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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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Name: M. J. Galbraith/
S. G. Marske

Signature

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7. Abstract

The purpose of this document was to obtain process knowledge to preliminarily characterize the waste in tank 241-CX-72. Incomplete records from the operation of the Hot Semiworks Facility hinder a detailed characterization.

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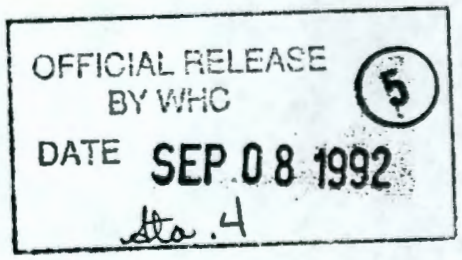

LITERATURE SEARCH FOR PROCESS KNOWLEDGE TO CHARACTERIZE THE WASTE IN TANK 241-CX-72

M. J. Galbraith

Decommissioning Engineering

July, 1992

EXECUTIVE SUMMARY

Comprehensive on-line and off-line searches of information related to tank 241-CX-72 were performed in an attempt to gain process knowledge to characterize the radioactive waste in the tank. The lack of historical documentation on the specific wastes placed in the tank prevents the use of process knowledge to eliminate analyses from the list to be performed. It is known that wastes from the Plutonium-Uranium Extraction plant (PUREX) were placed in the tank to study their self concentrating characteristics. The specific PUREX plant wastes are not detailed. It is also possible that PUREX plant decontamination flush solutions were placed in the tank. Thus, it is difficult to shorten the list of analyses.

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1. INTRODUCTION

The Hanford Site in southeastern Washington is approximately 560 square miles of semi-arid land in the Columbia Basin northwest of the city of Richland. The site is owned by the U.S. Government and managed by the Department of Energy, Richland Field Office (Figure 1). In early 1943, the U.S. Army Corps of Engineers selected the site for the production and purification of plutonium.

The "Hot Semiworks Facility" is in the 200 East Area of the Hanford Site (Figures 1 and 2). The facility with its associated underground processing tanks, 241-CX-70, 241-CX-71, and 241-CX-72, supported the processing of irradiated uranium fuel for the production of plutonium.

The Decommissioning Engineering group is currently in the process of removing and sampling the waste contained in tank 241-CX-72. The purpose of this literature search is to determine if there is the possibility of dangerous waste (listed waste) in the tank in addition to the detected high level radioactive sludge. The goal also is to plan for the eventual retrieval and packaging of the waste in accordance with U.S. Department of Transportation requirements. This document describes the results of the literature search for historical process knowledge to perform a preliminary waste characterization.

1.1. BACKGROUND

The Hot Semiworks Facility at the Hanford Site was constructed in 1949 initially to develop optimum conditions for the economic operations of the Reduction Oxidation plant (REDOX) and U-Plant. In 1954, the facility was converted to do pilot work to procure design data and specifications for the Plutonium-Uranium Extraction plant (PUREX). The Hot Semiworks facility was also to provide facilities for immediate trouble shooting for urgent plant separations problems (Evans and Tomlinson, 1954). In 1961, after extensive cleaning and decontaminating, the facility was modified and put back into operation for the recovery and purification of megacurie quantities of strontium. At this time, the facility was renamed the "Strontium Semiworks." Purified strontium-90 (as much as 400,000 Ci) was loaded into a cask and shipped offsite. In 1967, the facility was shut down and retired. Decontamination and decommissioning of the facility began in 1983 (Shoemaker, 1985).

Figure 1. Map of the Hanford Site.

