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Mr. John Grantham  
State of Washington  
Department of Ecology  
Nuclear & Mixed Waste Program  
P. O. Box 47600  
Olympia, WA 98504-7600

FLUOR DANIEL, INC.

Date: October 12, 1993

Reference: Hanford Waste Vitrification Plant  
DOE Contract DE-AC06-86RL10838  
Fluor Contract 8457

Transmittal No.: WDOE-667

Dear Mr. Grantham:

TRANSMITTAL

We enclose 2 copy of the items listed below. These are issued per US-DOE request.

Response due to Fluor: N/A

Responds to: A160 PACKAGE

| NUMBER      | REV | DATE     | TITLE   |
|-------------|-----|----------|---|
| DCN - #0123 | 0   | 10/08/93 | DCN TITLE:<br>DISINFECTION OF SANITARY WATER LINES<br><br>"APPROVED FOR CONSTRUCTION" |

Reference: FRP-1242, FUP-676

Distribution:

R. L. Long: DOE-RL, w/0

TWP/AME Corresp Cntrl Cntr, MSIN A5-10

(A160 PACKAGE), w/0

P. Felise, WHC-RL (MSIN G6-06), w/1

Environmental Data Management Center  
(MSIN H6-08), w/1

D. Duncan, US EPA, Region X, w/0

Very truly yours,

*Rosalie Cadenas for*  
R.S. Poulter  
Project Director



RSP:MHF:lh

|   |                                      |       |                             |
|---|--------------------------------------|-------|-----------------------------|
|  <b>FLUOR DANIEL</b><br>US DEPARTMENT OF ENERGY<br>HANFORD WASTE VITRIFICATION PLANT<br><br><b>DESIGN CHANGE NOTICE</b> | <b>DCN - 0123</b>                    | REV 0 | PAGE 1 OF 15                |
|   | DCN TITLE                            |       | DATE INITIATED              |
|   | Disinfection of Sanitary Water Lines |       | 10/8/93<br>PACKAGE NO. A160 |

**SECTION 1: DESCRIPTION OF CHANGE**

This DCN implements SWX disinfection on the A160 package Material Specification 15061 per WHC resident engineering request.

- Add reference to Attachment D to Paragraph 3.3.3 of Section B-595-C-A160-15061.
- Add HPS-112-M, as Attachment D to Section B-595-C-A160-15061.

FOR LIST OF AFFECTED DOCUMENTS, SEE SECTIONS 6 AND 7.

CAUSE OF CHANGE:

Field Change Request

Supplier Disposition

Deficiency Report

Design Development

Change Request

TBD/Hold

Other Client Request

WCH Ltr to UCAT  
 9357794 dtd 9/14/93  
 Initiating Document(s)

**SECTION 2: EVALUATION**

|  |  |   |
|--|--|---|
| WAPA DWG/SPEC? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES<br>QUALITY LEVEL I DWG/SPEC? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES<br>SAFETY CLASS 1 OR 2 DWG/SPEC? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES<br>SYSTEMS ANALYSES AFFECTED? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES<br>MULTI-DISCIPLINE CHANGE? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES | IF "YES", ADDITIONAL REVIEW REQUIRED BY: _____<br>_____<br>_____ | REVIEWER COMMENTS AND SIGNATURE/DATE<br>_____<br>_____<br>_____ |
|--|--|---|

DCN Evaluated by: Systems [Signature] ADM [Signature] Others \_\_\_\_\_

**SECTION 3: APPROVED FOR CONSTRUCTION**

[Signature] 10/8/93 Date      M.H. Featherston 10/8/93 Date  
 Originator      Date      Project/Resident Engineer      Date

**SECTION 4: CONCURRENCE**

Project Management \_\_\_\_\_ Date

Systems \_\_\_\_\_ Date

Independent Safety \_\_\_\_\_ Date

Quality Assurance \_\_\_\_\_ Date

Configuration Management \_\_\_\_\_ Date

**SECTION 5: RELEASED FOR CONSTRUCTION**

PE STAMP REQUIRED?  NO  YES

WHC \_\_\_\_\_ Date

UCAT \_\_\_\_\_ Date

DOE \_\_\_\_\_ Date

COMMENTS:



**FLUOR DANIEL**

US DEPARTMENT OF ENERGY  
HANFORD WASTE VITRIFICATION PLANT

9515556, 1537  
**DCN - 0123**

REV

0

DISCIPLINE

Piping

PKG. NO.

