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Y/EN-928

OAK RIDGE Y-12 PLANT

MARTIN MARIETTA

DESIGN CRITERIA FOR WASTE COOLANT PROCESSING FACILITY AND PRELIMINARY PROPOSAL 722 FOR WASTE COOLANT PROCESSING FACILITY

UCCND ENGINEERING

Date of Issue: September 27, 1991

Prepared by the
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Oak Ridge, Tennessee 37831
managed by
Martin Marietta Energy Systems, Inc.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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PRELIMINARY PROPOSAL 722 FOR
WASTE COOLANT PROCESSING FACILITY

Y/EN--928

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PREPARED BY
UNION CARBIDE CORPORATION
NUCLEAR DIVISION

A. DESCRIPTION

The existing development facility for biodegrading waste machine coolants will be replaced with a system based on the use of a commercial sewage disposal unit. Use of the existing feed tank and sludge dumpster will be made. The new coolant processing facility will handle the projected waste coolant load through the 1980's. The facility located on the north side of the railroad, south of Building will be 9404-16.

The Waste Coolant Facility is used for disposal of deteriorated machine coolants by controlled biological degradation; i.e., the activated sludge process. In this process, organic carbon is biologically degraded in a complete-mix aerobic reactor where the environment must be carefully controlled to optimize degradation. Steam sparging is required to prevent freezing during cold seasons. The biologically degraded carbon is removed in the forms of carbon dioxide gas and biomass solids.

B. JUSTIFICATION

The present coolant disposal equipment is a development facility which was put into operation in 1979 to prove the concept that Y-12 coolants could be decomposed by a biodegradation process. The existing facility uses an abandoned cooling tower basin as a reactor vessel and all piping and tanks are installed in a temporary fashion. The depth of the reactor is insufficient to achieve adequate oxygen contact with the process solutions. To increase the depth would necessitate shutting down the facility for several months and making major structural alterations. Even with this modification, the geometry would still be improper for an extended aeration system.

The new facility will utilize a commercially available extended aeration package unit designed for the biological degradation of sewage. By increasing the amount of aeration and prolonging the hydraulic residence time, the waste machine coolants can be degraded more efficiently, and to a higher degree, than with the present system.

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C. SCHEMATIC PLANS

The location for the facility is shown in Figure 1. Figure 2 provides the site layout plan. Figures 3 and 4 show the generalized block flow diagram and piping schematic, respectively. The electrical plan is presented in Figure 5.

D. OUTLINE SPECIFICATIONS

1. Process Design

The extended aeration basin will be designed to operate continuously; 24 hours/day, 365 days/year. The existing waste coolant feed tank will be relocated to the new site and provided with new supports on the pad. Waste machine coolant will be fed semi-continuously (24 hrs/day), such that the flowrate to the aeration basin is approximately 1000 GPD. The aeration basin comes equipped with an internal settling "tank." Supernatant drawn off from the settling tank will be dosed with 7.5% sodium hypochlorite and then fed into a contact chamber with a 30-minute detention time. The effluent will then be discharged to the storm sewer. Solids collected in the settling tank will either be recycled to the aeration basin or collected in an existing dumpster for disposal at the Y-12 burial ground.

2. Engineering Mechanics

Refer to Piping Drawing P2E-35542SK, Rev. A., Figure 4.

Steam Supply. A steam reducing station will be provided adjacent to an existing steam header. A steam service header will provide steam to the feed tank and aeration basin.

Condensate. Condensate from trapping stations will be piped to french drains.

Waste Coolant. Waste coolant transfer line will be installed from the existing storage facility to the feed tank. Waste coolant will be pumped from the feed tank to the aeration basin by an air-operated double diaphragm pump.

Supernatant. Supernatant released from the settling tank will flow by gravity to the sodium hypochlorite contact chamber. Sodium hypochlorite will be stored in a drum and transferred by a metering pump. Effluent from the chlorination chamber will flow by gravity to the nearby storm sewer.

Sludge. Sludge from the settling portion of the aeration basin will be pumped to an adjacent dumpster.

