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RADIOACTIVE WASTE TANK INITIAL PRETREATMENT MODULE (IPM) TECHNOLOGY DEVELOPMENT AND SELECTION

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RADIOACTIVE WASTE TANK INITIAL PRETREATMENT MODULE (IPM) TECHNOLOGY DEVELOPMENT AND SELECTION

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INTRODUCTION

The processing of nuclear materials at the Hanford Site has resulted in the accumulation of radioactive wastes stored in 177 single- and double-shell tanks (SSTs and DSTs). Fifty-four of the 177 tanks are currently on a tank watch list because organic chemicals and ferrocyanide compounds in the tanks present a potential fire or explosion hazard. In addition, one additional SST is under consideration for placement on the watch list because of high organic concentration. Seventeen of the watch list tanks require pretreatment, and two DST complexant concentrate waste tanks not on the watch list may also need pretreatment. The proposed Initial Pretreatment Module (IPM) is expected to resolve the safety concerns by destroying the organics and ferrocyanide compounds in the tank wastes.

The primary objective of the IPM is to destroy or modify constituents that cause safety concerns in the watch list tanks. A secondary objective is to enhance the cost effectiveness of processing the wastes by performing additional processing. Overall, IPM will achieve organic/ferrocyanide destruction (the primary goal) and will assist in the separation of cesium, strontium, and technetium from the tank wastes. The IPM process description is presented in Figure 1 (with the IPM shown within the treatment envelope).

TECHNOLOGY EVALUATION PROCESS

A selection panel convened in Salt Lake City from May 24-26, 1993, to select up to three technologies for further IPM development. The panel consisted of nine members (two non-voting) representing industry, academia, private consultants, and Department of Energy (DOE) contractors. John A. Roth, of Vanderbilt University, chaired the panel.

A structured technology evaluation process was developed to support the selection panel's recommendation. The process allowed the panel to systematically consider all relevant factors, highlight differences in judgement and values, and provide documented results that facilitate communication of the decision rationale. The selection panel's recommendation was made based upon technological reports, presentations, and expert judgement.

The selection panel was given the requirements for the IPM. which include the following: 1) treat wastes (at a 3:1 dilution) within safety standards, 2) meet grout requirements, 3) destroy organics to 1556 mg/l (as total organic carbon (TOC)), 4) destroy ferrocyanides to 2.5 percent (by weight), and 5) decompose (although a secondary consideration) nitrites and nitrates. The waste influent was assumed to be from Tank 101-SY for comparison purposes,

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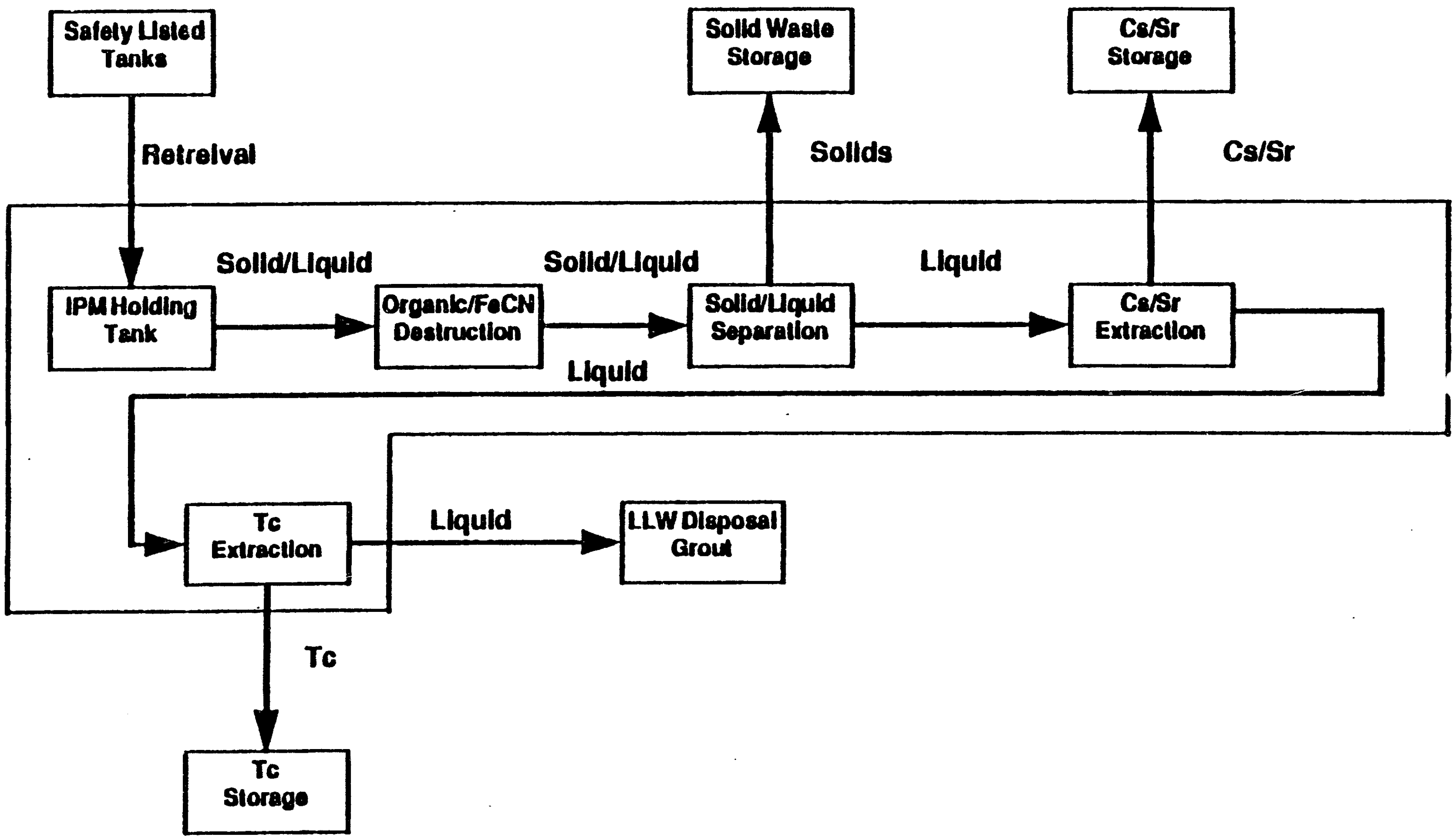

