JUN 17 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT No 614427

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Plant Controls 74E41	4. Related EDT No.: 613396
5. Proj./Prog./Dept./Div.: TWRS	6. Cog. Engr.: L. R. Kiewert	7. Purchase Order No.: N/A
8. Originator Remarks: Please Review and Comment		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 200E/200W
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 5-23-96

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Trans- mittal	Originator Dispo- sition	Receiver Dispo- sition
1	WHC-SD-WM-TR-034	ALL	0	Single-Shell Tank Riser Resistance to Ground Test Report	S	1&4		

16. KEY

Approval Designator (F)	Reason for Transmittal (G)			Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)		1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
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18. Signature of EDT Originator <i>[Signature]</i> Date	19. Authorized Representative for Receiving Organization <i>[Signature]</i> Date	20. Cognizant Manager <i>[Signature]</i> Date	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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SINGLE-SHELL TANK RISER RESISTANCE TO GROUND TEST REPORT

L.R. Kiewert

WHC, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

EDT: 614427

UC: 721

Org Code: 74E41

Charge Code: N2148

B&R Code: EW3120072

Total Pages: 197

Key Words: RISER RESISTANCE MEASUREMENTS

Abstract: This Test Report provides the results from Single-Shell Tank Riser to Earth Measurements which were conducted by engineering as a step towards providing closure for the Lightning Hazard Issue.

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[Signature] 6/14/96
Release Approval Date

Approved for Public Release

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SINGLE-SHELL TANK RISER
RESISTANCE TO EARTH GROUND TEST REPORT

1.0 GENERAL

Between the dates of March 23, 1996 and May 9, 1996 measurements were made on all accessible risers on the 149 single shell tanks per Test Plan WHC-SD-WM-TP-433. These measurements determined the resistance to earth which is of interest in evaluating the path to ground of a lightning strike through a riser. The techniques used to measure the riser resistivity are described in Appendix A. Within this report an acceptance criteria is established and riser measurements are compared to that criteria, conclusions are drawn and recommendations are made. Data sheets for each tanks measurements are found in Appendices B & C.

2.0 SUMMARY

The resistance to ground of accessible risers, attached equipment and other selected structures associated with the single shell tanks were measured. Additionally any metal structure above a tank was measured for comparison with the values for the tank risers.

A qualified acceptance criteria of 5 ohms maximum is assigned to the tank risers.

1094 Risers were measured on 149 tanks
213 Risers did not meet the acceptance criteria
65 Tanks - all risers met acceptance criteria

Soil resistivities were measured for each single shell tank farm location... A, AX, B, BX, BY, C, S, SX, T, TX, TY, U and are recorded on a data sheet in Appendix B. Values varied between 15K - 50K ohm - centimeters.

3.0 REFERENCES

IEEE STD 142-1991, "Grounding Of Industrial And Commercial Power Systems."

IEEE STD 81-1983, "Guide For Measuring Earth Resistivity, Ground Impedance, And Earth Surface Potentials Of A Ground System."

NFPA 780-95, "Standard For Installation of Lightning Protection Systems"

WHC-SD-RE-TI-053, "Riser Configuration Document For Single-Shell Waste Tanks."

WHC-SD-WM-TP-433, "Single Shell Tank Riser Resistance to Ground Test Plan"

4.0 DATA INTERPRETATION

SOIL RESISTIVITIES - varied between 15K and 50K ohm centimeters and were fairly consistent from tank farm to tank farm - the lower readings were in the vicinity of the 200 East Farms and the higher readings those found around the 200 West Farms. The soil resistivity appeared to have had little bearing on the results of the ground resistance measurements for most tank farms.