Instrument Air. An instrument air header will be installed from an existing instrument air header at the northeast corner of Building 9404-16 to the machine coolant processing facility site to provide instrument air to the air-operated pumps and for instrumentation.

Make-Up Water. Make-up water will be provided to the aeration basin and to a hose connection from an existing underground filtered water header adjacent to "K" road. A water line will also supply water to a eye/face wash fountain and safety shower in accordance with Engineering Standards ES-4.11-5 and ES-4.11-3.

Dike. A sump pump will be provided for the curbed area. Spills will be pumped to the aeration basin. Rainwater will be transferred to the storm sewer.

3. Site

The proposed site for the Machine Coolant Processing Facility is located directly south of the 9404-16 south concrete platform and north of the railroad tracks and Second Street. The site is generally flat with one ditch system leading to an existing catch basin. No vegetation exists at this site other than a grassed area. Minimal grading will be required to locate the elements of this facility. An existing sanitary sewer line will be either encased in concrete or relocated.

Civil/Architectural

The architectural and structural features consist of a concrete pavement with reinforced spill retainer walls and a sump for the feed tank, the aeration basin, and related equipment.

Electrical

Electrical service will be extended from wireway and lighting panel in Building 9404-16, through a fusible safety switch, to control the station on the wall in Building 9410-16. A motor starter, safety switch, timer, and pushbuttons will supply service to the field devices.

All construction will be grounded in accordance with applicable UCC-ND

E. PRELIMINARY ESTIMATE OF COST

	<u>UCC-ND</u>	<u>FPSC</u>	<u>TOTAL</u>
1. <u>Engineering</u> (Approx. 25% of Construction)	<u>\$60,000</u>		<u>\$ 60,000</u>
Design	45,000		
Inspection	15,000		
2. <u>Construction</u>	<u>\$ 5,000</u>	<u>\$230,000</u>	<u>\$235,000</u>
3. <u>Contingency</u> (Approx. 30% of Above)	<u>\$15,000</u>	<u>\$ 65,000</u>	<u>\$ 80,000</u>
4. <u>Total</u>	<u>\$ 80,000</u>	<u>\$295,000</u>	<u>\$375,000</u>

All costs will accrue to the FY 1983 General Plant Projects Program. Reference is made to Record Unit 640.01, Sanitary Sewerage System - Digester. Upon completion of the project, the facility will be capitalized in Asset Class 640.

F. PROPOSED STARTING AND COMPLETION DATES

	<u>START</u>	<u>COMPLETE</u>
Engineering Design	March 1, 1983	August 31, 1983
Construction	November 1, 1983	October 31, 1984

G. DIVISION OF WORK

It is proposed that UCC-ND perform all architect-engineering services including Titles I and II design and Title III inspection, furnish miscellaneous services to the contractor, and oversee preoperational testing and checkout. Construction will be done by a fixed-price subcontractor.

H. RISKS AND EXPOSURE HAZARDS

1. Fire Protection

The new facility will be located somewhat southwest of the existing system, in an area that is planned to be dedicated to the treatment of organic wastes. No new fire loads will be added to the area by the addition of this facility.

2. Health

No hazardous operations will be performed in the construction site during the construction period. The existing coolant storage and waste coolant degradation facilities will continue to operate during construction until it is necessary to relocate the coolant feed tank and sludge dumpster. Recent studies have shown the presence of potentially infectious microorganisms in some of the process solutions, and for this reason an eyebath will be installed in the area. However, no health hazards are anticipated during the construction period, because the new facility is adequately removed from the existing facility to preclude prolonged contact.

3. Industrial Safety

The job is located in an open area having minimal congestion. The area has been surveyed for radioactive contamination and was found to have only minimal amounts which do not require the use of protective equipment, clothing, or shoes in the performance of this job.

4. Environmental Impact

Installation of the proposed facility will not result in any new effluents being discharged to the environment. Moreover, the new facility will have the ultimate result of improving the current coolant degradation outfall.

5. Safety Analysis

A Safety Assessment has been prepared and no further safety documentation is required.

I. ENERGY CONSERVATION

The design concept for construction provides for the proper insulation and tracing of all exposed process piping.