FIGURE 1

IPM System Description

but the panel was aware that the IPM process must be able to accommodate a variety of waste compositions with regard to organic type and concentration, ferrocyanide concentration, and inorganic makeup. Precise waste compositions and exact treatment requirements were unavailable, resulting in a high degree of conservatism by the selection panel. In addition, the IPM technology was required to treat both liquid and solid wastes, as well as sludges found in the tanks (slurried in the 3:1 dilution of tank wastes).

The selection panel developed the procedure in a three-step process. The steps were as follows: a) criteria review, evaluation, and weighting; b) technology appraisal based on criteria; and c) recommendation development.

The purpose for the criteria review and weighting was to develop a common understanding of the criteria definitions, show the relevance of the criteria to the IPM decision, and ensure all aspects of the IPM decision would be considered and represented. During the criteria-review step, the criteria components and definitions were agreed upon and finalized by the panel. The criteria were divided into two categories: system requirements and process criteria. The panel determined the system requirements would be, with a high degree of certainty, the minimum standards acceptable with regard to each technology considered. Those technologies that were not judged to meet the system requirements were then evaluated against their ability to meet the process criteria. The system requirements consist of the following four subcategories:

1) degree of organic destruction
2) degree of ferrocyanide destruction
3) process throughput
4) applicability to Hanford tank wastes.

The process criteria consist of the following five subcategories, which are further divided and defined (see Figure 2):

1) technical availability
2) operability
3) facility/system integration
4) cost
5) safety and environment.

The weighting process established the relative importance of the criteria. Numerical weights were assigned to the criteria based on their value set for each voting individual on the selection panel. Differences in individual weights were assessed, and a composite set of weights representing the group values was used to proceed. Minor differences in values among the panel members were evident and were considered during recommendation development. The composite set of weights is shown in Figure 3.

