

1
2
3
4

ADDENDUM I
INSPECTION PLAN

DRAFT

1
2
3
4

This page intentionally left blank.

DRAFT

ADDENDUM I
INSPECTION PLAN

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

I INSPECTION PLAN..... 1

I.1 General Inspection Requirements/Inspection Summary 1

I.2 Conditions and Problems Sought During Inspections 1

I.3 General Testing and Maintenance..... 2

I.4 Inspection Frequencies..... 2

I.5 Schedule for Remedial Action for Problems Revealed 2

I.6 Tank System Inspections and Corrective Actions 2

I.6.1 Overflow Control 2

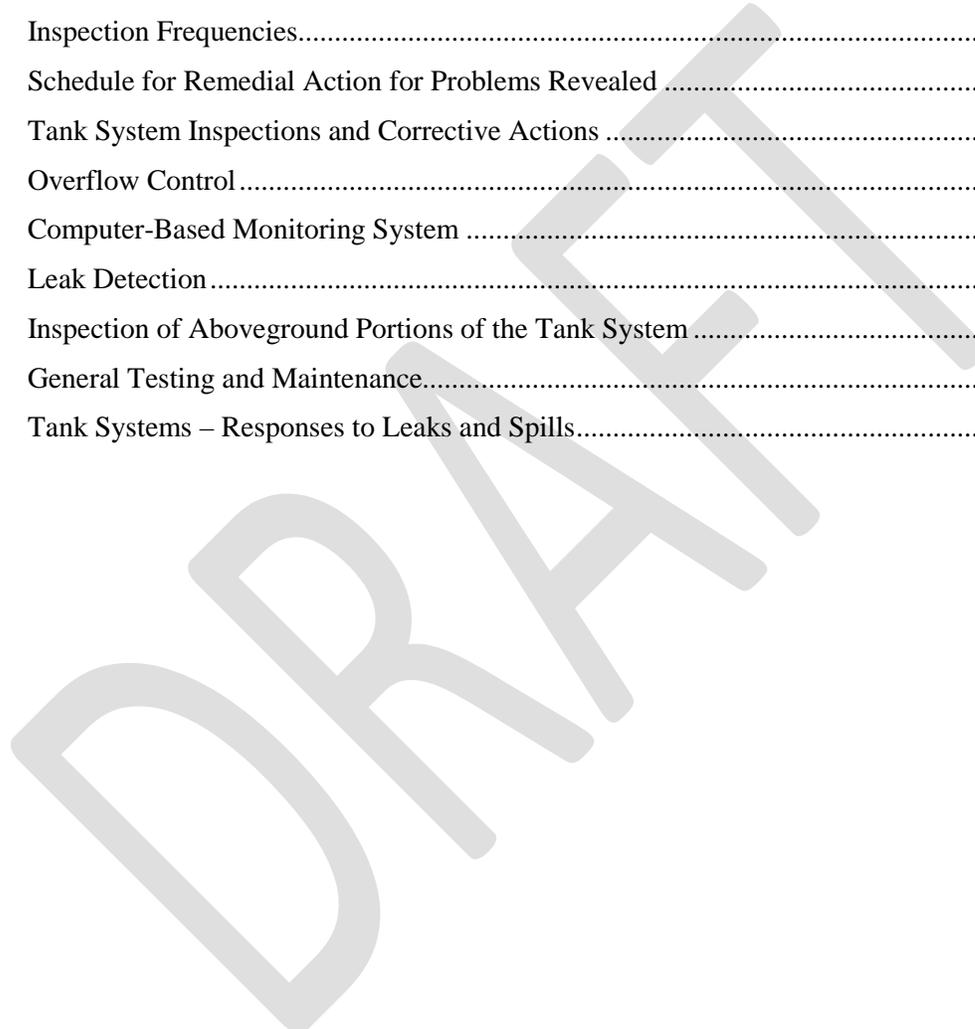
I.6.2 Computer-Based Monitoring System 3

I.6.3 Leak Detection 3

I.6.4 Inspection of Aboveground Portions of the Tank System 3

I.6.5 General Testing and Maintenance..... 3

I.6.6 Tank Systems – Responses to Leaks and Spills..... 4



1
2
3
4

This page intentionally left blank.

DRAFT

1 I INSPECTION PLAN

2 This section describes the method and schedule for the inspections of the DST System. These inspections
3 help ensure that situations do not exist that might cause or lead to a release of mixed waste that could pose
4 a threat to human health or the environment.