FIGURE 1: FACILITY LOCATION

FIGURE 2: LAYOUT PLAN

NOTES:

- 1) AERATION PACKAGE UNIT WILL BE NOMINALLY 30,000 GALLONS
- 2) AIR BLOWERS & SOLIDS RECYCLE LINE WILL BE INCLUDED IN PACKAGE UNIT
- 3) PROCESS WATER PROVIDED FOR MAKE-UP. STEAM SPARGE FOR WINTER USE

FIGURE 3: BLOCK FLOW DIAGRAM

FIGURE 4: PIPING SCHEMATIC

[illegible]

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- 10 - POTABLE WATER
9 - STEAM TRUCK
8 - BATTERY SEWER
7 - SEWAGE TREATMENT PLANT
6 - SEWAGE TREATMENT PLANT
5 - SEWAGE TREATMENT PLANT
4 - SEWAGE TREATMENT PLANT
3 - SEWAGE TREATMENT PLANT
2 - SEWAGE TREATMENT PLANT
1 - SEWAGE TREATMENT PLANT

Page 18

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Issue Date:

Document Number: Y/EN-928

DESIGN CRITERIA
FOR
WASTE COOLANT PROCESSING FACILITY

Prepared by
UCC-ND Engineering

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Date: 11/7/83
Approved by UCC-ND (Plant Division Representative)

Date: 11-6-83
Approved by UCC-ND Engineering

Date: 11/10/83
Approved by Department of Energy

Prepared for the DEPARTMENT OF ENERGY
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CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	3
2.0 GENERAL DESCRIPTION AND REQUIREMENTS	3
2.1 General Facility Description	3
2.2 Method of Accomplishment and Responsibilities	5
2.3 General Codes, Standards, and Specifications	8
2.4 Principal Safety, Fire, and Health Hazards	9
2.5 Environmental Impact	9
2.6 Quality Assurance	10
2.7 Project Schedule	11
2.8 Safety Analysis	11
3.0 SITE IMPROVEMENTS	11
4.0 BUILDINGS	12
5.0 SPECIAL FACILITIES	12
5.1 Process	12
5.2 Electrical	15
5.3 Engineering Mechanics	16
5.4 Instrumentation	18
6.0 REFERENCE DATA	19
6.1 Reports	19
6.2 Drawings	19

1. INTRODUCTION

This document contains the design criteria to be used by the architect-engineer (A-E) in the performance of Titles I and II design for the construction of a facility to treat the biodegradable, water soluble, waste machine coolant generated at the Y-12 Plant. The purpose of this facility is to reduce the organic loading of coolants prior to final treatment at the proposed West Tank Farm Treatment Facility.

2. GENERAL DESCRIPTION AND REQUIREMENTS

2.1 GENERAL FACILITY DESCRIPTION

The treatment facility will be located in an area south of Buildings 9404-16 and 9409-20 and west of the existing temporary coolant biodegradation facility (see Figure 1). The biological treatment facility shall basically consist of an extended aeration reactor, clarifier, and aerated liquid effluent and sludge holding tanks. A sludge evaporator and ribbon blender shall also be provided for dewatering floating sludge from the clarifier.

Waste coolant will be trucked to the site and stored in three existing storage tanks located adjacent to the area where the facility is to be located. From the storage tanks, waste shall be pumped into an existing feed tank prior to introduction into the extended aeration bioreactor. The treated waste will then be separated into the following three streams by the clarifier.

1. Oily, floating solids will be fed to a sludge evaporator and/or a ribbon blender to remove free liquid. After dewatering, the sludge will be emptied into drums and then incinerated or buried.

2. Liquid effluent will be pumped to an aerated storage tank and periodically hauled by tanker to the proposed West Tank Farm Treatment Facility where it will be treated by biodenitrification.

FIGURE 1: FACILITY LOCATION

3. Settleable biological solids from the clarifier will be further processed at an aerated sludge holding tank, from where they will be recycled to the aeration tank or hauled to the proposed West Tank Farm Treatment Facility for sludge treatment and dewatering.

Figure 2 gives a flow diagram for the facility. Figure 3 gives a general layout plan.