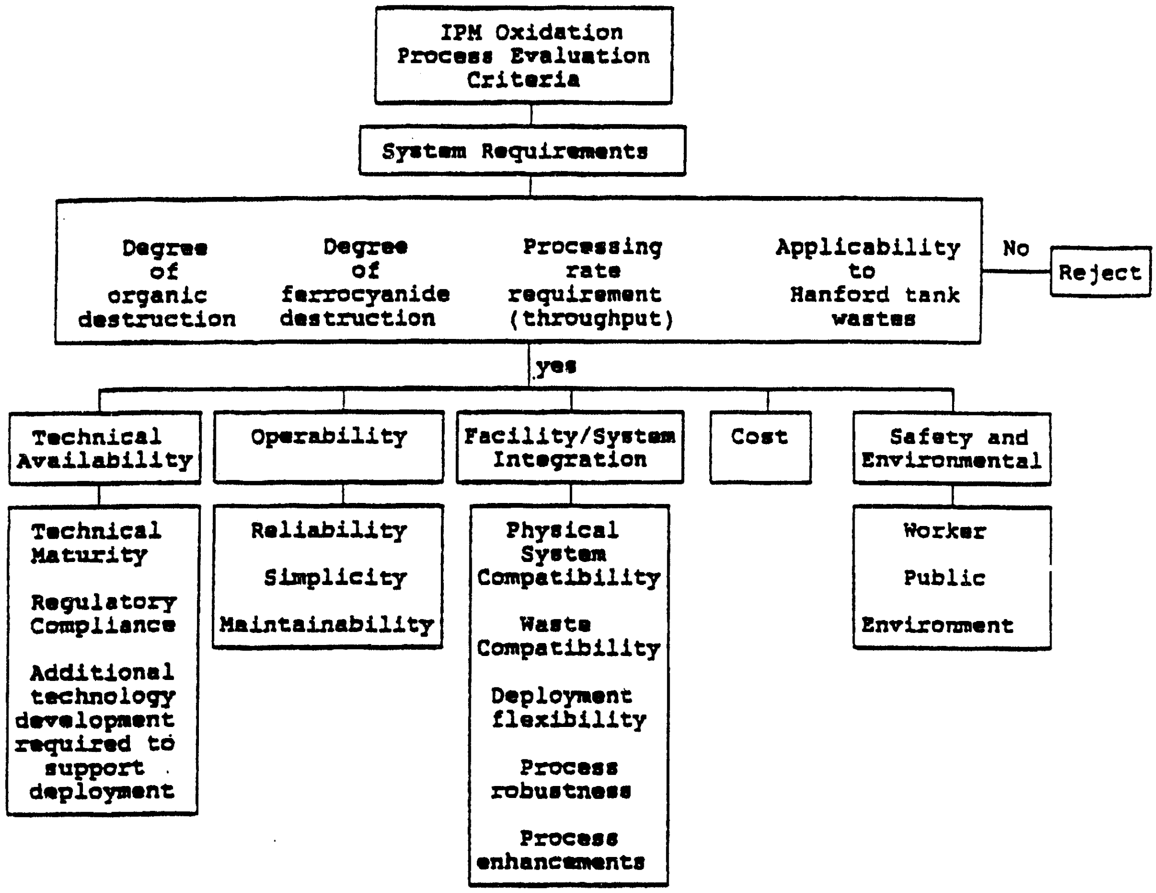

FIGURE 2

IPM Oxidation Process Evaluation Criteria

The appraisal of each technology was performed during the technology presentation. Each voting panel member used a scoresheet to record the relative strength or weakness of each technology for each criterion according to the following scale:

3 - good or strong
2 - no advantage/disadvantage
1 - poor or weak.

This appraisal method recorded and provided the rationale for each panel expert's assessment of the technology. Discussions were held in closed session among the panel members after every two presentations to ensure that the criteria definitions were uniformly and consistently applied. The panel members then were given a summary showing all their numerical assessments for each technology along every criterion. Assessment differences were used to focus the discussion and arrive at consensus.

		AVG.	
TECHNICAL AVAILABILITY			
Technical Maturity		8.7	
Regulatory Compliance		7.1	
Additional Technical Development Required		7.7	
	subtotal		23
OPERABILITY			
Reliability		7.4	
Simplicity		4.8	
Maintainability		4.8	
Corrosion		5.8	
	subtotal		23
FACILITY/SYSTEM INTEGRATION			
Physical System Compatibility		2.6	
Waste Compatibility		3.7	
Deployment Flexibility		3.1	
Process Robustness		5.2	
Process Enhancements		2.5	
	subtotal		17
COST		12.1	
	subtotal		12
SAFETY AND ENVIRONMENT			
Worker		8.8	
Public		8.7	
Environment		7.1	
	subtotal		25
	Total		100

FIGURE 3

IPM Selection Panel Criteria Weights

Finally, during recommendation development, the criteria weights were applied to the technology assessment. The technology scores were then presented to the panel. The panel evaluated and interpreted the scores to identify important differences in scoring and to improve the degree of consensus. The individual rationales and documentations throughout the technology appraisal step were critical in developing and documenting the panel's recommendation.

DESCRIPTION OF TECHNOLOGIES

Six technologies from the previous IPM selection (November 1992) were chosen in advance, and advocates of each technology submitted a written proposal and gave a presentation to the panel. The six technologies represented were high-temperature hydrothermal (S. Buelow, Los Alamos National Laboratory [LANL]); low-temperature hydrothermal (E. Jones, Pacific Northwest Laboratory, [PNL]); electrochemical treatment (L. Holton, PNL); steam reforming (J. Sprung, Sandia National Laboratories [SNL]); ozonation (M. Klem, Westinghouse Hanford Company [WHC]); and calcination (S. Colby, WHC). Ample time was given for questions from the panel, and each technology was scored at the end of the presentation. A brief description of each technology is presented in the following discussion.