TANK RESISTANCE TO EARTH - The tanks exhibited low values of grounding resistance - (less than 1 ohm in many cases) representative of the large area of reinforced concrete in contact with the soil. The tank ground resistance is taken to be the average value of acceptable riser resistances measured and is meaningful for determining the resistance of the riser to tank connection. Typically the acceptable riser resistances of a tank were measured in a narrow range with the difference attributable to the geometry of the current and voltage pins. In most cases the resistivities for different tanks within a given tank farm were similar being representative of the piping in the ground and again the location of the current and potential pins. Whenever possible the pins were located outside the tank farm fence in an undeveloped area. This was not always possible and the result in a few cases was exceptionally low readings that generally corresponded to a current path that included parallel piping and other tanks. The exact magnitude of the resistance measured is not as important as is the comparison of the different riser readings for a tank.

TANK RISER RESISTANCE TO EARTH - All risers and their attachment(s) were measured separately and all measurements were made to bare metal to insure no surface resistance. Results indicated that original construction tank risers with some exceptions are well connected electrically to the tanks. In most cases the acceptable riser resistance to ground for a given tank was less than 4 ohms and varied only a few hundredths of an ohm regardless of whether the riser was connected to the waste.

The original riser drawings for each tank were researched and compared with the "As Built" configuration. There are a total of 319 risers added after original construction. These risers are flagged as indicated on the Legend for the data sheets. One category of these risers was installed through corebores and metal to metal contact is incidental rather than constructed. The other category of these added risers is single or multiple risers welded to the blank flange cover of a large (usually 42") unused riser. The riser connection is bolted and is typically underground.

Total risers measured..... 1094
 Total original construction risers measured775
 Total added risers measured.....319

In most cases these added risers measured a higher resistance than the original construction risers.

The resistance between risers and attachments varied from no resistance to several thousand ohms (this is a multibolt connection with a gasket in between). It is to be noted that those risers which had recently been

regasketed or otherwise reworked showed little or no resistance while the resistance exhibited by others can be attributed to corrosion buildup underneath the boltheads and nuts. The importance of this measurement is that it points out the sensitivity of the instrumentation and indicates that the riser attachment to the reinforcing steel of the tank is extremely secure where the resistivity of the riser is within a few hundredths of an ohm of the measured value on the other risers. Note that this conclusion is corroborated with photographs of construction steel details from 1947 showing rebar to riser connection.

Generally the electrical boxes, receptacles, and ground cables indicated ground resistance values that were considerably larger than the riser resistance values - another indication of the quality of the original tank riser connection to ground. The data acquisition system (TMACS) field stations are connected to most of the various thermocouple trees and to the Enraf level gauges with a PVC coated rigid steel conduit - this connection provides an excellent insulated current path between the TMACS box and the tank sensor, especially the thermocouple probe. In some cases this connection is made via an underground conduit junction box with the conduits bonded together in the box. In a few cases the thermocouple probe was isolated by temporarily removing the bonding jumper and confirming that the measured value was attributed to the riser or probe.

The thermocouple probes in some cases exhibited lower resistance than the riser - the result of high conductivity of the waste surrounding the probe coupled with the probe to flange resistance. These are designated as "Grounded Through Waste" (GTW) on the data sheets.

5.0 ACCEPTANCE CRITERIA

The criteria from IEEE 142-1991 of "1 to 5 ohms ground resistance for large industrial installations" provides a good fit to the data collected. All tanks that were measured exhibited resistances to ground of less than 5 ohms, and riser resistances to ground varied from less than 1 ohm to >20K ohms. The tank resistance to ground is determined by averaging the resistance values of the original construction risers which fall into a narrow band with a spread of about 10% to 20 %.

The general acceptance criteria for riser resistance values is 5 ohms - where the riser measurement is more than 5 ohms, the riser is flagged "Ungrounded Riser" (UGR).

Where the tank can be considered hazardous (Watchlist Tanks which contain ignitable gases or organic materials), the 5 ohm criteria does not apply - The acceptable riser to ground resistance value is only apparent after reviewing the data for that tank. In this case acceptable readings fall into a narrow range around tank resistance value. Riser resistance values less than 5 ohms which may not be considered acceptable to safely conduct a lightning strike to ground are not flagged on the data sheets.