5 I.1 General Inspection Requirements/Inspection Summary

6 In accordance with [WAC 173-303-320](#), “the owner or operator must inspect the facility to prevent
7 malfunctions and deterioration, operator errors, and discharges that may cause or lead to the release of
8 dangerous waste constituents...” Additionally, the owner or operator must develop a written schedule for
9 inspecting all monitoring equipment, safety and emergency equipment security devices, and operating and
10 structural equipment that help prevent, detect, or respond to hazards to the public health or the
11 environment. Inspection schedules for the six DST farms must meet the following requirements:

- 12 • Be kept at the facility (copies are maintained as part of the facility operating record)
- 13 • Identify the types of problems that are to be looked for during inspections
- 14 • Indicate the frequency of inspection for specific items.

15 Unless otherwise specified by the regulations, frequencies typically are based on the rate of possible
16 deterioration of equipment, and the probability of an environmental or human health incident. Areas
17 subject to spills must be inspected daily when in use.

18 The owner or operator must keep an inspection log or summary, and it must be kept at the facility for a
19 minimum of 5 years and include the following at a minimum:

- 20 • Date and time of the inspection
- 21 • Printed name and the handwritten signature of the inspector
- 22 • Notation of the observations made and an account of spills or discharges in accordance with
23 [WAC 173-303-145](#)
- 24 • Date and nature of any repairs or remedial actions taken.

25 Inspection documentation for the DST System may include the following for meeting [WAC 173-303-320](#)
26 requirements:

- 27 • Preventive Maintenance and Calibration data sheets
- 28 • Tank Farm Operations round sheets
- 29 • Tank Farm Operations procedures
- 30 • Tank farm equipment/anomaly reports
- 31 • Shift Manager daily logbooks

32 The operating record for the DST System is contained in the Hanford Facility Operating Record, DST
33 System file. The DST System Operating Record is managed in accordance with [WAC 173-303-380](#)
34 “Facility Recordkeeping”. DST System in-process records are generated and stored in the 200 East and
35 200 West Areas. Final records are stored in the Integrated Document Management System (IDMS)
36 (through scanning the hard copy records), Records Holding Area at 940 Northgate Richland, WA, and/or
37 the Federal Records Center in Seattle, WA.”

38 The owner or operator must remedy any problems revealed by the inspection, on a schedule that prevents
39 hazards to the public health and environment. Where a hazard is imminent or already has occurred,
40 remedial action must be taken immediately.

41 I.2 Conditions and Problems Sought During Inspections

42 General and DST System-specific inspections include, but are not limited to; the following:

- 43 • Overfill controls

- 1 • Aboveground portions of the tank system, if any, to detect corrosion or releases of waste
- 2 • Data gathered from monitoring any leak detection equipment (e.g., pressure or temperature
- 3 gauges, monitoring wells) to ensure that the tank system is being operated according to its design
- 4 • The construction materials and the area immediately surrounding the externally accessible portion
- 5 of the tank system, including the Secondary Containment System (e.g., dikes) to detect erosion or
- 6 signs of releases of dangerous waste (e.g., wet spots, dead vegetation)
- 7 • The owner or operator must inspect Cathodic Protection Systems (CPS), if present, according to,
- 8 at a minimum, the following schedule to ensure that they are functioning properly
- 9 ○ The proper operation of the CPS must be confirmed within 6 months after initial
- 10 installation and annually thereafter
- 11 ○ All sources of impressed current must be inspected and/or tested, as appropriate, at least
- 12 bimonthly (i.e., every other month).

13 **I.3 General Testing and Maintenance**

14 In accordance with [WAC 173-303-340](#)(1)(d), all facility communications or alarm systems, fire
15 protection equipment, spill control equipment, and decontamination equipment, where required, must be
16 tested and maintained as necessary to ensure its proper operation in time of emergency.

17 **I.4 Inspection Frequencies**

18 Unless otherwise specified by regulations, frequencies typically are based on the rate of possible
19 deterioration of equipment, and the probability of an environmental or human health incident. Areas
20 subject to spills must be inspected daily when in use.

21 **I.5 Schedule for Remedial Action for Problems Revealed**

22 Deficiencies identified during inspections are reported to the operations shift manager. Once the
23 deficiency has been identified and reported, the facility has developed a work control process that
24 determines the priority of reported deficiencies and schedules corrective action to ensure health risks to
25 personnel are minimized and the integrity of waste management units is maintained. Immediate response
26 is taken when a deficiency is discovered that poses a hazard to human health or the environment (e.g.,
27 spray leaks, aboveground spills).

28 Response actions will comply with requirements of [WAC 173-303-640](#)(7). In emergencies, responses are
29 in accordance with Addendum K, Contingency Plan and/or Addendum J, the emergency pumping guide.