Hydrothermal Processing (HTP)

Hydrothermal processing is a chemical process in which the temperature and pressure are elevated, increasing the oxidation rate of the organics and the ferrocyanides present in the wastes. A schematic of this process is shown in Figure 4. Sufficient nitrite and nitrate (oxidants) are present in the Hanford tank wastes such that additional oxidants do not have to be added. Investigations have been carried out in two process-operating regions. The low-temperature hydrothermal program at PNL operates at 250°C to 400°C and approximately 3000 psi. The high-temperature hydrothermal program at LANL operates at temperatures greater than 450°C and pressures between 3000 and 15,000 psi.

The low-temperature HTP kinetics required residence times on the order of minutes for the waste streams investigated. Since the oxidation reactions are exothermic, a heat transfer fluid is used to maintain the temperature in the plug flow reactor. Heat is recovered by preheating the feed with the treated waste. Pressure letdown is required after the treated stream is cooled. Experimental rate data were obtained on Tank 101-SY simulant waste with EDTA as the only organic source. At high operating temperatures, solids (primarily sodium carbonate) formation has been observed in the reactor. The kinetics of destruction of other organics present in the Hanford wastes have not yet been determined. A reductant such as formate must be added to destroy excess nitrites and nitrates. It has not yet been determined whether this process can be carried out in the same reactor that destroys the organics. In addition, decomposition rates of the ferrocyanide have not yet been studied, although it is anticipated that the ferrocyanide decomposition will occur above 300°C. Fouling, scaling, and corrosion issues also need to be resolved. As a result, extended tests will be required to determine system performance.