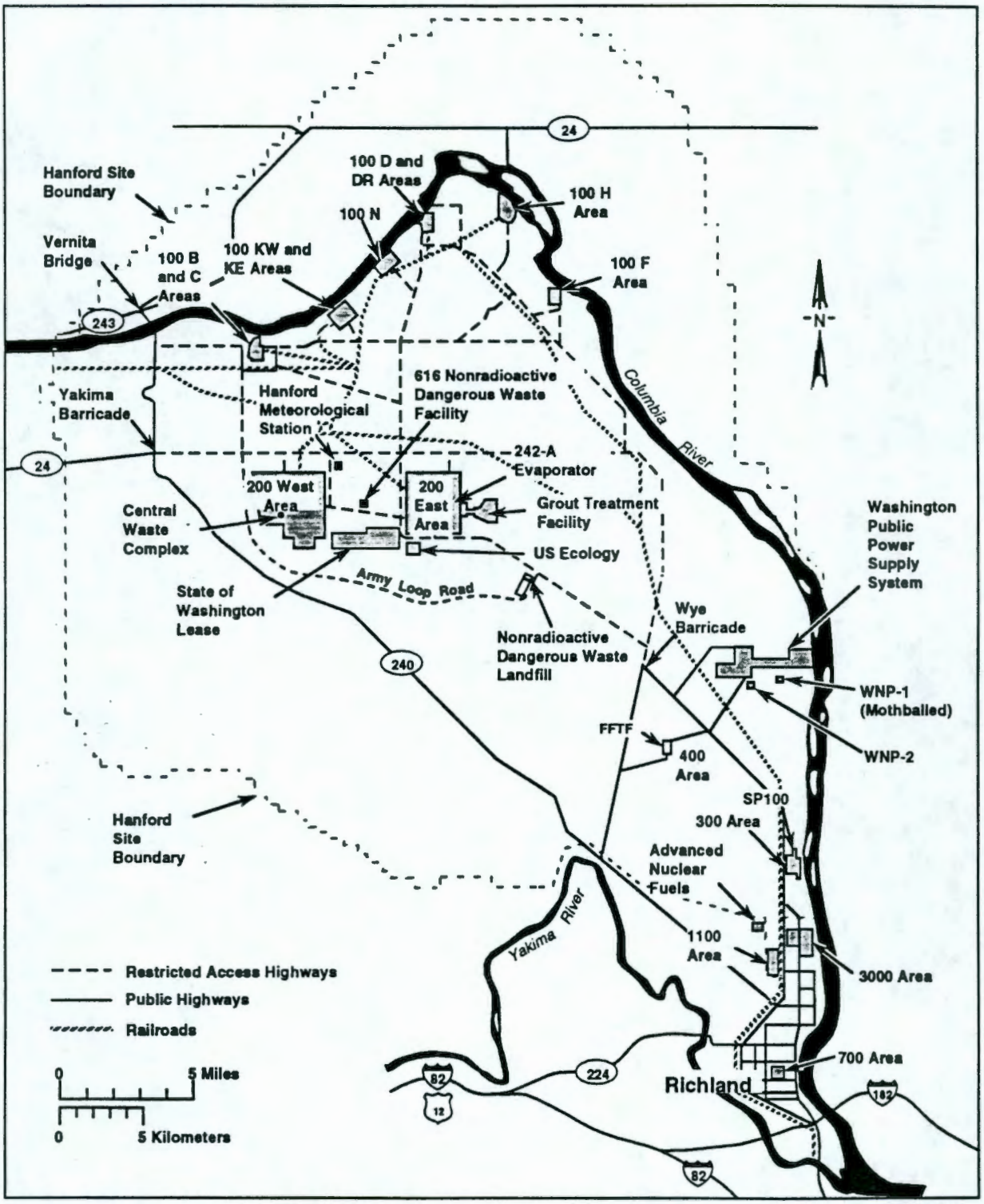