A160

PAGE

2

**DESIGN CHANGE NOTICE**

PREPARED BY: P. McCaughey

Date: 10/8/93

DISCIPLINE ENGINEER: Cliff Johnson

Date: 10/8/93

**SECTION 6: CONSTRUCTION DOCUMENTS AFFECTED**

| DOCUMENT NUMBER | SHT/PAGE | REV NO | DOCUMENT NAME   | INCLD Y/N | DESCRIPTION OF CHANGE  |
|-----------------|----------|--------|---|-----------|--|
| A160-15061      | 45       | 2A     | Piping Material, Fabrication, Erection, and Pressure Testing (Carbon steel, Iron and Nonmetallic) | Y         | <ol style="list-style-type: none"> <li>Added reference to Attachment D in Paragraph 3.3.3.</li> <li>Added Attachment D.</li> </ol> |

**SECTION 7: NON-CONSTRUCTION DOCUMENTS AFFECTED**

This section references affected items such as P&IDs or calculations/analyses, but they are generally not included in DCN package.

| DOCUMENT NUMBER | SHT/PAGE | REV NO | DOCUMENT NAME | DESCRIPTION OF CHANGE |
|-----------------|----------|--------|---------------|-----------------------|
| None            |          |        |               |                       |

### 3.3.3 Disinfection

All lines in potable water service (Service Code SWX) shall be disinfected in accordance with AWWA C651 and Attachment D. One exception to Attachment D will be allowed.

A residual chlorine level greater than 1 ppm is allowed after flushing.

|  |      |  |  |                             |  |     |      |   |   |
|--|------|--|--|-----------------------------|--|-----|------|---|---|
|  <b>FLUOR DANIEL</b>  |      | U.S. DEPARTMENT OF ENERGY<br>HANFORD WASTE VITRIFICATION PLANT |  | <b>DESIGN CHANGE NOTICE</b> |  |     |      |   |   |
| DESCRIPTION OF CHANGE<br>This DCN implements SWX disinfection on the A160 Package Material Specification 15061 per WHC resident engineering request. |      |  |  | BASE DOC. NO. 15061         |  |     |      |   |   |
| 1. Add reference to Attachment D to Paragraph 3.3.3 of Section B-595-C-A160-15061  |      |  |  | SHT/PG. 45      REV. 2A     |  |     |      |   |   |
| 2. Add HPS-112-M, as Attachment D to Section B-595-C-A160-15061  |      |  |  | DISCIPLINE: Piping          |  |     |      |   |   |
| PREPARED BY: P. McCaughey  |      | DATE: 10/8/93  |  | DCN - 0123                  | <table border="1"> <tr> <td>REV</td> <td>PAGE</td> </tr> <tr> <td>0</td> <td>3</td> </tr> </table> | REV | PAGE | 0 | 3 |
| REV  | PAGE |  |  |                             |  |     |      |   |   |
| 0  | 3    |  |  |                             |  |     |      |   |   |
| DISCIPLINE ENGINEER: Cliff Johnson   |      | DATE: 10/8/93  |  |                             |  |     |      |   |   |

ATTACHMENT D

HPS-112-M

**STANDARD SPECIFICATION  
FOR  
DISINFECTING SANITARY WATER SYSTEMS**

This Specification  
Consists of 8 Pages

|                            |                  |  |              |
|----------------------------|------------------|--|--------------|
| Description of Revision    |                  | <b>HANFORD PLANT STANDARDS</b><br>DOE · RICHLAND, WASHINGTON | Number       |
| Supersedes HPS-112-M Rev 0 |                  |  | HPS-112-M    |
| Prep. or Rev. by           | Orig. Issue Date | Mechanical Standard  | Revision No. |
| <i>R. D. Foster</i>        | 8-1-72           |  |              |
| Approved                   | Date             | Specification for Disinfecting<br>Sanitary Water Systems     | 1            |
| <i>R. D. Foster</i><br>DOE | 2-7-84           |  |              |

HPS-112-M  
STANDARD SPECIFICATION  
FOR  
DISINFECTING SANITARY WATER SYSTEMS

1.0 SCOPE

This specification covers the disinfection of sanitary water piping, wells, filters, and storage tanks prior to initial use and after modifications or repairs.