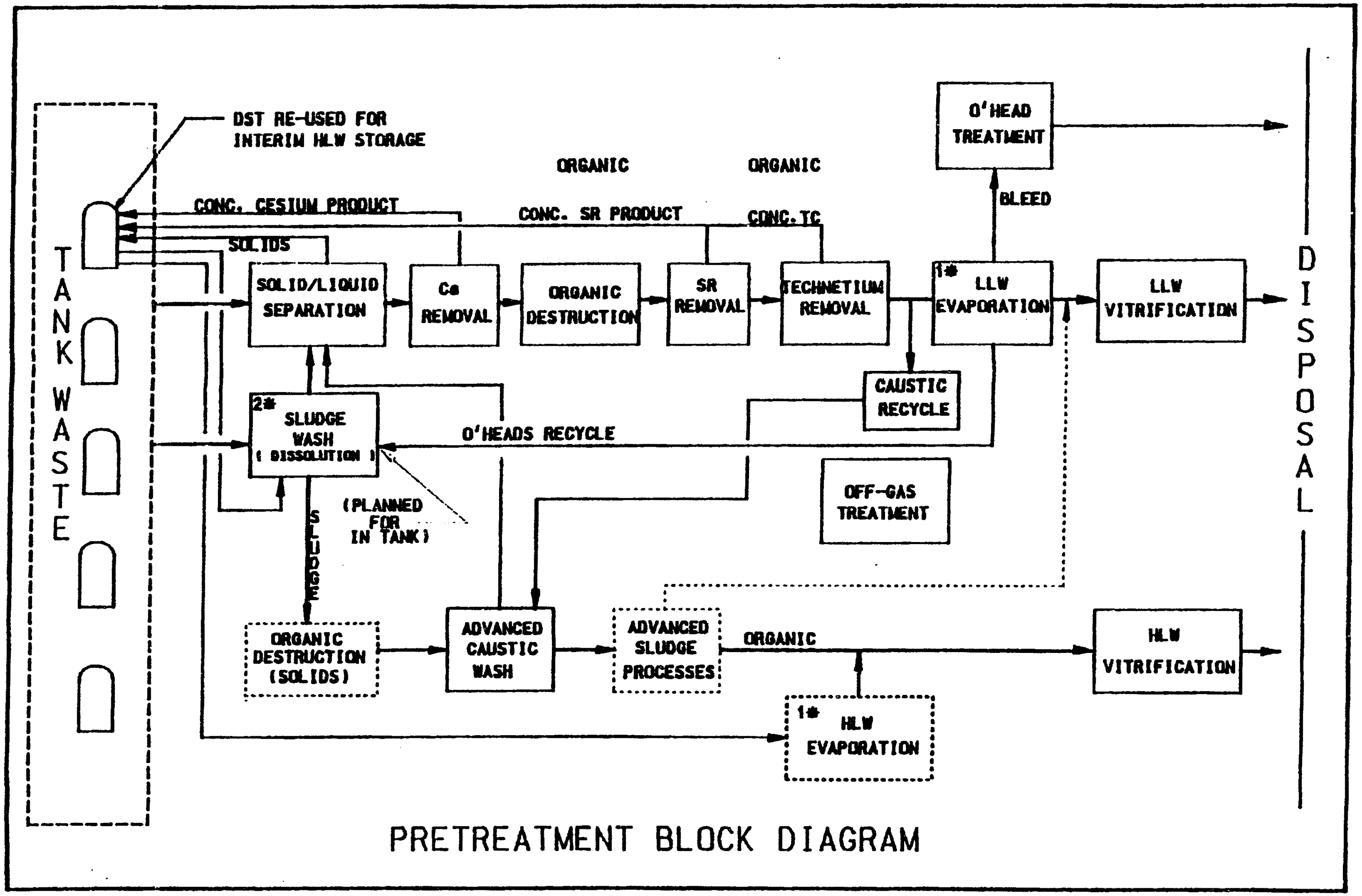

FIGURE 4

Pretreatment Block Diagram

The high-temperature HTP, as proposed, uses electrical heaters to achieve temperatures up to 550°C. Cooling water is used to cool the treated waste so as to not complicate the process with heat recovery. At the higher temperatures and pressures, residence time requirements are reduced to the order of magnitude of seconds. Ammonia has been proposed as a reducing agent to complete the destruction of excess nitrites and nitrates. Corrosion problems resulting from the extreme conditions, precipitation of solids, and erosion are potential problems. Pressure letdown at these pressures may present development problems.

Hydrothermal processing may be viewed as a continuum over the entire low- and high-temperature and pressure ranges. Additional process thermodynamic, kinetic, and speciation data are needed for design of an optimum hydrothermal process. In addition, the variability of the Hanford tank wastes may require operational flexibility over a range of conditions.

Electrochemical Treatment

Electrochemical processing is a mature, state-of-the-art, chemical processing technology with over 60 years of industrial experience. However, electrochemical waste processing has only been studied since the early 1980s, and there are few operating examples of electrochemical waste treatment processes. The electrochemical process is carried out in an electrochemical cell consisting of two electrodes, a cathode (reduction reactions), and an anode (oxidation reactions) suspended within an electrolyte. The waste must be circulated through the cell with sufficient velocity to prevent occlusion of the electrodes by gas bubbles formed during the electrolysis of water or other gas-forming reactions. The energy required to sustain redox reactions is supplied directly to the electrodes by an applied current at a specific potential. Hanford wastes require the oxidation of organics to CO_2 and water; the oxidation of cyanides to CO_2 and N_2; and the reduction of nitrites/nitrates to N_2, N_2O and NH_3. Oxidation and reduction of water occurs simultaneously, generating gaseous H_2 and O_2 at the cathode and anode, respectively. The primary electrolytes present in the Hanford wastes are $NaNO_2$, $NaNO_3$, NaCl, and NaOH. The oxidation of organics and cyanides may occur directly at the anode surface, or indirectly as the result of chloride oxidation to hypochlorite, OCl^-, and the subsequent oxidation of the organics by OCl^-. Significant development is required to determine suitable electrode materials, the electrode gap widths required to prevent solids plugging, and the materials of the electrode assembly constructed to withstand the highly radioactive environment. In addition, process parameters need to be developed that will accommodate the high variability of the Hanford wastes.

Steam Reforming

Steam reforming is an existing technology used for decades to produce molecular hydrogen from simple hydrocarbons. The reaction of steam with hydrocarbons produces carbon monoxide, carbon dioxide, and hydrogen. Carbon monoxide and hydrogen can also react back into water and methane. Steam gasification of cellulosic wastes has been studied for the last decade as a method of producing energy and reducing waste volumes. These reactions are endothermic, overall, so that electrical heating is used to maintain the temperature. The rate of reaction follows Arrhenius' kinetics, increasing significantly with temperature. This process for organic waste treatment has been under development by Synthetica Technologies, Inc. for several years, but has not been placed in wide use.

The process begins with the decomposition of nitrates and partial oxidation of organics occurring in the moving bed evaporator (MBE). At the temperatures in the middle regions of the MBE, sodium hydroxide will be molten and coat the ceramic spheres. In the cooler (bottom) of the MBE, NaOH will solidify and be separated from the ceramic balls by a mechanical screw. The water soluble fraction of the wastes, including the radioactive elements, is also anticipated to remain on the spheres. This waste stream will be further separated into a small amount of high-level waste to be vitrified and a large amount of low-level waste that will be immobilized in grout. The organics remaining in the gas stream will further destruct in the high-temperature steam reforming reactor. Treatment of the off-gas from the high-temperature reactor is required. While the ferrocyanide destruction is expected to take place during the steam reforming process, this result has not yet been demonstrated. Corrosion problems also may exist with this process. The ceramic balls used in the moving bed evaporator will fracture at an estimated rate of 2 percent per week, resulting in additional waste.