Although the NEC considers that a grounding resistance of 25 ohms or less is acceptable for a single made electrode - that criteria is not applicable in this case in that the tank resistances in every case has been demonstrated to

be less than 5 ohms and any resistance greater than the tank resistance represents the electrode resistance (riser to tank connection).

6.0 CONCLUSIONS

Acceptable riser resistance values were less than 5 ohms. Using the acceptance criteria there are 84 tanks with risers which are unacceptable. Risers which do not meet the acceptance criteria are flagged. It is to be noted that most of the risers on the sixteen 200 series tanks (50,000 gallon) have high readings which indicate that the method of installing or attaching those risers to the tank was different than on the larger tanks.

All risers which are indicated as added after original construction should be considered questionably grounded (even when not flagged UGR). Bonding/grounding will need to be considered for these risers when the tank is considered hazardous (Watch List Hydrogen or Organic) regardless of the measured riser resistance value. Supplementary grounding will be effective only when the grounding point chosen is close to the tank resistance value.

The results of the resistance measurements indicate that thermocouple trees present the most credible entrance path for a lightning strike into a tank because of the insulated rigid steel conduit connection to the TMACS field station. This connection multiplies the surface area over which a lightning strike could be channeled into the tank. There are 21 tanks with risers which contain thermocouple trees which have been shown to be grounded through the waste (flagged as GTW) - supplementary grounding/bonding will not create a path of less resistance in this case and it will be necessary to shield or isolate the thermocouple tree from a direct lightning strike. Additionally the conduit connection to TMACS will need to be isolated to prevent an indirect strike on the TMACS field station or connecting conduits from being conducted into the tank(s) waste.

Unacceptable original risers requiring review.....71 (200Series....56)
Added risers requiring review.....319

7.0 RECOMMENDATIONS

There are a number of remediation steps which can be taken to acceptably ground a tank riser/attachments to prevent arcing during an electrical short circuit or lessen the vulnerability of a tank riser from a lightning strike. Solutions initiated for lightning protection should be applied using a graded approach concentrated on those tanks which can be considered hazardous and those risers which are not under the zone of protection of another structure. Solutions for unacceptable risers utilized for grounding electrical equipment are required regardless of tank classification.

A properly grounded and bonded riser will efficiently conduct a lightning stroke to ground thus eliminating in most cases that riser/attachment as a potential source of ignition for flammable tank contents when subjected to a lightning strike. Likewise a riser which is shielded from direct lightning strikes and isolated from indirect lightning strikes can be eliminated as a

hazardous target. Schemes for providing the remediation are depicted in Appendix D.

LIGHTNING ANALYSIS - Utilize NFPA 780 "Standard for the Installation of Lightning Protection Systems" zone of protection concepts for selecting risers which need grounding or other protection. This process will also selectively remove other risers from consideration as a lightning target. Riser attachments which protrude into the waste should be carefully assessed for the effectiveness of shielding or bonding.

BONDING - The results of the testing indicate that many risers are an excellent electrical ground, however the attachments may or may not be. A bonding strap (See appendix D-1) bolted to the side of the riser and to the attachment flange(s) would permanently eliminate the resistance thus providing an excellent ground path for a lightning strike. A bonding link should be utilized on all bolted joints on risers that are considered lightning targets by virtue of their physical configuration.

GROUNDING - Those risers which are indicated as ungrounded and which are used as a ground need to have a permanent low resistance ground provided in accordance with NEC Article 250 Part H and K. In some cases the data sheets provide assistance for locating an alternate ground point (I.E. - ground pad adjacent to BX106).

In general those risers found to be ungrounded on hazardous tanks should be grounded for lightning protection even if they can be shown to be in the zone of protection of another structure.

Where thermocouple trees are indicated as grounded through the waste (GTW) a parallel ground path would not provide much help in shunting off a lightning strike. If the tank is considered Watch List Hydrogen or Organic, a local air terminal (See appendix D-2) will need to be provided to intercept a direct lightning strike unless the thermocouple tree is determined to be in the zone of protection of another structure.