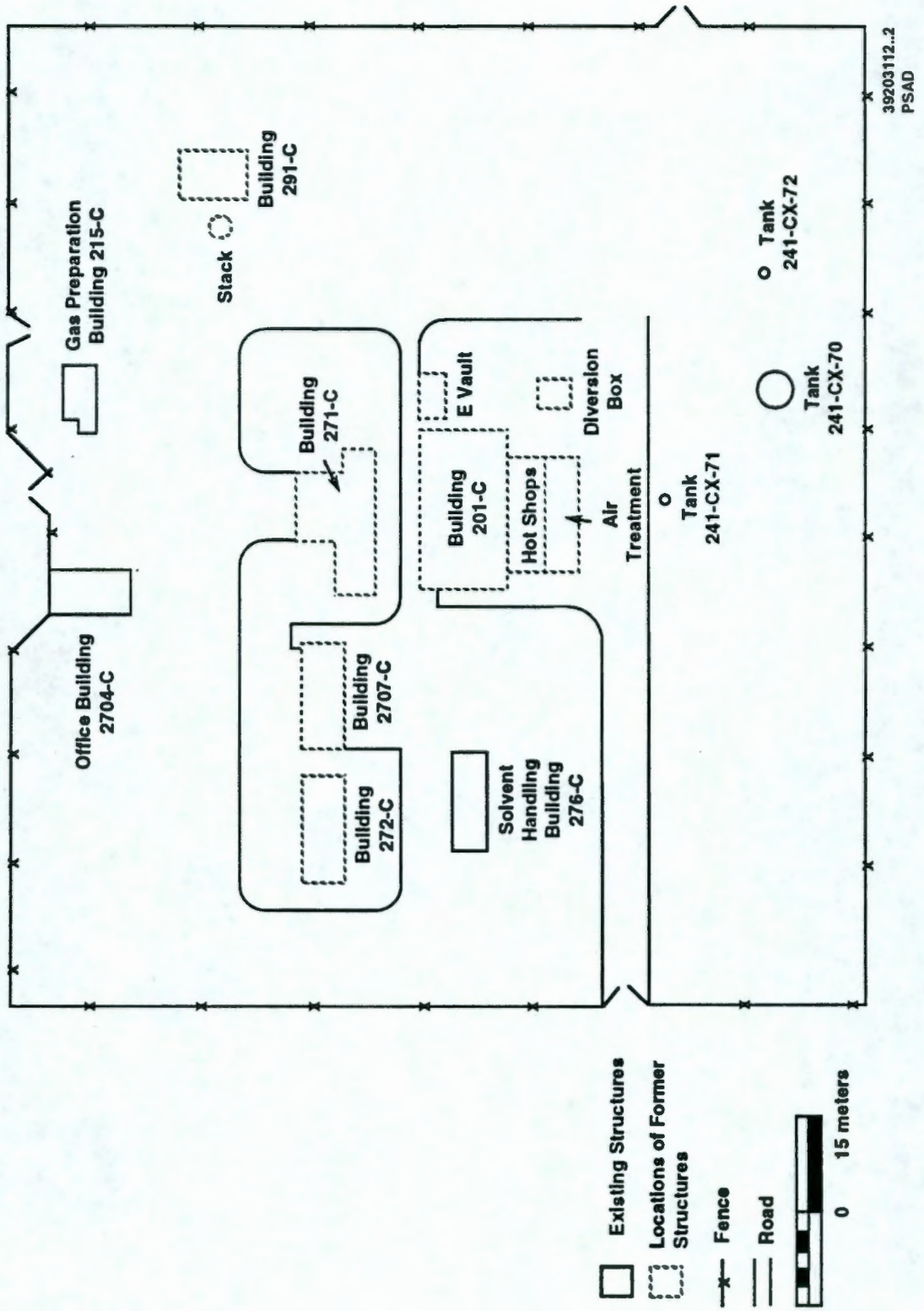