2.0 PREPARATION

Sanitary water systems shall be pressure tested, and flushed before disinfecting procedures are started, except when the Tablet Method is used as defined in Paragraph 5.3.

3.0 MATERIALS

Disinfection of sanitary water systems shall be done by chlorination, except as otherwise permitted in Paragraph 7.5. Personnel responsible for handling chemicals used for disinfecting sanitary water systems should be aware of potential health hazards and be trained to observe prescribed chemical handling and disinfecting procedures.

3.1 FORMS OF CHLORINE FOR DISINFECTION

The forms of chlorine that may be used in the disinfection operations are liquid chlorine, liquid sodium hypochlorite solution, dry calcium hypochlorite granules or tablets, and dry chlorinated lime.

- a. Liquid chlorine in pressurized cylinders contains 100% available chlorine gas and shall be used only in combination with appropriate gas-flow chlorinators and ejectors which provide a controlled high concentration solution feed to the water to be chlorinated.
- b. Liquid sodium hypochlorite contains approximately 5 to 15% available chlorine by volume and is known commercially as "Liquid Laundry Bleach."
- c. Dry calcium hypochlorite is available in granular or tablet form, contains approximately 65% available chlorine by weight, and is known commercially by such names as "HTH", "Perchloron", and "Pittchlor."
- d. Dry chlorinated lime contains approximately 32 to 35% available chlorine and is known commercially as "Bleaching Powder."

3.2 USE

- a. Pre-job planning is mandatory prior to the use of chlorine gas. Two self-contained breathing apparatuses shall be placed at strategic locations and the personnel instructed in their use. Safety precautions set forth in the National Safety Council Data Sheet D207, "Chlorine," shall be observed. CHLORINE GAS MAY NOT BE INTRODUCED DIRECTLY INTO ANY SANITARY WATER SYSTEM.
- b. Protective clothing consisting of rubber gloves, acid resistant suit and boots and a full face shield approved for chemical use shall be worn by the workmen preparing the chlorine solutions from calcium hypochlorite and chlorinated lime. An eye/face wash fountain shall be located in the immediate vicinity of the mixing operation.
- c. Locks and commercially printed "DANGER - DO NOT OPERATE" tags or signs shall be attached to all outlets of the system prior to the start of disinfection. Locks and tags or signs shall not be removed until so directed by the designated representative of the user of the facilities.
- d. All necessary precautions shall be taken to prevent disinfecting solutions from entering adjacent, operating, sanitary water lines.
- e. All chlorine bearing compounds shall be mixed with water to form 1% (10,000 ppm) stock solutions before being proportioned with more water to form the disinfecting solution. The following mixtures will form a 1% stock solution.:

|                      |                                    |
|----------------------|------------------------------------|
| Calcium hypochlorite | 1 lb per 8.5 gallons of water      |
| Chlorinated lime     | 2 lb per 7.5 gallons of water      |
| Sodium hypochlorite  | 1 gallon per 4.25 gallons of water |

4.0 DOSAGE

- a. The disinfecting solution shall have sufficient strength to fulfill the coliform organism removal requirements of Section 8. Minimum chlorine concentrations and minimum retention periods shall be as listed in Paragraph e, below. It may be necessary to use chlorine concentrations and retention periods greater than the allowable minimums to fulfill the requirements of Section 8.
- b. Chlorine gas shall be added to water only with a solution feed chlorinator to form the disinfecting solution. Other compounds, that have been diluted to a 1% stock solution as previously described, shall be accurately proportioned with chemical pumps, gravity feed devices, orifices, etc, to form the disinfecting solution.
- c. During the time that the disinfecting solution is in the pipe, well, tank, standpipe or reservoir, the chlorine content will decrease at

a rate dependent upon the internal conditions. Therefore, the initial chlorine dosage shall be of sufficient strength to produce a chlorine content of at least 10 ppm (mg/l) at the end of the minimum retention period.