Ozonation

Ozone has been used for water disinfection in Europe since the late 1800s. It is generated by flowing oxygen or air through a high-voltage corona discharge. Ozone is formed by generating atomic oxygen, which then recombines as triatomic ozone. While there has been extensive work on the use of ozone in wastewater treatment of organics, there are few field applications of ozone for wastewater treatment. Those applications that exist are typically applied to low organic concentrations in wastewater. Work has been performed on the destruction of EDTA with ozone. Adequate destruction of the EDTA has occurred after retention times in the order of magnitude of hours (reportedly limited by O_3 production and mass transfer rates in the laboratory). However, oxalic acid and other organic daughter products have been formed, and adequate TOC destruction has not been demonstrated. Ozone will oxidize nitrite to nitrate. However, ozonation will not destroy the nitrates, and it is questionable if ferrocyanides will be destroyed to the extent required for IPM resulting in further treatment requirements.

An advantage of ozonation is the low temperature (30°C) and pressure (1 atm) conditions of this process. Caustic addition may be necessary to redissolve precipitants by adjusting the pH. Approximately 127 MT of liquid oxygen, 110 MWh of electricity, and 6 M gal of cooling water per day are required. Chromium (III) hydroxide precipitate will be oxidized to chromium (VI), requiring further treatment. The off-gas system must safely handle large amounts of oxygen and destroy residual ozone. Subsequent separation of the sludge and other solids is required.

Calcination

Calcination, as proposed for IPM, consists of a two-step process. These steps include:

1) thermal decomposition (approximately 850°C) of tank wastes (organics, ferrocyanide nitrate/nitrite) and formation of a free-flowing NaOH melt

2) dissolution of the non-transuranic (TRU) components from the solid NaOH medium.

Calcination is a mature process that has been used at other locations. However, Hanford tank wastes require a new operating system to accommodate the large quantity of the resulting NaOH melt. Westinghouse proposes to use a Plasma Arc Cupola to overcome the difficulties associated with Hanford wastes. Similar plasma torch systems are commercially available and have been in service for a number of years. Plasma torches reportedly last 1000 to 2000 hours before needing to be rebuilt.

Based on a one-fifth scale demonstration, calcination exhibited 98 percent nitrite/nitrate destruction (no significant NO_x). This demonstration utilized air as the plasma gas. However, other gases (H_2, N_2, inert gases) could be used in place of air. The pilot-scale test consumed about 1 MWh/gpm of <u>undiluted</u> waste simulant. Operating requirements (size and power consumption) must be determined for the 3:1 diluted wastes. To accommodate the diluted waste, either the calciner will treat the dilute waste directly or an evaporator will be added prior to calcination. Additional laboratory tests showed that ferrocyanides were essentially 100 percent destroyed.

Dissolution of the resulting solids will ideally lead to a soluble salt solution of sodium, aluminum, cesium, and other soluble species that can go to further processing. Insoluble oxides, strontium, uranium, and transuranics may remain and potentially could go directly to vitrification. Significant development is required to design the molten calcine handling system and the dissolution process.

Corrosion of the cupola liner in the presence of molten NaOH was found to be significant. While Westinghouse has been unable to find a suitable corrosion-resistant material, they propose using a "cold skull" process that has been successful in industrial applications. These corrosion problems must be solved prior to design.

TECHNOLOGY SELECTION

Six processes from the previous IPM selection (November 1992) were chosen in advance, and advocates of each technology submitted a written proposal and gave a presentation to the panel. The six technologies represented were high-temperature hydrothermal (S. Buelow, LANL), low-temperature hydrothermal (E. Jones, PNL), electrochemical treatment (L. Holton, PNL), steam reforming (J. Sprung, SNL), ozonation (M. Klem, WHC), and calcination (S. Colby, WHC). Ample time was given for questions from the panel, and each technology was scored at the end of the presentation.

Based on the criteria and discussions, the panel selected the following technologies for further consideration by the IPM project:

- low-temperature hydrothermal processing
- high-temperature hydrothermal processing calcination.

These selections were made in an environment of uncertainty about many aspects of all of the technologies, uncertainty as to the precise character of the wastes, and uncertainty as to the final requirements of the treated effluent. Because of these uncertainties, the technologies were selected for their potential to effectively treat wastes with a wide range of characteristics. These technologies were also judged to have the potential to achieve more complete organic destruction of the wastes than the current criteria require. It was assumed that the resulting waste streams would be suitable for direct input to vitrification and/or grout. Each of the selected technologies should meet the goals of the IPM project and meet safety and environmental concerns.