Figure 2. Map of the Strontium Semiworks Facility.



1.2. DESCRIPTION OF TANK 241-CX-72

Tank 241-CX-72 is a single-shell carbon steel tank buried upright inside a steel caisson 14 ft below grade. The tank is 40 in. in diameter and 36 ft long. In addition to two 8-in. risers, a 3-in. diameter dry well is located around the circumference of the tank. The risers have been capped. Down its center, the tank has an agitator rod assembly with five manually actuated paddles attached concentrically. These were used to determine the consistency of waste/sludge in the tank. The tank walls are reinforced with five backing rings. Three rows of vertical guides connect each backing ring. An electrical heater is mounted just above each backing ring. Two underground pipes enter the tank from the 201-C Building. The tank is not connected with any other disposal cribs or processing tanks (Figure 3).

1.3. HISTORY OF TANK 241-CX-72

In 1955, tank 241-CX-72 was constructed as an experimental tank to study self concentrating wastes from PUREX pilot studies. The PUREX process used tributyl phosphate in kerosene solvent to extract plutonium and uranium from irradiated uranium fuel. Nitric acid was used to enhance the extraction. Condensates from this process contained dilute nitric acid and a variety of inorganic and organic contaminants depending on the specific waste stream.

Documents indicate that the tank was in use for only one year (1956) when 2,305 gal of PUREX plant waste was originally placed; however, interviews with Hot Semiworks personnel, now retired, indicated that PUREX plant decontamination flush solutions may also have been placed in tank 241-CX-72. Personnel also indicated that the tank was not used during the strontium recovery program (Cummings, 1989).

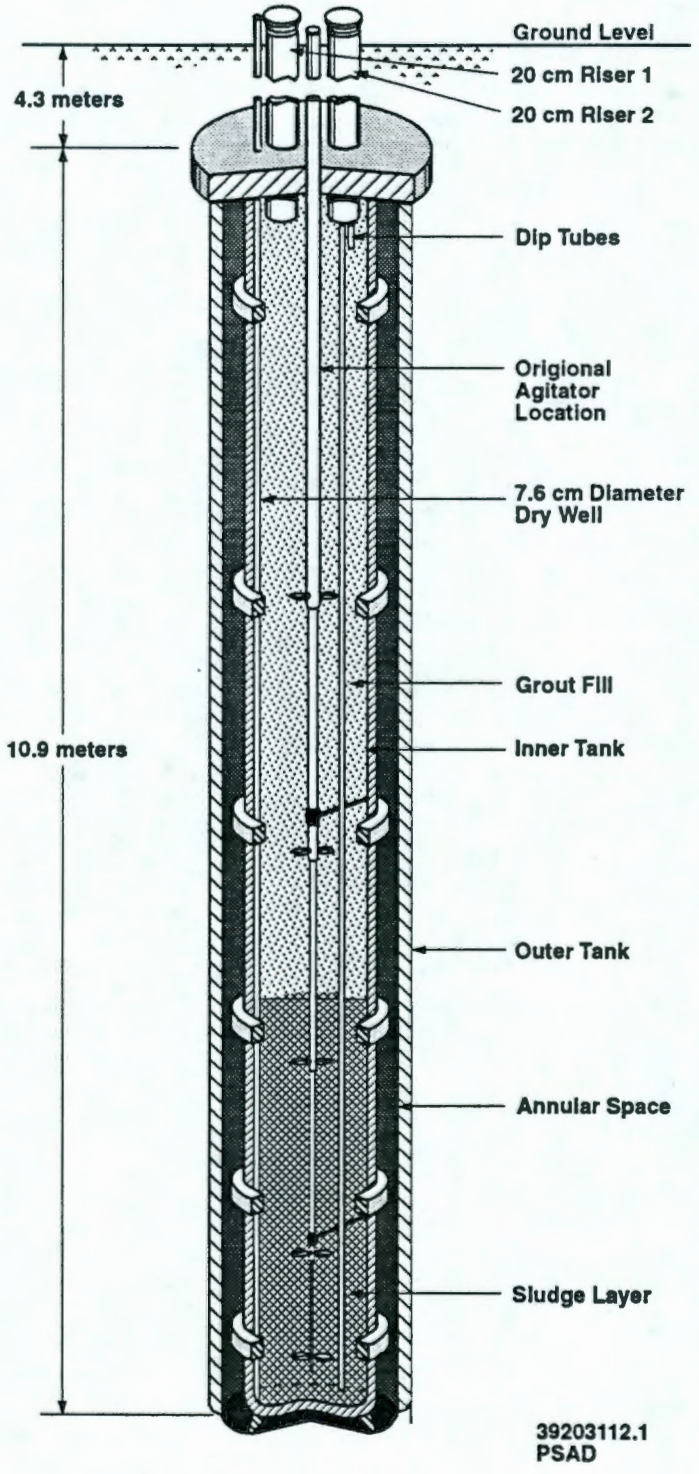
Thus, the tank was apparently not used after the PUREX studies phase of Hot Semiworks. The tank was idle from 1960 until the facility was retired in 1967.