2.2 METHOD OF ACCOMPLISHMENT AND RESPONSIBILITIES

2.2.1 Department of Energy

The Department of Energy (DOE) will direct, coordinate, and administer all work performed by the project participants. The DOE will approve all design documents submitted and will approve all additions, deviations, or exceptions to the project. DOE will provide direction and coordinate all necessary activities related to interfacing with environmental regulatory agencies such as the Environmental Protection Agency (EPA) and the Tennessee Department of Health and Environment (TDHE).

2.2.2 Architect-Engineer

The A-E shall be responsible for the design drawings, specifications, bills of materials, and cost estimates on Titles I and II engineering for the project, as outlined in these criteria, except for those items indicated as being furnished by UCC-ND. Design reviews (including cost estimates) shall be held at the 50% and 90% completion levels.

2.2.3 Union Carbide Corporation Nuclear Division (UCC-ND)

UCC-ND shall furnish design criteria, review all Titles I and II engineering documents prepared by the A-E and furnish comments to DOE, provide support engineering services to the A-E, provide miscellaneous support to the contractor, perform critical utility tie-ins, provide Title III coordination and inspection, and perform preoperational testing.

* TYPICAL AIR OPERATED DOUBLE-DIAPHRAGM PUMPS ARE SHOWN. ACTUAL PROCESS REQUIREMENTS FOR PUMPS WILL BE DETERMINED BY THE ARCHITECT ENGINEER.

FIGURE 2 - BLOCK FLOW DIAGRAM:
WASTE COOLANT PROCESSING FACILITY

NOTE: TYPICAL LAYOUT OF EQUIPMENT IS SHOWN. ACTUAL LAYOUT OF EQUIPMENT WILL BE DETERMINED BY THE ARCHITECT ENGINEER.

FIGURE 3 - GENERAL LAYOUT PLAN: WASTE COOLANT PROCESSING FACILITY

2.2.4 Fixed-Price Subcontractor (FPSC)

The FPSC will be responsible for the purchase and installation of all equipment, except for utility tie-ins identified in Section 2.2.3.

2.3 GENERAL CODES, STANDARDS, AND SPECIFICATIONS

2.3.1 General

This section contains the general codes, standards, specifications, and technical definitions that are applicable to the design work. The latest editions will apply, except where amended in the design criteria documents for specific jobs.

2.3.2 General Codes

DOE General Design Criteria, Appendix 6430

DOE Life Cycle Costing Guidelines

Standard Building Code

Uniform Building Code (sections pertaining to earthquake regulations)

National Fire Protection Association Code

American Concrete Institute Building Code for Reinforced Concrete

American Welding Society Specifications and Codes

UCC-ND General Design Criteria

National Electric Code

National Electrical Manufacturers Association

Instrument Society of America

ASHRAE Handbook and Product Directory

Industrial Ventilation Manual, American Conference of Government Industrial Hygienists

National Standard Plumbing Code

2.3.3 Standards

Rules of the TDHE (Water and Wastewater)

UCC-ND Engineering Standards

AISC Specifications and Standards
Occupational Safety and Health Standards
American National Standards Institute (ANSI)
ASTM Standards

2.3.4 Specifications

UCC-ND Technical Specifications
UCC-ND Welding Manual
American Iron and Steel Institute Specifications for the Design of
Cold-Formed Steel Structural Members

2.4 PRINCIPAL SAFETY, FIRE, AND HEALTH HAZARDS

The treatment facility will be compatible with existing facilities and will conform with DOE and Y-12 safety requirements. Measures necessary to assure compliance with safety, fire, and health requirements will be included in the project. All applicable provisions of the Occupational Safety and Health Act and regulations shall be followed.

2.5 ENVIRONMENTAL IMPACT

2.5.1 General

The proposed facility will provide facilities for the biological decomposition of waste coolants. Solids produced will be dewatered prior to being buried or incinerated. No liquid effluents will be discharged from this facility to the environment.

2.5.2 Potential Environmental Impact

The overall impact is expected to be beneficial in preserving the quality of the water and general environment. An improvement of treatment over the existing temporary coolant biodegradation facility will occur. No wastes will be discharged upon surface streams as a result of the operation of the facility.