SHIELDING - Shielding can be utilized for lightning protection in certain cases. For example Manual Tapes can be fitted with a steel box which would surround the electrically isolated top section. The box would act as a Faraday Cage and shunt the lightning strike around the isolated tape reel to a grounded riser.

ISOLATION - Provide isolation between the TMACS field station and hazardous tanks to prevent coupling energy from an indirect lightning strike on a TMACS cabinet or conduit into the tank through a thermocouple probe or other tank sensor. Removing the PVC jacket from a buried section of the conduit would serve to provide a ground path.

APPENDIX A
DATA COLLECTION METHODS

SOIL RESISTIVITY MEASUREMENTS

Soil resistivity was measured for each general tank farm area where ground resistance measurements were taken in order to account for any significant differences in the resistance to earth data from tank farm to tank farm. The Wenner Four Electrode Method (ASTM Standard G57-78-86) is used to measure resistivity at various depths at tank farm locations. This procedure involves the use of four electrodes which are driven in the soil along a straight line at equal spacing. The spacing determines the depth at which the soil is evaluated. Electrical current is circulated through the two outside electrodes while the resultant voltage drop is measured across the two inside electrodes. Using Ohms Law, the resistance is calculated by dividing the measured voltage drop by the applied current to yield resistance. Appendix A-3 illustrates this procedure. Once the resistance of the soil at a particular depth is determined, it is converted to resistivity by multiplying the value by a constant (191.5) and the electrode spacing(depth) in feet.

$$\text{RHO (ohm-cm)} = R \times d \times 191.5$$

R = measured resistance, d = distance between electrodes in feet.
191.5 = constant derived from $2 \times 3.14 \times 12 \text{ in./ft.} \times 2.54 \text{ cm./in.}$

The calculated value is the resistivity in ohm-centimeters. The soil pins are pushed into the earth by hand extending below the surface approximately 6 inches. The spacing between the pins is 10 feet for these tests. Four pins are used and they are connected to the resistance meter using insulated test leads. The actual resistance is read off the digital display and converted to resistivity in ohm-cm.

RESISTANCE TO EARTH MEASUREMENTS

The measurement of riser to ground resistances was conducted with a low voltage test instrument which was attached by test leads to steel pins which are driven into the ground approximately 12" so that the safety of underground structures beneath the pins is insured. Test current of 10ma maximum was circulated from the riser through the tank structure, through the ground to the current electrode. The connection at the riser or other structure to be measured was made with an alligator clip or other tension clip to assure a good connection. The method of measuring riser to ground resistance was the "Fall of Potential Method" - This procedure was used for all measurements taken while conducting the test.

The fall of potential method uses a current electrode(pin) and a potential electrode(pin) arranged in a straight line away from the structure under test as indicated in Appendix A-4. Using this arrangement, current is introduced into the earth using the current electrode and the resulting change in potential between the structure and the potential electrode is measured. Resistance is plotted as a function of the distance between the structure and the potential electrode which is moved away from the structure being measured until the resistance levels out.

In practice the test is conducted in the same manner as the soil resistivity test using the same meter to supply a low voltage alternating current between the structure under test and the two pins that are driven in the ground some distance away. Typically the current pin is located 500-1000' from the structure, while the potential pin is located approximately 62% of the distance to the current pin. In all cases sufficient data is gathered by moving the potential pin in a straight line towards the current pin until the resistance remains relatively constant.

When difficulties were encountered to obtain measurements for a specific tank it was necessary to use a reference ground or dead earth to obtain measurements. A typical reference ground could be buried piping. The Biddle Earth Tester was used for all testing. This unit is a 4 terminal direct digital readout ohmmeter. The tester generates a low voltage (50VAC) 135 Hz current (0-10ma) between the current posts. The input to the detector section of the Tester is filtered and not affected by stray A.C. or D.C. currents and converts the voltage measurements directly into resistance.