Low- and High-Temperature Hydrothermal Processing

The panel believes that the low-temperature and high-temperature hydrothermal processing technologies, from a process perspective, represent a continuum. However, the process chemistry requires the development of kinetic data and the pH effect on the kinetics. In addition, the temperature and pressure effects on the solubility require elucidation to understand the potential for precipitation that might result in plugging. Excessive corrosion is a potential problem that needs careful evaluation as is selection of materials of construction, particularly at the more extreme conditions. At lower temperature and pressure conditions, commercially available equipment may be suitable or modified for fabrication of the equipment for use in a radioactive facility. At the upper end of the temperature and pressure range, specially designed and developed equipment may be required. These differences will result in significantly different engineering requirements. Accordingly, the panel recommends careful coordination of these activities and other related existing programs to eliminate duplication of effort and to obtain optimal utilization of existing resources. The development of hydrothermal processing requires optimization of the process parameters, and the engineering should incorporate operability, safety, and economics. The panel believes this process should result in a single-engineered, hydrothermal process. Further, the panel believes it is advantageous to operate at the lowest possible temperatures and pressures that will achieve the treatment goals. A major strength of the hydrothermal processing is its robustness, given the variability of the waste streams. Hydrothermal processing has the potential of fitting well into the Hanford Tank Waste Remediation System (TWRS) operating scheme.

Calcination

The panel selected calcination for further development as a potential IPM technology. The major advantage of this technology is its ability to completely destroy the organics, the ferrocyanide, and the nitrates/nitrites. While the wastes and applications may be significantly different, calciners are in operation industrially and are in use for nuclear waste treatment. The existing utilization of this technology may facilitate permitting. However, a number of significant development issues remain. Corrosion of the crucible liner continues to be a major problem that requires resolution. The gas emissions may require treatment and will require permitting. However, use of nitrogen or another inert carrier gas should be investigated in case the use of air would result in calcination being interpreted as an incineration process. These concerns were not adequately addressed in the presentation.

In addition, the power requirements and/or upstream pretreatment and handling processes must be investigated for treating 20 gpm of diluted waste rather than 5 gpm of undiluted waste. The downstream process equipment for handling the molten salt from the calcine needs definition. Handling and dissolution of the resulting solids and subsequent processing require further development. And, the reduction of hexavalent chromium to trivalent chromium in the dissolution product also needs to be evaluated. Finally, there is some concern that the products from dissolution may add an environmental problem. However, the panel feels this technology has the potential to meet safety and environmental concerns and that this technology could meet the goals of the IPM project.

Other Treatments

Electrochemical, ozone, and steam reforming treatments were not selected for IPM. The panel judged that these technologies did not have as high a potential to achieve IPM program goals as the selected technologies.

Electrochemical Treatment - Electrochemical treatment was unanimously rejected for IPM. This technology was perceived by the panel as unable to meet the system requirements. The panel had several concerns that electrochemical treatment could not meet these requirements within the short time frame (8 months) allowed. This was particularly true for the electrode development that the panel felt would be required. While electrochemical processes are common in industry, there is a lack of experience in processing wastewaters, in general, and wastes as complex as Hanford tank wastes, in particular.

The available data were insufficient to demonstrate ferrocyanide destruction or the simultaneous destruction of a wide variety of organics. The mechanism of organic destruction was unknown and reportedly could result from chloride oxidation to hypochlorite and subsequent hypochlorite oxidation of the organics. Therefore, wastes having less chloride than Tank 101SY may not be treatable without the external addition of chlorides. There were no available data on the destruction of organics in the solid phase (tank sludge), as required for all tank wastes. It was not demonstrated that larger solids could pass through the cells without blocking the small gaps between the electrodes. In addition, it was felt that the competing reactions between all of the various species in solution would make it difficult to optimize the process with a single set of electrodes. Other questions arose regarding the high recycle rates required to maintain sufficient velocities through the electrodes, and the complicated plumbing, controls, and valves required for sensing and bypassing reduced capacity cells. While the panel felt that a substantial amount of development would be required to demonstrate the viability of electrochemical treatment and that it could not meet the required time schedule, there were many attractive features and the technology was potentially promising. Therefore, the panel recommends that DOE consider funding this technology from other research and development funds.

Ozone - Ozone was a technology that had considerable prior development (since the early 1980s) for treatment of Hanford tank wastes. However, several panel members expressed concern that ozone could not meet the system requirements. It was felt that the variability in organic composition and concentrations in the tank wastes could result in wastes that would not be treated by ozone to the degree required by IPM. There is little flexibility in the process parameters to accommodate higher concentrations of organics. Additionally, the ability to treat ferrocyanides and organics in the sludges was not sufficiently demonstrated. It was felt that ozone would require significant additional technology development prior to design. The control of this process, which must treat highly variable waste, would be overly complex. There were also serious questions regarding the maintainability of the ozone generators, and concerns regarding the safety (compared to other technologies) of storage and handling bulk quantities of liquid oxygen. Also, the physical system compatibility and deployment flexibility were considered low compared to other technologies.