A liquid level measurement, taken in 1974, indicated that 6 ft 2.5 in. of sludge was in the tank (Harlow, 1974).

In 1978, the tank was erroneously recorded as empty. In 1986, a liquid measurement probably taken from within the dry well confirmed that the tank was empty. Hence, the tank was filled with grout as part of the ongoing decommissioning activities of the Strontium Semiworks Facility to eliminate empty spaces within the tank which could structurally weaken the vessel. The grout addition was in support of the planned entombment of the facility (Crawford, 1992).

In 1988, an actuator rod was accidently pulled approximately 15 ft out of the tank by a piece of heavy equipment. This rod was thus found to be radioactively contaminated and was subsequently buried as low-level radioactive waste. The extensive radioactive contamination found on the rod prompted further investigation using nondestructive assays (Subrahmanyam, 1989).

Figure 3. Cutaway Drawing of Tank 241-CX-72.



In the fall of 1988 and the spring of 1989, neutron and gamma radiation measurements were made from within the dry well. The two radiological evaluations headed by J. D. Ludowise and V. B. Subrahmanyam came to the following conclusions:

1. A layer of radioactivity approximately 11 feet in thickness, exists at the bottom of the tank. The activity is from fission products and transuranium isotopes.

2. The activity layer is dry and does not contain appreciable quantities of hydrogenous materials to thermalize the neutrons generated within the tank.

3. Calculations of plutonium content in the radioactive layer, using realistic and reasonable isotopic compositions, resulted in a conservative estimate of 150 to 200 g. This conclusion is based on the assumption that the pilot studies of the PUREX process that generated the waste suffered a 1 to 2 percent loss of plutonium to the waste (Ludowise, 1990).

The former radiological investigation also quantified the amount of cesium-137 in the tank as 8,000 to 10,000 Ci (Ludowise, 1990).

It must be pointed out that the absence of appreciable quantities of moderating hydrogenous materials, as stated above does not rule out potentially designating quantities of organic compounds which are not able to volatilize due to their being trapped in the radioactive waste matrix. Since the radioactive layer will likely contain significant quantities of transuranic radionuclides, a transuranic waste (TRU Waste) designation cannot be ruled out.

Because of the detection of high-level radioactivity, engineering studies were prepared to evaluate alternatives to decommission the facility. The current decommissioning activity is to drill out and sample the grout material, sample the high-level waste, and remove and dispose of these wastes per their characterizations. Nondestructive radiological examinations cannot be used alone for waste designation so sampling must still be performed.

2. SEARCH PROCESS

A comprehensive search for historical documentation was undertaken. The Hot Semiworks pilot and troubleshooting documentation of the REDOX and PUREX processes were sent to the Record Center in Seattle, Washington. Subsequently, many of the Strontium Semiworks records were also sent to the Record Center. Many of the documents were inadvertently destroyed in 1982. No microfilm/fiche copies exist (Cummings, 1989).

There exists some historical documentation at the Pacific Northwest Laboratory (PNL) library. Several Hot Semiworks and PUREX documents are still classified; however, these were screened by library personnel with appropriate security clearances. Neither references to tank 241-CX-72 nor applicable related operations to PUREX studies found.

On-line and off-line literature searches were conducted at the Battelle library. The following subjects (and their abbreviated keywords) were investigated:

- PUREX Pilot Studies
- 201-C Hot Semiworks
- 201-C Strontium Semiworks
- REDOX Studies
- Underground Radioactive Waste Tanks
- Radioactive Waste Tanks
- PUREX Process Troubleshooting
- 241-CX-72

In addition, a chronological search covering 1954 through 1962 for pertinent information in the above categories was also conducted. The goal was to find information on process streams which would have been likely candidates for placing in tank 241-CX-72. A search of laboratory records for evidence of sampling of tank contents was also conducted.