WENNER FOUR ELECTRODE METHOD
(SOIL RESISTIVITY)

SINGLE SHELL TANK RISER RESISTANCE MEASUREMENTS

TANK FARM SOIL RESISTIVITY DATA SHEET

TANK FARM	DATE	LOCATION	RESISTIVITY
241-A	5/9/96	SOUTH OUTSIDE	15.7K Ω
241-AX	4/18/96	NORTHEAST CORNER OUTSIDE NORTHEAST CORNER INSIDE	21.3K Ω 35.7K Ω
241-B	5/1/96	NORTH SIDE OUTSIDE NORTHEAST CORNER OUTSIDE	14.7K Ω 28.5K Ω
241-BX	4/9/96	WEST SIDE OUTSIDE WEST SIDE OUTSIDE	30.8K Ω 21.8K Ω
241-BY	4/29/96	WEST SIDE OUTSIDE	28.7K Ω
241-C	4/16/96	SOUTHWEST CORNER INSIDE SOUTHWEST CORNER INSIDE	25.5K Ω 19.4K Ω
241-S	3/30/96 4/3/96	WEST SIDE OUTSIDE SOUTH SIDE INSIDE	37.6K Ω 23.6K Ω
241-SX	3/30/96	SOUTHWEST CORNER OUTSIDE NORTHWEST CORNER OUTSIDE	34.7K Ω 24.2K Ω
241-T	3/25/96	WEST SIDE OUTSIDE NORTHEAST CORNER OUTSIDE	34.9K Ω 28.9K Ω
241-TX	3/28/96	WEST SIDE OUTSIDE EAST SIDE OUTSIDE	35.4K Ω 16.7K Ω
241-TY	3/23/96	WEST SIDE OUTSIDE EAST SIDE OUTSIDE	47.2K Ω 15.5K Ω
241-U	4/11/96	WEST SIDE OUTSIDE NORTH SIDE OUTSIDE	50.4K Ω 26.6K Ω

TEST EQUIP # 785-77-47-001CALIB DUE DATE 3-12-97

RISER RESISTANCE TO GROUND DATA SHEETS

LEGEND

↖ RISER NUMBER

⑧

— RISER ADDED AFTER ORIGINAL CONSTRUCTION

↖ RISER NUMBER

10A

— 4", 12" OR 18" RISER ATTACHED TO 42" RISER
BELOW GRADE

U.G.R. — UNGROUNDED RISER

G.T.W. — RISER/PROBE GROUNDED THROUGH WASTE

RISER RESISTANCE DATA SHEET

TANK A-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	8" THERMOCOUPLE	.06	.06	
3	8" DRYWELL	.05	.23	
6	4" ENRAF	.05	.10	
7	4" CRUST BRKR	.09	.09	
10	4" SPARE	.07	.09	
11	4" WASTE LINE	2.83	2.83	
(12)	4" TEMP PROBE	.09	.09	
(16)	OBSV PORT	.28	.29	
(19)	4" SPARE	43.8	43.8	U.G.R.
(20)	4" BREATHR FLTR	.22	.23	
	SHMS CABINET		.16	
P2	1" PIPE		33.2	
IH	INSTRUMENT HOUSE		.37	
CA1	4' CAISSON		.62	
WV3	VALVE HANDLE		.67	

CONTINUED NEXT SHEET

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK A-101 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
VV4	6" VALVE STEM		.13	
EU	ENRAF UNISTRUT		.13	
VW7	VALVE CASING		.12	
ER	ELECT RCPT		.58	
LD3	LEAK DET STA		22.5	
WR	WELD RCPT		.15	
P1	1" PIPE		1.8	
PCS2	PUMP CNTRL STA		.21	
VV5	VALVE HANDLE		11.5K	
VV6	VALVE HANDLE		18.4K	
WFE	WF ENCLOSURE		.50	
PCS1	PUMP CNTRL STA		.53	
LD2	LEAK DET PANEL		.48	
CA2	4" CAISSON		.97	
VV2	VALVE HANDLE		.23	
VV1	VALVE HANDLE		230	
LD1	LEAK DET PANEL		.45	

