	3.12	32.15	8.49	11.61	311.61
			600	23.59	6.23	64.30	16.99	23.22	623.22
			900	35.38	9.35	96.45	25.48	34.83	934.83
			1200	47.18	12.46	128.60	33.98	46.44	1246.44
			1500	58.97	15.58	160.75	42.47	58.05	1558.05
12.5	0.011	0.0001	300	38.15	10.08	32.90	8.69	18.77	318.77
			600	76.31	20.16	65.79	17.38	37.54	637.54
			900	114.46	30.24	98.69	26.07	56.31	956.31
			1200	152.62	40.32	131.59	34.76	75.09	1275.09
			1500	190.77	50.40	164.48	43.46	93.86	1593.86
13.0	0.011	0.0001	300	130.11	34.38	35.50	9.38	43.75	343.75
			600	260.22	68.75	70.99	18.76	87.51	687.51
			900	390.33	103.13	106.49	28.13	131.26	1031.26
			1200	520.44	137.50	141.99	37.51	175.01	1375.01
			1500	650.55	171.88	177.48	46.89	218.77	1718.77
13.5	0.011	0.0001	300	547.01	144.52	47.29	12.49	157.01	457.01
			600	1094.01	289.04	94.57	24.99	314.03	914.03
			900	1641.02	433.56	141.86	37.48	471.04	1371.04
			1200	2188.03	578.08	189.14	49.97	628.05	1828.05
			1500	2735.04	722.60	236.43	62.46	785.06	2285.06
11.0	0.011	0.001	300	1.17	0.31	29.22	7.72	8.03	308.03
			600	2.33	0.62	58.45	15.44	16.06	616.06
			900	3.50	0.92	87.67	23.16	24.09	924.09
			1200	4.66	1.23	116.89	30.88	32.12	1232.12
			1500	5.83	1.54	146.12	38.60	40.14	1540.14
11.5	0.011	0.001	300	3.70	0.98	29.29	7.74	8.72	308.72
			600	7.39	1.95	58.59	15.48	17.43	617.43
			900	11.09	2.93	87.88	23.22	26.15	926.15
			1200	14.78	3.90	117.18	30.96	34.86	1234.86
			1500	18.48	4.88	146.47	38.70	43.58	1543.58
12.0	0.011	0.001	300	11.77	3.11	29.52	7.80	10.91	310.91
			600	23.54	6.22	59.05	15.60	21.82	621.82
			900	35.30	9.33	88.57	23.40	32.73	932.73
			1200	47.07	12.44	118.09	31.20	43.64	1243.64
			1500	58.84	15.55	147.62	39.00	54.55	1554.55