3. RESULTS OF LITERATURE SEARCH

Unfortunately, the literature searches conducted at the Battelle library yielded little valuable information beyond that which is already available. No documentation was found on specific PUREX waste streams placed in the tank other than the initial placing of 2,305 gal of an unspecified PUREX waste stream containing 61.22 lb of uranium and 48.49 g of plutonium in the tank in 1957. It is indicated that tank 241-CX-72 received quantities of PUREX waste streams, but no documentation tells which specific stream was actually placed (Cooley, 1957).

The supporting document, WHC-SD-DD-TI-040 (Cummings, 1989), lists the results of contacts with retired Strontium Semiworks personnel who indicated that PUREX decontamination flushes may have been placed in the tank but no strontium recovery project wastes. Fourteen different decontamination solutions were in use at PUREX during its first 10 years of operation. Depending on the type of contamination present, a solution would be washed through the columns at a specific application temperature. These included such solutions as tartaric acid in caustic sodium hydroxide, oxalic acid, sodium fluoride in nitric acid, sodium dichromate in sulfuric acid, and sodium dichromate in nitric acid (Cummings, 1989).

The later status reports and memos on tank 241-CX-72 after the facility was retired are compiled in WHC-SD-DD-TI-040.

Several observations were conducted to determine if waste was in the tank. In 1976, it was also planned to purchase optical equipment for a detailed viewing of the inside of the tank. No documentation was found to indicate that this viewing was performed (Burton, 1976).

Sections 5 and 6 list all the documents reviewed by the author in the attempt to gain insight into the possible origins of the radioactive sludge in tank 241-CX-72.

4. CONCLUSIONS

The results of this literature search indicate that it is not possible to characterize the 241-CX-72 radioactive waste using process knowledge. Historical documentation indicates that PUREX wastes were placed in tank 241-CX-72. The documents do not specify which specific streams were placed nor the quantities or dates. The PUREX process used tributyl phosphate and kerosene in nitric acid to extract plutonium and uranium from irradiated uranium fuel. This general knowledge of the PUREX wastes and the possibility that decontamination flushes may also have been placed in the tank do not rule out the possibility of trace organic contaminants trapped in the radioactive sludge.

The plutonium is likely present as oxide and fluoride compounds. This raises the possibility that potentially designating quantities of fluorides may be present. If a sodium dichromate decontamination flush solution was placed in the tank then potentially designating quantities of chromium may be present. Due to the decontamination flushes speculation, it is also remotely possible that designating quantities of sulfates and nitrates are present as a cation-anion combination with iron. This speculation on the contents of the tank can easily become quite extensive.

Based on the lack of sufficient historical documentation, a waste characterization based on process knowledge is not possible.

5. REFERENCES

Burton, G., 1976, Letter to O. J. Elgert, Energy Research and Development Administration (ERDA), "Waste Tank Survey," dated June 1976.

Cooley, C. R., 1957, *Standby Status Report Hot Semiworks Facility*, HW-52860, September 1, 1957, General Electric Company, Richland, Washington.

Crawford, J. A., 1992, *Preliminary Design Criteria for Waste Removal from Tank 241-CX-72*, WHC-SD-DD-RD-001, March 1992, Westinghouse Hanford Company, Richland, Washington.

Cummings, J. E., 1989, *Tank 241-CX-72 Preliminary Waste Characterization*, WHC-SD-DD-TI-040, June 30, 1989, Westinghouse Hanford Company, Richland, Washington.

Evans, T. F. and R. E. Tomlinson, 1954, *Hot Semiworks Redox Studies*, HW-31767, January 27, 1954, General Electric Company, Richland, Washington.

Harlow, D. G., 1974, Rockwell Memo to J. A. Teal, "Disposition and Isolation of Tanks 270-E-1, 270-W, 241-CX-70, 241-CX-71, and 241-CX-72," dated July 2, 1974.

Ludowise, J. D., 1990, *An Estimate of the Radionuclide Content of Tank 241-CX-72*, WHC-SD-DD-TI-051, April 1990, Westinghouse Hanford Company, Richland, Washington.