In addition, it was noted that operating and maintaining the world's largest ozone generation facility may present problems. Ozone treatment was the least robust technology of the six technologies considered and was not capable of nitrate decomposition, requiring a separate process in the treatment train for nitrate decomposition. Additionally, the waste was not thought to be compatible with the goals of IPM since a secondary waste, hexavalent chromium as chromate, would be produced as a byproduct of ozonation. Ozone also received low evaluations for cost since at least eight ozone generators were required based on the composition of Tank 101SY, and some wastes could have organic concentrations in excess of Tank 101SY waste concentrations.

Steam Reforming - Steam reforming was perceived to meet the system requirements by all of the panel members. However, steam reforming did not rate as highly by the weighted criteria as the three technologies selected. The technical maturity of this technology was perceived as being very low, not with respect to steam reforming as a process, but with regard to the moving bed evaporator and screw assembly used to remove the solids from the ceramic balls. This process would also require a dissolution step for the subsequent waste. Overall, the process was regarded as cumbersome. Steam reforming received low evaluations for reliability and simplicity. Maintainability was also a concern with respect to the moving bed evaporator. Corrosion and plugging issues cannot be resolved without long-term operating data. In particular, breakage and abrasive loss of the ceramic balls could result in an undue amount of this material in the waste and create further maintenance problems as well as additional waste.

CURRENT STATUS OF SELECTED TECHNOLOGIES

Hydrothermal Processing

Hydrothermal processing activities have continued at LANL and PNL. It was originally deemed desirable to narrow the operating temperature and pressure range of hydrothermal processing at the 30 percent design review. Subsequent work has shown that a temperature of operation within the range of 385°C to 450°C is required to achieve TOC destruction deficiencies (percent) in the high 90s. The operating pressure range to complement the temperatures will be the subject of trade studies that evaluate enabling a clean system against a lower specification of pump/let down system.

Los Alamos National Laboratory is in the process of developing a design for a 300 gallon/day non-radioactive pilot plant. Pacific Northwest Laboratory has completed testing a low-temperature system using wet air oxidation.

Calcination

The second plasma arc calciner test was successfully completed at Westinghouse Science and Technology Center (WSTC) in Pittsburgh, Pennsylvania on November 4, 1993. The key test objective of providing data required for prototype design was met. This data includes material corrosion, material and energy balances, kinetics, and product quench/dissolution. A viscous product flowed out of the reactor that was fed 700 gallons of 101-SY simulant waste during the 6.25-hour test. The nominal feed rate was exceeded by 100 percent (2.0 gpm versus 1.0 gpm) over the test objectives with an average power consumption of 1 MWh.

A quench/dissolution experiment successfully demonstrated rapid and safe dissolution of the molten caustic product in a high-velocity water stream. This process provides a means of separating bulk water soluble inactive components from active insolubles without solids handling of the calcine product. A final report will be issued in the summer of 1994.

CURRENT STATUS OF TECHNOLOGY SELECTION

Changes affecting the requirements for organic destruction arose from the recently completed Tri-Party Agreement (TPA) negotiations. This agreement calls for tank safety issues to be mitigated using in-situ methods such as mixer pumps or by diluting the wastes in the tanks. Development of organic destruction processes would only continue as a contingency, unless it was demonstrated that the new proposed approach could not achieve an adequate level of safety in the tanks. In addition, the LLW form has been changed from grout to glass. This has also had an impact on the requirements for organic destruction.

It is now envisioned that the required organic destruction for the LLW pretreatment facility process will not have to process solids. It is also assumed that cesium will be removed prior to organic destruction and that this will have a positive impact on the operation of the organic destruction process. It is believed that the main need for organic destruction will be to decomplex strontium and transuranic (TRU) in the supernates. This change in mission for the organic destruction process necessitates a revisitation of the entire organic destruction down selection. The following is the revised schedule for the organic destruction-down selection:

- Issue revised preliminary organic destruction criteria 1/14/94
- Finalize technology selection panel 2/28/94
- Finalize organic destruction selection criteria 2/28/94

• Deliver technology proposals	3/15/94
• Conduct technology selection meeting	3/28/94
• Issue technology selection report	4/14/94
• Issue guidance to selected technologies	4/28/94

It is expected that the technology selection meeting held in late March will select no more than three technologies for further consideration. These technologies will continue to be developed for the remainder of FY94, and final technology reports will be submitted in September of 1994. Concurrent with this activity, Ebasco/British Nuclear Fuels Limited will develop conceptual designs for each of the selected technologies and will issue a 60-percent-complete conceptual design report in October of 1994. Selection of the final technology will take place in late October or November of 1994.

END

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4/12/94