- d. The initial and final chlorine concentrations during the disinfecting period will be checked by the designated representative of the user of the facility.
- e. The following table lists minimum initial chlorine concentrations and minimum retention periods that shall be used for various parts of sanitary water systems. Also included, for reference, is the maximum amount of water allowable to dilute the 1% stock solutions to the required minimum concentrations.

| <u>System</u>                               | <u>Min. Initial Chlorine Concentrations in Sys</u> | <u>Maximum Gals H<sub>2</sub>O Per Gal 1% Stock Sol</u> | <u>Minimum Retention Period</u> |
|---|--|---|---------------------------------|
| (1) Piping                                  | 25 ppm (25 mg/l)                                   | 100 gallons   | 24 hours                        |
| (2) Small storage tanks (under 250,000 gal) | 25 ppm (25 mg/l)                                   | 100 gallons   | 24 hours                        |
| (3) Filters                                 | 100 ppm (100 mg/l)                                 | 100 gallons   | 8 hours                         |
| (4) Wells                                   | 150 ppm (150 mg/l)                                 | 66 gallons  | 24 hours                        |
| (5) Large storage tanks                     | 300 ppm (300 mg/l)                                 | 33 gallons  | 4 hours                         |

## 5.0 METHODS OF CHLORINE APPLICATION

Four methods of application of chlorine are recognized:

- a. Continuous feed method.
- b. Slug method.
- c. Tablet method.
- d. Swabbing.

### 5.1 CONTINUOUS FEED METHOD (For Systems 1, 2, 3, and 5)

Water from an approved source of supply shall be made to flow at a constant, measured rate into the system. One percent stock solution of chlorine shall be simultaneously added to the system by injection into the supply water at a constant measured rate so that the resulting mixture contains a minimum initial chlorine concentration as tabulated in

4.0.e above. The chlorinated water shall be retained in the system for a minimum period of time as noted in Paragraph 4.0.e above. At the end of the retention period the treated water shall contain no less than 10 ppm (mg/l) of chlorine throughout the system.

## 5.2 SLUG METHOD (FOR SYSTEM 1)

This method is suitable for use with large diameter piping systems (14 inch and over) for which the continuous feed method is not practical because of the large volumes of water involved. Water from an approved source shall be made to flow at a constant measured rate into the system with a one percent stock solution of chlorine added to the water at a constant measured rate so that the resulting mixture contains a minimum of 100 ppm (mg/l) of available chlorine. The one percent stock solution of chlorine shall be applied continuously and for a sufficient length of time to develop a solid column or "slug" of chlorinated water that will, as it passes along the system, expose all interior surfaces to the concentration of available chlorine for at least 3 hours.

## 5.3 ~~TABLET METHOD (FOR SYSTEM 1)~~

The tablet method consists of placing calcium hypochlorite granules and/or tablets in a piping system as it is being installed and then filling the system with potable water when the system is completed.

**Warning:** This procedure must not be used on solvent welded plastic or on screwed joint steel pipe because of fire or explosion danger caused by the reaction of the joint compounds with the calcium hypochlorite.

- a. Tablet disinfection is best suited to short pipe line installations (up to 2,500 feet) with smaller diameter pipe (up to 12 inches). Because the preliminary flushing step must be eliminated, this method shall only be used when scrupulous cleanliness has been exercised. The Tablet Method shall not be used if foreign material has entered the system, or if the water is below 5°C (41°F).
- b. Tablets are placed in each section of pipe and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in joints between the pipe sections. All the tablets within the system must be at the top of the pipe. If the tablets are fastened before the pipe section is installed, their position shall be marked on the section to assure that there will be no rotation of the section.
- c. In placing tablets in joints, they are either crushed and placed on the inside annular space, or if the type of assembly does not permit, they are rubbed like chalk on the butt ends of the sections to coat them with calcium hypochlorite.
- d. When installation has been completed, the piping shall be filled with water at a velocity of less than 1 ft/sec. This water shall remain in the pipe for at least 24 hours.