Construction activities will take place within the Y-12 Plant. Construction impacts upon the environment will be minimal. No significant erosion, dust, or noise problems during construction are expected.

Operation of the new facility will have minimal environmental effects. The proposed project will not degrade water, air, or land resources. Proper operation of the system will result in a decrease in the pollutional load applied to land, surface, and ground water at the Y-12 Plant.

There are no historical or cultural landmarks that can be affected by the project. There are no features of archaeological interest that will be affected by the construction or operation of the facility.

2.5.3 Coordination with Federal, State, Regional, or Local Programs or Plans

There are no known conflicts with any programs or plans as a result of the implementation of the project. General environmental regulatory coordination will take place through the Oak Ridge Operations Office, DOE.

2.6 QUALITY ASSURANCE

Quality assurance provisions will apply through all phases of project planning, design, procurement, and construction. Guidance provided by the applicable provisions of the following supportive documents will be used in establishing quality assurance requirements for the project:

DOE Manual 5700.6

DOE Manual Appendix 6430, General Design Criteria

Application of Quality Assurance Guidelines for A-Es Participating in the
DOE-ORO Construction Program

Quality Assurance Program, EQA-7 (UCC-ND Engineering)

Quality Assurance Planning, EQA-1 (UCC-ND Engineering)

In accordance with these procedures, UCC-ND will prepare a quality assurance assessment for this project to be included in the detailed design. The A-E shall assist in this endeavor by identifying critical system equipment and/

or components, assessing system reliability, and identifying the need for back-up of both equipment and controls. This assessment will identify the significant quality concerns and identify responsibilities to assure that the appropriate action is taken to prevent undesired consequences. The assessment will be reviewed and updated at the beginning of the project phases of design, procurement, and construction.

2.7 PROJECT SCHEDULE

	<u>Start</u>	<u>Complete</u>
Engineering Design	November 1, 1983	June 30, 1984
Construction	October 1, 1984	December 30, 1984

2.8 SAFETY ANALYSIS

The safety assessment is being reviewed and updated for the Waste Coolant Processing Facility. No further safety documentation is anticipated.

3. SITE IMPROVEMENT

The site is located west of the temporary waste coolant processing facility, north of Second Street, and south of the 9404-16 south concrete platform. The site is generally flat. Minimal grading will be required.

Two existing sanitary sewers run under the proposed slab sites. An existing 8 inch sanitary sewer runs in a general southeasterly direction under the proposed west slab. An existing 8 inch sanitary sewer runs in an approximately northeasterly direction under the area designated for the proposed east slab. Both sanitary sewers, as well as three others, connect to a sewer manhole located under the existing driveway located between the two proposed slabs. The manholes, as well as sanitary sewer lines running parallel and under the railroad tracks, are not to be disturbed. Existing sanitary sewers under the proposed slabs are to be encased in concrete,

replaced with cast iron sewer pipe or relocated, based on the recommendation of the A-E.

Previous construction drawings indicate that a 10-inch storm line may also be under the proposed west slab and runs in a westerly direction. The storm drain may either be abandoned or relocated, depending upon the service that it provides and the recommendation of the A-E.

Two reinforced concrete slabs will be provided, as indicated in the site plan. Slabs will be of sufficient size to accommodate the equipment indicated. The slabs will be of reinforced concrete layed on a stabilized aggregate base. All slabs will be curbed to contain spills.

A gravel roadway will be provided from the graveled area east of the east slab. Provisions are to be made for a tanker to approach and collect the treated liquid effluent stored in the holding tank.

An existing pump house at the proposed site is to be removed.

4. BUILDINGS

No new buildings will be included in the project. An open shed shall be provided to keep rainwater from diluting the sludge drying in the evaporative plates and will also cover the ribbon blender. The shed structure shall be metal and the cover should be a metal, plastic, or composite material.

5. SPECIAL FACILITIES

5.1 PROCESS

5.1.1 Influent Design Criteria

Hydraulic design criteria for the waste coolant stream is a flow of 1,000 gallons per day, or 30,000 gallons per month. Waste will primarily

consist of biodegradable organic coolants that are water soluble. Organic design criteria, in terms of five-day Biochemical Oxygen Demand (BOD), are to be 64 pounds per day.