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK A-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	8" SPARE	.05	.05	
3	8" DRYWELL	.10	.17	
6	4" FIC	.04	.18	
7	4" TEMPERATURE	.07	.10	
⑮	6" DRAIN	.09	.09	
⑮	10" DRAIN	.18	.746	
⑮	10" DRAIN	.17	.75	
⑮	4" BREATHER FLTR	16.10	16.11	U.G.R.
⑮	12" OBSV PORT	21.4	21.4	U.G.R.
VSD	VAPOR SEAL DRAIN		20.8	
IH	INSTRUMENT HOUSE		.30	
SL	SEAL LOOP 2" PIPE		.14	
VV3	6" VALVE STEM		.08	
FIC	FIC BOX		.26	
PP1	2" PIPE		.06	

CONTINUED NEXT SHEET

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK A-102 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
PP2	2" PIPE		.07	
VV6	VALVE HANDLE		.11	
ER	ELECT RCPT		209	
PCS	PUMP CNTRL STA		.15	
PP3	3/4" PIPE		.24	
VV4	VALVE HANDLE		184	
VV5	VALVE HANDLE		612	
LD5	LEAK DET STATION		.15	
LD4	LEAK DET STATION		.16	
LD3	LEAK DET STATION		.38	
WR	WELDING RECEPTACLE		.13	
LD2	LEAK DET STATION		.47	
VV1	VALVE HANDLE		200	
VV2	VALVE HANDLE		319	
LD1	LEAK DET STATION		.38	
RK	ELECT RACK		.22	

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK A-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	8" THERMOCOUPLE	.06	.07	
3	8" DRYWELL	.04	.04	
6	4" FIC	.04	.20	
7	4" CRUST BKR	.07	.07	
(11)	8" SPARE	52.6	52.6	U.G.R.
(12)	12" OBSV PORT	37.9	37.9	U.G.R.
(15)	4" TEMPERATURE	2.24	.06	G.T.W.
(17)	4" BREATHER FLTR	41.8	41.8	U.G.R.
(19)	4" LOW	53.7	53.7	U.G.R.
WV2	AIR		.08	
VSD	VAPOR SEAL DRAIN		40.8	
WV3			.16	
MCC	MCC A-1		.07	
SL	SEAL LOOP		.09	
PNL2	POWER DIST PANEL		.05	

CONTINUED NEXT SHEET

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK A-103 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
PNL1	POWER DIST PANEL		.05	
IH	INSTRUMENT HOUSE		.05	
VV1	STEM CASING		.06	
PP4	2" PIPE		.06	
IE1	INSTR ENCLOSURE		.13	
ER	ELECT RCPT		.13	
FIC	FIC BOXES		.25	
PP2	4" PIPE		.16	
PP3	4" PIPE		.33	
LD2	LEAK DET STATION		.28	
WR	WELD RCPT		.11	
LD3	LEAK DETECTOR		.21	
IE2	INSTR ENCLOSURE		52.1	
PP1	2" PIPE		97.7	
PCS1	PUMP CNTRL STA		.19	
PP7	1" PIPE		.07	
LD1	LEAK DET STATION		.15	
PP8	1" PIPE		119.3	
VV4	VALVE HANDLE		6.07	
PCS2	PUMP CNTRL STA		.11	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK A-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	8" SPARE	.05	.24	
5	4" REEL	.05	OPEN	
8	4" PRESS GAUGE	.04	.05	
⑨	8" TEMPERATURE	22.2	22.2	U.G.R.
⑭	4" SPARE	16.24	16.24	U.G.R.
⑮	4" TEMPERATURE	189	189	U.G.R.
⑯	4" TEMPERATURE	76.8	76.8	U.G.R.
⑰	4" TEMPERATURE	254	254	U.G.R.
⑱	4" SPARE	15.09	15.09	U.G.R.
⑲	4" TEMPERATURE	3.76K	3.76K	U.G.R.
⑳	4" SPARE	62.6	62.6	U.G.R.
㉒	4" TEMPERATURE	OPEN		U.G.R.
ES	EXHAUST STACK		.09	
IH	INSTRUMENT HOUSE		.17	
P1	2" PIPE	2.10	2.10	