- e. The number of 5 gram Hypochlorite Tablets required for a dose of 25 ppm (25 mg/l) is shown in the following table:

| Length of Section<br>Ft | Diameter of Pipe - Inches |   |   |   |    |    |
|-------------------------|---------------------------|---|---|---|----|----|
|                         | 2                         | 4 | 6 | 8 | 10 | 12 |
| 13 or less              | 1                         | 1 | 1 | 1 | 2  | 3  |
| 18                      | 1                         | 1 | 1 | 2 | 3  | 4  |
| 20                      | 1                         | 1 | 1 | 2 | 3  | 4  |
| 30                      | 1                         | 1 | 2 | 3 | 4  | 6  |
| 40                      | 1                         | 1 | 2 | 4 | 5  | 7  |

#### 5.4 SWABBING (FOR SYSTEM 1)

Swabbing may be used for disinfecting local areas in sanitary water systems when modifying or repairing existing piping and for preventive or corrective measures required when dirt enters piping during construction.

- a. When specified by the user: Swab or spray the interior of pipe and piping components (fittings, valves, etc.) with a one percent hypochlorite solution before they are installed when repairing or modifying existing sanitary water systems, refer to Paragraph 7.5.
- b. When dirt enters the interior surfaces of sanitary water piping during construction and in the opinion of the user's representative it cannot be removed by flushing, the pipe shall be cleaned by mechanical means and then swabbed with a one percent hypochlorite disinfecting solution prior to normal disinfecting procedures.

#### 6.0 FLUSHING AND RESIDUAL CHLORINE

After the disinfecting period, the disinfecting solution shall be pumped or drained to waste. The pipe, tank, reservoir or well shall then be flushed thoroughly until tests performed by the designated representative of the user of the facility indicate that the residual chlorine content is less than one ppm (1 mg/l).

#### 7.0 APPLICATIONS

##### 7.1 PIPING

Sanitary water piping systems shall be flushed with an approved water supply prior to disinfecting. The materials, dosage and methods of application for disinfecting sanitary water piping shall be in accordance with the following:

- a. Materials for disinfecting piping systems shall be chlorine compounds of the type and form listed in Paragraph 3.1.
- b. The order of preference for disinfecting materials used in the continuous feed, or slug method is as follows:

- (1) Chlorine gas.
  - (2) Calcium or sodium Hypochlorite.
  - (3) Chlorinated lime.
- c. Disinfecting material dosage requirements for use in the tablet method is specified in the table in Paragraph 5.3.e.
  - d. The method used to add 1% stock solution to water to form the disinfecting solution shall produce uniform dispersion of the chlorine.
  - e. The disinfecting solution shall be introduced into the pipe until water flowing from all outlets and the far ends tests at least 25 ppm (mg/l) chlorine concentration. Tests will be made at various points by the designated representative of the user of the facility to assure uniform chlorine distribution throughout the system. All air shall be removed from the system to assure full surface contact of the disinfecting solution.
  - f. The disinfecting solution shall be retained in the system for at least twenty-four hours. During this time all valves on the pipe-lines, except those connecting directly to the sanitary water supply line, shall be fully opened and closed at least twice. The system shall be kept full during valve operation by introducing make-up water with a chlorine concentration of at least 25 ppm (mg/l).

## 7.2 WELLS

Well casings shall first be thoroughly cleaned of sand, grit, grease and oil by swabbing with a 1% solution of trisodium phosphate. Personnel handling crystalline trisodium phosphate should wear respirators, chemical goggles, and gloves. Protective equipment required for work with trisodium phosphate solutions will vary with the concentration of trisodium phosphate in the solution. Cleaning solutions shall be flushed from the well casing by pumping well water to a drain for waste effluent until all products of the cleaning process are removed. One of the following methods shall be used to disinfect the well:

- a. Add a 1% stock solution of calcium of sodium hypochlorite and mix mechanically until the chlorine concentration is at least 150 ppm (mg/l).
- b. Add dry calcium hypochlorite directly into the well, and thoroughly mix with water by using the bailer or similar device.

### 7.3 FILTERS

Filter units in sanitary water systems shall be disinfected by injecting a chlorine solution at the suction or discharge of the backwash or supply pump. The disinfectant solution flowing into the filter shall have a concentration of at least 100 ppm (mg/l). When the discharge flow from the filter has a chlorine concentration of at least 100 ppm (mg/l), valves shall be closed and the disinfecting solution allowed to remain for at least 8 hours.