Shoemaker, D. C., 1981, *Hot Semiworks Insitu Disposal Study*, RHO-CD-1541, September 1981, Rockwell Hanford Operations, Richland, Washington.

Subrahmanyam, V. B., 1989, *Radiological Evaluation, Hot Semiworks Waste Tank 241-CX-72*, WHC-SD-CP-TI-148, July 1989, Westinghouse Hanford Company, Richland, Washington.

6. BIBLIOGRAPHY

Allen, G. K., L. L. Jacobs and D. W. Reberger, 1985, *PUREX Flowsheet - Reprocessing N Reactor Fuels*, Rev. A-8, PFD-P-020-00001, September 20, 1985, Rockwell Hanford Operations, Richland, Washington.

Baes, Jr., C. F., 1962, "The Extraction of Metallic Species by Dialkylphosphoric Acids," *Journal of Inorganic and Nuclear Chemistry*, Volume 24, 1962, pp 707-720.

Bendixson, R. B., 1990, *Sludge in Aging Waste Tanks and Maximum Observed Temperature*, WHC-SD-WM-TA-019, April 1990, Westinghouse Hanford Company, Richland, Washington.

Bray, L. A., 1961, *Incorporation of Ion-Exchange in the Hot Semiworks Solvent Extraction Strontium Facility*, HW-68786, March 9, 1961, General Electric Company, Richland, Washington.

Bray, L. A. and H. H. Van Tuyl, 1961, *Laboratory Development of a Carrier - Precipitation Process for the Recovery of Strontium from PUREX Wastes*, HW-69534, May 9, 1961, General Electric Company, Richland, Washington.

Coplan, B. V., J. K. Davidson, and E. L. Zebroski, 1954, "The Pump-Mix Mixer Settler a New Liquid-Liquid Extractor," *Chemical Engineering Progress*, Volume 50, Number 8, August 1954, pp 403-408.

Evans, T. F., 1959, *The Pilot Plant Denitrification of PUREX Wastes Using Formaldehyde*, HW-58587, February 3, 1959, General Electric Company, Richland, Washington.

Fukumoto, D. W., 1985, Internal Letter to W. M. Hayward, "Concrete Specifications for A, C, D and E Cells, Galleries, Tanks and Labyrinth," dated July 26, 1985.

GE, 1954a, "Self Concentrator Arrangement," Drawing number H-22-2554, General Electric Company, Richland, Washington.

GE, 1954b, "Self Concentrator Agitator Detail," Drawing number H-2-2559, General Electric Company, Richland, Washington.

GE, 1954c, "Self Concentrator Details," Drawing number H-2-2563, General Electric Company, Richland, Washington.

GE, 1961, *The Recovery and Purification of Multi-Kilocurie Quantities of Fission Product Strontium by Cation Exchange*, HW-70998, September 8, 1961, General Electric Company, Richland, Washington.

GE, 1963, *Hot Semiworks Strontium-90 Recovery Program*, HW-72666, July 17, 1963, General Electric Company, Richland, Washington.

GE, 1965, *Specifications & Standards Strontium Purification at the Strontium Semiworks*, RL-SEP-20, February 15, 1965, General Electric Company, Richland, Washington.

Geier, R. G., 1960, *Process Specifications for Chemical Hazard Control - PUREX Plant*, HW-67757, General Electric Company, Richland, Washington, December 1960.

Griffin, T. E. and J. D. Ludowise, 1989, *Recommendations for the Sampling and Decommissioning of Tank 241-CX-72*, WHC-SD-DD-ES-008, September 7, 1989, Westinghouse Hanford Company, Richland, Washington.

Irish, E. R., 1958, *Process Specifications for Operational Control - PUREX Plant, Revision Number 1*, HW-56933, November 17, 1958, General Electric Company, Richland, Washington.

McHenry, R. E. and J. C. Posey, 1961, "Separation of Strontium-90 from Calcium by Solvent Extraction," *Industrial and Engineering Chemistry*, Volume 53, Number 8, August 1961, pp 647-650.