Final		Cat. Tank	Cat. Tank	NaOH required		NaNO2 required		Total	Min. catch
pH	NO2, M	NO2, M	Liquid, gal	liters	gallons	liters	gallons	gallons	tank, gal.
12.5	0.011	0.001	300	38.07	10.06	30.27	8.00	18.05	318.05
			600	76.14	20.12	60.53	15.99	36.11	636.11
			900	114.21	30.17	90.80	23.99	54.16	954.16
			1200	152.27	40.23	121.07	31.99	72.22	1272.22
			1500	190.34	50.29	151.33	39.98	90.27	1590.27
13.0	0.011	0.001	300	129.82	34.30	32.86	8.68	42.98	342.98
			600	259.64	68.60	65.72	17.36	85.96	685.96
			900	389.45	102.89	98.58	26.05	128.94	1028.94
			1200	519.27	137.19	131.44	34.73	171.92	1371.92
			1500	649.09	171.49	164.31	43.41	214.90	1714.90
13.5	0.011	0.001	300	545.78	144.19	44.62	11.79	155.98	455.98
			600	1091.55	288.39	89.25	23.58	311.97	911.97
			900	1637.33	432.58	133.87	35.37	467.95	1367.95
			1200	2183.10	576.78	178.49	47.16	623.94	1823.94
			1500	2728.88	720.97	223.12	58.95	779.92	2279.92
11.0	0.011	0.01	300	1.14	0.30	2.95	0.78	1.08	301.08
			600	2.28	0.60	5.90	1.56	2.16	602.16
			900	3.42	0.90	8.85	2.34	3.24	903.24
			1200	4.56	1.20	11.81	3.12	4.32	1204.32
			1500	5.70	1.51	14.76	3.90	5.40	1505.40
11.5	0.011	0.01	300	3.61	0.95	3.02	0.80	1.75	301.75
			600	7.22	1.91	6.04	1.60	3.50	603.50
			900	10.84	2.86	9.06	2.39	5.26	905.26
			1200	14.45	3.82	12.08	3.19	7.01	1207.01
			1500	18.06	4.77	15.11	3.99	8.76	1508.76
12.0	0.011	0.01	300	11.50	3.04	3.24	0.86	3.90	303.90
			600	23.00	6.08	6.49	1.71	7.79	607.79
			900	34.51	9.12	9.73	2.57	11.69	911.69
			1200	46.01	12.16	12.98	3.43	15.58	1215.58
			1500	57.51	15.19	16.22	4.29	19.48	1519.48
12.5	0.011	0.01	300	37.21	9.83	3.97	1.05	10.88	310.88
			600	74.42	19.66	7.94	2.10	21.76	621.76
			900	111.63	29.49	11.91	3.15	32.64	932.64
			1200	148.84	39.32	15.88	4.20	43.52	1243.52
			1500	186.05	49.15	19.86	5.25	54.40	1554.40
13.0	0.011	0.01	300	126.89	33.52	6.51	1.72	35.24	335.24
			600	253.78	67.05	13.01	3.44	70.49	670.49
			900	380.67	100.57	19.52	5.16	105.73	1005.73
			1200	507.56	134.10	26.03	6.88	140.97	1340.97
			1500	634.45	167.62	32.54	8.60	176.22	1676.22
13.5	0.011	0.01	300	533.47	140.94	18.00	4.76	145.70	445.70
			600	1066.93	281.88	36.01	9.51	291.40	891.40
			900	1600.40	422.83	54.01	14.27	437.10	1337.10
			1200	2133.86	563.77	72.02	19.03	582.79	1782.79
			1500	2667.33	704.71	90.02	23.78	728.49	2228.49

APPENDIX E

Drawing List

H-2-71644, Rev. 1	Piping Plans, Section & Details, 241-A-151 & 241-A-302A
H-2-71670, Rev.1	Piping Enlgd Plan & Sect 241-ER-151 & 241-ER-311
H-2-2542, Rev. 0	Catch Tank Replacements at 241-TX-155 & 241-ER-151 Tank Removal & Alterations
H-2-44683, Rev. 6	241-AX-152 Diverter Sta. Piping & Equipment Arrangement - Sections
H-2-68316, Rev. 1	STRUCTURAL Concrete Catch Tank Plans, Sections & Details
H-2-68315, Rev. 2	Structural Concrete Condensate Pump Pit Plans, Sections, & Details
H-2-38203, Rev. 2	Structural Plans - Sections & Details 244-A Lift Station
H-2-70705, Rev. 2	Piping Sections and Details
H-2-56800, Rev. 9	Structural Concrete Tank 241-A-417 Plan, Sections, & Details
H-2-70318, Rev. 0	Structural Drainage Lift Station Plan, Section & Details
H-2-71660, Rev. 2	Piping Plan & Elevations 241-TX-154 & 241-TX-302C
H-2-71653, Rev. 1	Piping Plans and Sections 241-U Area
H-2-71665, Rev. 2	Piping Plan & Elevation 241-UX-154 & 241-UX-302
H-2-71052, Rev. 3	Piping Plans and Section
H-2-73789, Rev. 2	Structural RCVR Vault 244-BX, TX & U Plans and Sections
H-2-43148, Rev. 5	General Arrangement Vent Station Diversion Box 241-EW-151

DISTRIBUTION SHEET

To	From	Page 1 of 1
DISTRIBUTION	Materials and Corrosion Engineering	Date 6/12/96
Project Title/Work Order		EDT No. 616649
CATCH TANKS INHIBITOR ADDITION 200-EAST AND 200-WEST AREAS		ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
Westinghouse Hanford Company					
G.L.Edgemon	R1-30	X			
P.C.Ohl	R1-30	X			
S.R.Pierce	S5-05	X			
R.L.Powers	S5-13	X			
D.W.Reberger	S5-13	X			
S.H.Rifaey	R1-56	X			
J.P.Sloughter	R2-54	X			
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Technical Documents	E6-63	X			

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