### 7.4 STORAGE TANKS

- a. Storage tanks and reservoirs shall first be cleaned of oil, grease, or algae deposits before disinfecting procedures are started. Oil or grease shall be removed with a 1% solution of trisodium phosphate and algae shall be removed with a 1% solution of copper sulphate (blue vitriol). All residue and cleaning solution shall be thoroughly removed by flushing with sanitary water before starting disinfection.
- b. Reservoirs, standpipes and elevated storage tanks shall be disinfected by one of the following methods:
  - (1) Small tanks, standpipes, and reservoirs (under 250,000 gal) may be disinfected as a part of the Piping System, see Paragraph 7.1. The 1% stock solution of water-chlorine mixture shall be added to the water to form a uniform disinfecting solution with a minimum chlorine concentration of 25 ppm (mg/l). The solution shall be retained in the storage tank for at least four hours.
  - (2) In large reservoirs and storage tanks, the surface of the walls, floors, and other parts that come in contact with stored water shall be disinfected by spraying with a solution of calcium or sodium hypochlorite, with a chlorine concentration of at least 300 ppm (mg/l). The surfaces shall be continuously wetted with the solution for at least four hours and then flushed with hoses using sanitary water until the residual chlorine is less than one ppm (1 mg/l).

### 7.5 REPAIRED WATER SYSTEMS

Repairs and modifications to existing sanitary water piping systems do not require disinfection, unless otherwise specified by the user. After repairs or modifications have been made, the system's potable water supply shall be used to flush the piping. When the piping has been thoroughly flushed, the system shall be tested for bacteriological quality as outlined in Section 8.0.

When specified by the user, repaired sanitary water piping systems shall be disinfected by the methods previously outlined in Paragraph 5.4 or, by one of the methods listed below.

Retention periods, chlorine concentrations, methods of application, and flushing shall be as outlined in Sections 4, 5, and 6.

- a. Place calcium hypochlorite tablets inside the pipe at the top or place dry chlorine compounds in the pipe and add water very slowly. The quantity and distribution of the compound or tablets shall produce a chlorine concentration of at least 25 ppm (mg/l).
- b. Flush the new sections of pipe with hot water. The pipe temperature shall be 170° F or higher for 20 minutes.
- c. Heat the new sections of pipe with low pressure steam (10 psig or less). A means of removing the condensate shall be provided. Steam shall be introduced until all sections of the system have been heated to a temperature of 200 F for at least 5 minutes.

## 8.0 BACTERIAL TESTS

After a sanitary water system has been disinfected in accordance with methods described in this specification, thoroughly flushed, and tests not more than one ppm (1 mg/l) residual chlorine, the system shall be tested for bacteriological quality. Water samples shall be taken from several points in the system specified by the designated representative of the user of the facility. The bacterial samples shall be collected directly from the disinfected system and not via non-sanitized valves, hoses, etc. Sample bottles shall be filled within 3/4 to full capacity but shall not be allowed to overflow or have liquid removed by pouring after filling. The samples shall be collected in sterile bottles treated with sodium thiosulfate as required by American Water Works Association "Standard Methods for Examination of Water." These samples will be subjected to bacterial test by others. If the test shows coliform organisms, the disinfecting procedure shall be repeated until tests indicate the absence of coliform. No part of the system shall be placed in operation until so directed by the designated representative of the user of the facility.