Peppard, D. F., J. R. Ferraro, and G. W. Mason, 1957a, "Possible Hydrogen Bonding in Certain Interactions of Organic Phosphorus Compounds," *Journal of Inorganic and Nuclear Chemistry*, Volume 4, 1957, pp 371-372.

Peppard, D. F., G. W. Mason, J. L. Maier, and W. J. Driscoll, 1957b, "Fractional Extraction of the Lanthanides as Their Di-Alkyl Orthophosphates," *Journal of Inorganic and Nuclear Chemistry*, Volume 4, 1957, pp 334-343.

Peppard, D. F., J. R. Ferraro and G. W. Mason, 1958, "Hydrogen Bonding in Organophosphoric Acids," *Journal of Inorganic and Nuclear Chemistry*, Volume 7, 1958, pp 231-244.

Pence, R. J., 1958, *Installation of Ammonia Scrubbers in PUREX*, HW-55548, April 4, 1958, General Electric Company, Richland, Washington.

RHO, 1979, *Preliminary Study for Decontamination and Decommissioning of Strontium Semiworks*, D0105ER0001, October 1, 1979, Rockwell Hanford Operations, Richland, Washington.

RHO, 1981, *Hot Semiworks In Situ Disposal Study*, RHO-CD-1541, September 1981, Rockwell Hanford Operations, Richland, Washington.

RHO, 1982, *Rockwell Retired Contaminated Facility Listing and Description*, SD-DD-FL-001, July 19, 1982, Rockwell Hanford Operations, Richland, Washington.

RHO, 1983, *Strontium Semiworks Decommissioning Engineering Study*, SD-DD-ES-003, July 1983, Rockwell Hanford Operations, Richland, Washington.

RL, 1987, *Final Environmental Impact Statement --- Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes*, DOE/EIS-0113, 1987, U.S. Department of Energy, Richland Field Office, Richland, Washington.

RL, 1992, *Semi-Works Source Aggregate Area Management Study Report*, DOE/RL-92-18 (Draft), May 1992, U.S. Department of Energy, Richland Field Office, Richland, Washington.

Shulz, W. W, J. E. Mendel, and G. L. Richardson, 1961, *Solvent Extraction Recovery and Purification of Strontium-90*, HW-SA-2396, December 13, 1961, Pacific Northwest Laboratory, Richland, Washington.

Smith, C. W., 1961, *Strontium-90 Shipping Cask Design Criteria and Hazards Evaluation*, HW-68081, January 13, 1961, General Electric Company, Richland, Washington.

Tomlinson, R. E., 1953, *Hot Semiworks Summary - Run HR-8*, HW-28464, May 15, 1953, General Electric Company, Richland, Washington.

Weaver, W. F., 1986, Internal Letter to W. F. Heine, "201-C Tank Fill," dated February 24, 1986.

WHC, 1988, *Tank 241-CX-70 Waste Removal Assessment*, SD-DD-TI-034, October 31, 1988, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990a, *Engineering Report for Tank 241-CX-72 Decommissioning*, WHC-SD-DD-ER-002, April 20, 1990, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990b, *Task Plan for the Sampling and Decommissioning of Tank 241-CX-72*, WHC-SD-DD-PAP-002, September 5, 1990, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990c, *Safety Evaluation for Interim Waste Management Activities in Tank 241-CX-70, Tank 241-CX-71, and Tank 241-CX-72*, WHC-SD-DD-SAD-001, September 19, 1990, Westinghouse Hanford Company, Richland, Washington.

WHC, 1992, *CX-72, Safety Assessment, Hot Semiworks, D&D, Grout Removal, Phase I*, WHC-SD-DD-SAD-002, April 29, 1992, Westinghouse Hanford Company, Richland, Washington.

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M. C. Hughes	R2-81	X		
B. D. Keele	T6-31	X		
S. G. Marske	R2-77	X		
A. G. Miskho	B2-19	X		
R. G. Shuck	S4-67	X		
E. H. Smith	B2-19	X		
DE Files C.11.9	R2-77	X		
Central Files	L8-04	X		
EDMC	H4-22	X		