5.1.2 Extended Aeration Tank

A hydraulic retention time of approximately 30 days will be provided in the aeration tank. The effective liquid capacity of the reactor will be not less than 30,000 gallons. The aeration tank will be filleted on each side and bottom to prevent sludge accumulation. The tanks will be located above ground.

Air will be introduced, in controlled amounts, longitudinally along one side and near the bottom of the tank. At least four diffuser drops and sixteen diffusers will be provided. At least 110 cubic feet of air per minute will be supplied to the tank.

The aeration tank will be supplied with a froth control system. Steam will be supplied to the aeration tank.

5.1.3 Clarifier

The secondary clarifier will provide for a minimum retention time of 12 hours and a maximum retention time of 18 hours. The bottom of the tank will be in the form of an inverted pyramidal hopper with walls not less than 1.7 vertical to 1.0 horizontal. The total settling volume will be approximately 500 gallons. Settleable sludge from the clarifier will be conveyed to the sludge holding tank.

The clarifier will be provided with a four-inch eductor airlift pump. An air supply of 8.0 cubic feet per minute will be supplied to the airlift.

The clarifier will be provided with a skimming device against the possibility that some oils and other low density liquids may be introduced into the system. The skimmer will have the capability of transferring the floating material to the sludge dryer.

At various depths in the clarifier, nozzles will be provided for removal of liquid effluent. Steam will be supplied to the clarifier.

5.1.4 Sludge Treatment

5.1.4.1 Sludge Dryer

Two steam-fed dryers are to be provided to dewater oily, floating solids from the clarifier. Each dryer will have a capacity of approximately 600 gallons with a minimum free-board of 6 inches.

5.1.4.2 Mixer

A ribbon-type absorbant blender will be provided to further solidify oil and other floating material and to condition the material for burial or incineration by the addition of an absorbant blending material. The blender is to have a minimum working capacity of 36.0 cubic feet. The blender will be fed by a conveyor and will have the capability for access through the top.

5.1.5 Storage Tanks

5.1.5.1 Sludge Holding Tank

An aerated sludge holding tank with a minimum capacity of 5,640 gallons will be provided. Not less than 15 cubic feet of air per minute will be delivered to the tank. The sludge holding tank will have the capability of conveying sludge to the aeration tank, portable sludge pan, or sludge dryer. Steam will be supplied to the sludge holding tank.

5.1.5.2 Portable Sludge Container

A sludge container is required to transfer waste sludge from the sludge holding tank to the proposed West Tank Farm Treatment Facility. The container will be hauled by existing maintenance vehicles and will be able to contain approximately 400 gallons. The container will be emptied by gravity by opening a valve at the bottom of the tank.

5.1.5.3 Liquid Effluent Holding Tank

Liquid effluent from the clarifier will be pumped to an aerated holding tank for storage. The holding tank will be aerated and will have a capacity of approximately 5,000 gallons. The tank will have a dished bottom and will be emptied by gravity to a nearby tanker. Steam will be supplied to the holding tank.

5.1.5.4 Existing Tanks

Three existing tanks located west of the proposed coolant processing facility will be used for storing the coolant prior to treatment. An existing cylindrical feed tank (9 feet diameter by 17 feet long) will be relocated and will be used to supply coolant to the extended aeration reactor.

5.1.6 Air Supply

Dual positive displacement blowers will be provided with the extended aeration tank. Each blower is to be of sufficient capacity to provide a sufficient amount of air at the required pressure to the extended aeration tank, clarifier, sludge holding tank, and effluent holding tank. Each is to be able to deliver a minimum of 140 cfm of air.

5.2 ELECTRICAL

5.2.1 General

Electrical service will be extended from 480V, 3 phase, 60 hertz wire-way located in Building 9404-16 through safety switch to power panels to be mounted on the wall in Building 9416-10. Outside lighting will be provided.

Services needed are 480V, 3 phase, 60 hertz to ribbon blender, sump pumps, and 60A supply to the aeration tank control unit. 230V, single phase, 60 hertz service to two HP metering pumps and 120V, single phase, 60 hertz service to two solenoid valves for air-operated pump control.