**INSTRUCTIONS FOR THE USE OF HPS-112-M  
SPECIFICATION FOR DISINFECTING SANITARY WATER SYSTEMS**

1. This Standard Specification for disinfecting sanitary water shall be used for the following systems:
  - a. Sanitary water piping located downstream of the first shut-off valve from distribution mains, except fire protection water piping.
  - b. Filter units for sanitary water treatment.
  - c. Wells supplying sanitary water.
  - d. Storage tanks for sanitary water.
2. This specification does not cover fire protection water systems or sanitary water distribution mains which shall be disinfected in accordance with AWWA C601, "Standard for Disinfecting Sanitary Water Mains."
3. This Standard Specification may be used for disinfecting work performed by either construction or plant forces, and includes disinfecting procedures for both new systems and repairs or modifications to existing systems.
4. Notify Hanford Environmental Health Foundation, Environmental Health Sciences, 747 Building, 700 Area, Phone 376-6985, prior to the use of disinfecting procedures by either plant or construction forces. Arrangements for the testing of water samples should be made with Environmental Health Sciences. The bacterial analysis is four days in length from the time samples are received in the laboratory. The analysis provides "presumptive" results in two days with "confirmation" at the end of the test.
5. It is strongly urged that the cleanliness of existing sanitary water systems be protected whenever repairs and modifications are performed. This would include the condition of the materials as well as the physical factors at the work area. This specification contains a special section which will be helpful to those who make minor repairs or changes to existing systems, refer to Paragraph 7.5.
6. This specification includes requirements for the removal of algae, oil and grease from pipes, tanks and reservoirs. Since the quantities of these fouling materials varies, specific limits of work or quantities must be specified elsewhere.

This Instruction  
Consists of 2 Pages

|                            |                  |  |  |              |
|----------------------------|------------------|--|--|--------------|
| Description of Revision    |                  | <b>HANFORD PLANT STANDARDS</b>                     |  | Number       |
| Supersedes DI-112-M Rev 0  |                  | DOE - RICHLAND, WASHINGTON                         |  | DI-112-M     |
| Prep or Rev. by            | Orig. Issue Date | Mechanical Instruction                             |  |              |
| <i>R. D. Fisher</i>        | 8-1-72           |  |  | Revision No. |
| Approved                   | Date             | Instruction for the use of Specification HPS-112-M |  | 1            |
| <i>R. D. Fisher</i><br>DOE | 2-7-84           |  |  |              |

7. It is recommended that all persons who either supervise or inspect disinfection of water systems be thoroughly familiar with the American Water Works Association AWWA C601, "Standard for Disinfecting Water Mains" and DOE Document RL 5480.1 Chapter X, Part D, Attachment 1, "Cross-Connection Control Standard Hanford Water Systems".
8. The flushing of pipes and tanks to remove disinfecting solutions may require large volumes of sanitary water. Both the water supply and waste systems should be checked to determine their ability to supply or handle the required flow. If facilities are limited, special procedures should be specified elsewhere.
9. Reference material for safe handling of chemicals: See "Accident Prevention Manual for Industrial Operations," National Safety Council.

Westinghouse  
Hanford Company

P.O. Box 1970 Richland, WA 99352

September 14 1993

Ed / Martin 1545  
Please evaluate if  
the 160 spec needs  
to be revised that and  
9357794  
Responds to: N/A  
Response due: N/A  
DCN-0173 Pg 15

Mr. F. D. Pettit, Project Director  
UE&C-Catalytic Inc.  
Hanford Waste Vitrification Plant Project  
Post Office Box 10  
Richland, Washington 99352

Dear Mr. Pettit:

HANFORD WASTE VITRIFICATION PLANT PROJECT, DISINFECTION OF SANITARY WATER LINE

Attached herewith is Hanford Plant Standard, (HPS) "Standard Specification for Disinfecting Sanitary Water Systems," HPS-112-M, Revision 1. Sanitary water lines installed as part of Package A160, Mechanical Site Utilities, Package A120, Tank Waste Remediation System Office Building, and subsequent packages are to be disinfected in accordance with American Water Works Association (AWWA) 651 and HPS-112-M. Compliance with AWWA 651 is required by the specifications. Compliance with HPS-112-M, which is similar to but somewhat more restrictive than AWWA 651, is necessary to meet the state licensed water purveyors requirements to ensure a safe drinking water supply.

One exception to HPS-112-M will be allowed. Westinghouse Hanford Company Steam and Water Utilities maintains a residual chlorine level greater than 1 ppm. UE&C-Catalytic Inc. will not be required to flush lines to less than 1 ppm chlorine. The system is to be flushed to the residual chlorine level.

Questions regarding the above should be referred to Mr. C. A. Augustine at 376-4772.

Very truly yours,

  
C. A. Augustine, Technical Monitor  
Hanford Waste Vitrification  
Plant Project  
Tank Waste Remediation System Projects

  
R. A. Smith, Manager  
Hanford Waste Vitrification  
Plant Project  
Tank Waste Remediation System Projects

cjh

Attachment

RL - J. E. Couey  
R. L. Long