30 **I.6 Tank System Inspections and Corrective Actions**

31 The following sections describe the schedules and processes for inspection of waste tank overflow controls,
32 including the aboveground portions of the DSTs, and data from waste tank system leak detection devices,
33 CPSs, and corrective actions in response to waste in secondary containment during waste transfers.

34 **I.6.1 Overflow Control**

35 The DST liquid levels are kept below maximum limits to prevent overflowing and/or over-stressing of the
36 tanks due to increased hydrostatic head. A minimum liquid level also is maintained in the DSTs to
37 provide protection against any uplift of the steel liner. Each is equipped with a level-sensing device
38 (Enraf¹ level monitor) and manual tape for measuring tank liquid level (see Addendum C). Liquid levels
39 either are monitored automatically from the Computer-Based Monitoring System or are obtained
40 manually in the field. Field operators enter non-automated readings obtained from the field manually into
41 the Surveillance Analysis Computer System. These readings are entered daily directly into Surveillance
42 Analysis Computer System by surveillance personnel.

¹ Enraf is a registered trademark of Enraf B. V., Delft, The Netherlands.

1 During waste transfers, tank liquid levels are monitored at a frequency specified in a waste transfer
2 procedure. In the event of a high-level detection, the transfer is stopped manually from the motor control
3 center.

4 **I.6.2 Computer-Based Monitoring System**

5 The Tank Monitor and Control System (TMACS) and the Tank Farm Monitoring and Control System
6 (TFMCS) are both utilized by Base Operations to monitor tank farm data.

7 Both the TFMCS and TMACS systems provide real time monitoring for the DST System. Parameters
8 monitored include tank liquid levels, tank pressures, ventilation flows, tank thermocouple temperature
9 readings, transfer leak detection, and other operational field equipment. Examples of alarms received
10 from the field include high-liquid levels, high or low pressure, and high and low temperature. Alarms
11 produced by the TFMCS/TMACS are monitored to determine whether any off-normal conditions exist.
12 These data are automatically entered into the personal computer Surveillance Analysis Computer System
13 and analyzed by Base Operations engineers for trends. Trend analysis is the best way to overcome
14 limitations in available monitoring techniques.

15 Not all alarms are monitored by the TFMCS/TMACS; some are monitored in-field. Field data are
16 gathered daily (during operator rounds) by tank farm operators and reviewed for off-normal conditions by
17 the shift managers.

18 Data gathered in-field and by the TFMCS/TMACS are analyzed after collection to track systems together.

19 **I.6.3 Leak Detection**

20 Leak detection for the DST System is monitored through the use of ENRAFs in the tank annulus and
21 within the primary tank. There is also leak detection in the transfer pits.

22 **I.6.4 Inspection of Aboveground Portions of the Tank System**

23 The cover blocks, tank risers and upper portion of the pits are the only portion of the DST System that are
24 aboveground. Tank Farm Operations personnel are responsible for inspecting the aboveground portions
25 of the DST System for signs of damage and releases of waste, and for inspecting the surrounding area for
26 spills.

27 **I.6.5 General Testing and Maintenance**

28 Testing and maintenance of emergency equipment are accomplished through several different Tank
29 Operations Contractor (TOC) procedures.

30 **I.6.5.1 Alarm Panel Inspections**

31 Tank Farm Operations personnel are responsible for testing and recording the alarm status at the DST
32 System, including tank farm instrument buildings and the 242-S Evaporator control room. Daily
33 inspections of the alarm panels are performed. Record of new alarms is kept in the Tank Farm Operations
34 round sheets. Notification of all activated alarms to the operations shift manager ensures appropriate
35 corrective actions are taken to eliminate the alarming condition.

36 While alarming instruments are undergoing or awaiting repairs, the operations shift manager ensures an
37 acceptable alternate method of monitoring is being performed when required.

38 **I.6.5.2 Cathodic Protection Systems**

39 Inspection and testing of the cathodic protection system includes bimonthly inspection of the rectifiers
40 and annual testing at test stations. Table I-2 lists the cathodic protection rectifiers within the DST
41 System.

1 Bimonthly inspections document the physical conditions and the operating parameters of the rectifiers,
2 and identify any needed maintenance. Negative polarized potentials and negative (cathodic) polarized
3 potentials are measured at every test station for every survey

4 All rectifier test stations in the DST System are located in maintenance access boxes situated below grade
5 so traffic can pass over test stations without interference. Test stations are inspected annually to measure
6 impressed voltage and to confirm that the system is operating correctly. Annual inspection of the CPS
7 evaluates the cathodic protection being provided to the waste transfer piping against current National
8 Association of Corrosion Engineer (NACE) standards.