Motor starters, safety switches, timer, and pushbuttons will supply electric service to the required equipment.

All construction will be grounded in accordance with applicable UCC-ND standards.

5.2.2 Reference Drawings

E2E109150	Plan & electrical details
B-16102	Single line diagram
50-N50-50	Lighting plan sections & details
50-N20-74	Plan & sections

5.3 ENGINEERING MECHANICS

5.3.1 Piping

5.3.1.1 General

Piping services will generally be extended from existing headers located near Building 9404-16. The following piping services will be required as part of this project.

- Steam (S) (15 psig)
- Condensate (C)
- Instrument Air (YA)
- Potable Water (SW)
- Safety Shower and Eyewash Fountain Water (SWS)
- Storm Sewer (SD)
- Waste Coolant (WC)

5.3.1.2 Steam (S) (15 psig)

A steam pressure reducing station located as shown in Figure 3 shall be provided for supplying (15 psig) steam to the feed tank, aeration reactor, clarifier, sludge evaporator, holding tanks, and for steam tracing of waste

coolant feed line. See drawing D-P-23390 for location of 3 inch 150 psig steam header for supplying steam to the steam pressure reducing station.

5.3.1.3 Condensate (C)

Condensate from the steam pressure reducing station and steam tracing lines shall be piped to a dry well.

5.3.1.4 Instrument Air (YA)

An existing 1 inch instrument air header is located at the northeast corner of Building 9404-16. See drawing E-P-66127 for tie-in location. Instrument air shall be provided to the air-operated double diaphragm pumps.

5.3.1.5 Potable Water (SW)

Make-up water shall be provided to the aeration reactor. An existing 6 inch potable water header is located south of Building 9404-16. See drawing E-CV-25866 for the location of the potable water line.

5.3.1.6 Safety Shower and Eyewash Fountain Water (SWS)

Potable water shall be provided to a safety shower and eyewash fountain. See drawing E-CV-25866 for the location of the potable water line.

5.3.1.7 Storm Sewer (SD)

Rain water collected in the diked areas shall be piped from the sump pits to an existing catch basin west of the proposed site. Sump pumps shall be provided in the sump pits.

5.3.1.8 Waste Coolant (WC)

Waste coolant shall be piped from the existing coolant storage tanks west of the proposed site to the feed tank. Waste coolant shall be transferred from the feed tank by an air-operated double diaphragm pump to the extended

aeration tank. Air-operated double diaphragm pumps shall be used as required for transferring waste through the processing facility. All waste coolant lines shall be steam traced.

5.3.2 Demolition

The existing shed at the proposed site shall be removed to provide space for the Waste Coolant Processing Facility. The aboveground 8 inch raw water lines shall be removed. Approximately 20 feet of the underground 10 inch raw water line shall be removed and the remaining line capped. See drawing E-CV-25866 for the location of the raw water line.

The existing 3 inch steam line that drops from overhead to underground in the proposed site shall be relocated as required to provide additional space. See drawing D-P-23390 for location of the steam line.

5.3.3 Reference Drawings

<u>Drawing Number</u>	<u>Title</u>
D-P-23390	Steam Heat, Bldgs. 9720-12 & -13 Plan & Profile
E-CV-25866	Underground Water Lines
E-CV-26155	Underground Sanitary Sewer Lines
E-CV-26239	Underground Storm Sewer Lines
E-P-66127	Oil Reclaim System Piping Plan

5.4 INSTRUMENTATION

The architect-engineer shall incorporate adequate instrumentation in the design to ensure safe operation and continuous reliability of the system.

6. REFERENCE DATA

6.1 REPORTS

"Environmental Assessment, Y-12 Plant Site," DOE/EA-0182.

"Disposal of Waste Machining Coolants in a Biological Reactor,"
P. A. Taylor, Y/DZ-65.

6.2 DRAWINGS

Additional site and building layout drawings will be provided.

Distribution

A. K. Lee/DOE-OSTI (4)
Y-12 Central Files (RC)

END

**DATE
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12/30/91