9 **I.6.6 Tank Systems – Responses to Leaks and Spills**

10 Responses to leaks and spills from the primary tank system and annulus or secondary containment of
11 double-shell tanks are in accordance with Addendum J and Addendum K. Unless the owner or operator
12 satisfies the requirements of [WAC 173-303-640\(7\)](#), the tank system must be closed in accordance with
13 [WAC 173-303-610](#) and Addendum H.

14

DRAFT

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
Tank Primary Level	Enraf	DAILY
Annulus Leak detection	Enraf	DAILY
Pits and piping	Evidence of visible waste leaks and spills to the environment (not weather related) inside the tank farm are found.	During Transfers
Waste leaks and spills All tank farms.	Evidence of visible waste leaks and spills to the environment (not weather related) inside the tank farm are found.	DAILY
Alarms panel inspections Location: 204-AR and 242-A Evaporator, Control Rooms tank farm instrument buildings.	Lit flashing alarms, alarm lamps inoperable when tested.	DAILY
Building doors and tank farm perimeter fence, 204-AR building, tank farm change trailer entrances, tank farm perimeter fence gates.	Broken locks, doors and gates in poor condition or not functioning properly, doors and gates unlocked when not staffed for access control.	DAILY
Inspection of the aboveground portion of tank systems All tank farms.	Visible damage to, or leaks from aboveground portion of Tank Farm process and support pits, diversion boxes and catch tanks.	DAILY
Lock and key control Tank Farm Shift Office.	Non-returned or missing keys, incomplete key control log entries.	DAILY

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
Fire Protection System: Fire suppressant and notification systems (i.e., sprinkler system and fire alarm pull boxes)	Water flow alarm tests of the sprinkler system to ensure the operation of a single sprinkler head will transmit an alarm, and that any of the manual fire alarm boxes will properly transmit an alarm signal.	ANNUALLY
Fire Protection System: Visual inspection of the physical condition of the sprinkler system, testing, and calibration of smoke detectors, and testing of heat detectors	A visual inspection of the sprinkler system to ensure system integrity as well as the required testing and calibration of detectors to ensure functionality. A flow test at the sprinkler system is performed to ensure proper flow to the system riser.	BIENNIAL
Safety showers (fixed) 204-AR Mechanical Equipment Room & balcony of Tanker Car Unloading Room, 272-AW Building	Verify Operability	MONTHLY

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
Tank farm fencing All tank farms, and East/ West Vent Station.	Fencing that is inadequate (fence is sagging, openings underneath or through the fencing that a person can pass through) to prevent unauthorized access.	MONTHLY
Posted “Danger-Hazardous Materials, Unauthorized Personnel Keep Out” warning signs.	Fallen or illegible warning signs,	WEEKLY
Signs should be present on all entrances into the tank farms, the East/ West Vent Station and 204-AR Building.	Signs not visible from a 25-foot distance.	
Emergency lighting At various tank farm buildings and locations	Verify Operability	MONTHLY
Emergency siren (take cover and evacuation alarms) 200 East and West area utility poles Area siren (DOE/RL-94-02 Section 11.3) Inspection performed by the site emergency preparedness organization and	Emergency siren alarms are not sounding or inaudible in specified area when tested each month.	MONTHLY

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
operations.		
Eye wash stations (portable and fixed) Balcony of Tanker Car Unloading Room, and the 272-AW Building.	Verify Operability Expired inspection tag.	MONTHLY
Fire extinguishers 204-AR, Tank Farm Instrument Buildings. Tank Farm Change Trailers, 272-AW, and MO-28.	Verify fire extinguishers are in their proper location	MONTHLY
Spill kits (for chemical spill) 204-AR Mechanical Equipment Room.	Verify spill kit is present	MONTHLY

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
Protective clothing 272-AW Buildings and most tank farm change trailers	Verify availability	MONTHLY
Ignitable/ reactive waste storage inspection	Review ignitable/ reactive waste storage inspection data and perform a visual inspection. Chemicals with properties, issues and potential areas of concern are found.	ANNUALLY
Catch Tank Dip Tube System-Liquid Level, High Level Alarm: Tank 1 (AR204-WT-LI-101) Catch Tank Dip Tube System-Liquid Level, High Level Alarm is monitored at 242-A Evaporator control room.	Tank high-level alarm	DAILY
Catch Tank Sump Leak Detector: 204-ARTank 1 Catch Tank Sump Leak Detector is monitored at 242-A Evaporator control room.	Alarming Catch Tank Sump Leak Detector at monitoring locations	DAILY

Table I.1 Tank Farm General Environmental Inspections

Equipment Information	Inspection	Frequency And Monitoring Duration Requirements
Transfer Line Equipment – Conductivity Probe Leak Detector LIQW-702 Transfer Line Equipment – Conductivity Probe Leak Detector is monitored at 242-A Evaporator control rm.	Alarming Monitor Transfer Line Equipment – Conductivity Probe Leak Detector	Observable parts of the transfer line conductivity probe detector alarm systems shall be visually inspected and monitored as required by operating procedures for routine surveillance and during transfers.
Equipment -Rail Out/Tank Trailer Unloading Room Floor (UNTIL A RCRA-COMPLIANT TRANSFER LINE IS AVAILABLE LEAVING 204-AR, THIS FACILITY IS INACTIVE)	Leaks and spills in Equipment – Rail out/tank trailer unloading room floor	DAILY
241-AZ-301AZ Condensate distribution tank AZ-301-COND-TK-001 level is high (≥47.5 inches.)	241-AZ-301AZ high-high tank level detector alarming.	DAILY
241-AZ-301AZ Leak detected or trouble in leak detector circuit in AZ-301 secondary containment.	241-AZ-301AZ secondary containment leak detector alarming.	DAILY

1
2

Table 1.2 Tank Farm Cathodic Protection

Equipment Information	Condition/Required Response	Inspection and Monitoring Duration Requirements
<p>Rectifier R1 Located next to the 271-AP Instrument Building, north of AP Tank Farm fence.</p>	<p>CONDITION: Rectifier R1 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier R2 Located next to the 271-AP Instrument Building, north of AP Tank Farm fence.</p>	<p>CONDITION: Rectifier R2 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 2 Located on the south side of PUREX Building against the wall north-northeast of 241-A-151</p>	<p>CONDITION: Rectifier 2 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 7 Located next to the 271-AP Instrument Building, north of AP Tank Farm fence.</p>	<p>CONDITION: Rectifier 7 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 8 Located between Buffalo Avenue and the West side of AY Tank Farm fence.</p>	<p>CONDITION: Rectifier 8 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>

Table 1.2 Tank Farm Cathodic Protection

Equipment Information	Condition/Required Response	Inspection and Monitoring Duration Requirements
<p>Rectifier 11 Located between the parking area and West fence of AN Tank Farm.</p>	<p>CONDITION: Rectifier 11 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 13 Located rear west fence of the AN Tank Farm.</p>	<p>CONDITION: Rectifier 13 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect top setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 16 Located between Buffalo Avenue and the west side of A Tank Farm fence.</p>	<p>CONDITION: Rectifier 16 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 18 Southwest outside corner of 242-A building</p>	<p>CONDITION: Rectifier 18 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 19 Located in the 271-AW Instrument Building.</p>	<p>CONDITION: Rectifier 19 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>

Table 1.2 Tank Farm Cathodic Protection

Equipment Information	Condition/Required Response	Inspection and Monitoring Duration Requirements
<p>Rectifier 31 Located near the west side of AY Tank Farm fence.</p>	<p>CONDITION: Rectifier 31 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 36 Located southeast of 242-S Evaporator, near east side of SY Tank Farm fence.</p>	<p>CONDITION: Rectifier 36 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect top setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 41</p>	<p>CONDITION: Rectifier 41 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 46 Located South of corner of 7th Street and Buffalo Avenue.</p>	<p>CONDITION: Rectifier 46 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>
<p>Rectifier 47 Located northeast of C Tank Farm.</p>	<p>CONDITION: Rectifier 47 is operational, no indication of frayed or broken wiring, leaks, gasket seal not adequate, murky oil, oil level low, incorrect tap setting.</p> <p>RESPONSE: No response is necessary.</p>	<p>Source(s) of impressed current (rectifier) are inspected bi-monthly (every other month) and the operation of the cathodic protection system (test station) is inspected annually.</p>

Enraf is a registered trademark of Enraf B. V., Delft, The Netherlands.

Resource Conservation and Recovery Act, as amended

RP-02-85, 2002, Standard Recommended Practice - Corrosion Control of Underground Storage Tank Systems by Cathodic Protection, National Association of Corrosion Engineers,

www.techstreet.com/info/nace.html.

Table 1.2 Tank Farm Cathodic Protection

Equipment Information	Condition/Required Response	Inspection and Monitoring Duration Requirements
------------------------------	------------------------------------	--

RCRA *Resource Conservation and Recovery Act*

SACS = Surveillance Analysis Computer System.

TOC = Tank Operations Contractor.

TMACS = Tank Monitor and Control System.

1
2

DRAFT

1
2
3

This page intentionally left blank.

DRAFT