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RISER RESISTANCE DATA SHEET

TANK A-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	8" DRYWELL	.02	.03	
2	8" THERMOCOUPLE	.13	1.18	
6	4" ENRAF	.11	.41	
⑩	6" SLUDGE MEAS	18.0	21.5	U.G.R.
⑪	6" SLUDGE MEAS	27.6	28.9	U.G.R.
⑫	6" SPARE	33.4	33.5	U.G.R.
⑭	4" TEMPERATURE	3.34	.12	G.T.W.
⑰	12" OBSV PORT	22.1	22.5	U.G.R.
⑱	4" BREATHER FLTR	33.4	33.5	U.G.R.
20	6" SPARE	.08	2.37	
IE	INSTR ENCLOSURE		.05	
EU	ENRAF UNISTRUT		.37	
P4	2" PIPE		472	
W1	VALVE HANDLE		12	
W2	VALVE HANDLE		.06	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK A-106 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
LD2	LEAK DET STATION		48	
VV3	AIR VALVE HANDLE		1.64	
R	RECEPTACLE		13.9	
P6	2" PIPE		.06	
VSD	VAPOR SEAL DRAIN		4.71	
B2	ELECTRICAL BOX		113	
IH	INSTRUMENT HOUSE		.08	
WR	WELD RCPT		.09	
P5	1" PIPE		117	
B1	ELECT BOX		149.5	
VV4			.88	
LD1	LEAK DET STATION		.46	
PCS	PUMP CNTRL STA		.17	
P2	4" PIPE		411	
P3	1" PIPE		58.2	
P7	2" PIPE		384	

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RISER RESISTANCE DATA SHEET

TANK AX-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1A	34" STEAM COIL CAISSON		19.31	
3A	16" OBSV PORT			TOO HOT
7A	4" PROFILE TEMP			RISER ENCASED
7B	4" PROFILE TEMP			RISER ENCASED
7C	4" PROFILE TEMP			RISER ENCASED
7D	4" PROFILE TEMP			RISER ENCASED
8A	6" PLUG	.46	2.34	
8B	6" PLUG	.45	48.5	
8D	6" PLUG	.48	.80	
8E	6" PLUG	.45	2.17	
8F	6" SPARE	.47	5.51	
8G	6" PLUG	.47	OPEN	
9A	6" LOW	.47	.53	
9B	6" TEMP PROBE	.45	.48	
9C	6" ENRAF	.50	.41	

CONTINUED NEXT SHEET

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK AX-101 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
9D	6" SLUDGE MEAS	.47	17.5K	
9E	6" BREATHER FLTR	.46	.48	
9F	6" SHMS CONNECT	.47	.47	
9G	6" SLUDGE MEAS	.45	.46	
13A	4" WC			RISER ENCASED
13B	4" WC			RISER ENCASED
14	42" STEAM COIL CAISSON		14.83	
VH3	VALVE	*140.6	8.98K	*CASING
VH2	VALVE HANDLE		.46	
JB4	J BOX (20 X 20)		272	
WFE	WF ENCLOSURE		.43	
P5	AIR VALVE		320	
JB2	J BOX		OPEN	
JB3	J BOX		.49	
PCS2	PUMP CNTRL STA		.68	
P6	2" PIPE W/FLANGE	.46	.47	
LDE2	LEAK DETECTION		.58	
LDE1	LEAK DETECTION		.61	
SHMS	SHMS CABINET		.50	
VH1	VALVE HANDLE		963	
P2	2" PIPE		219	
P1	2" PIPE		218	
PCS1	PUMP CNTRL STA		.50	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK AX-101 CONTINUED

[illegible]

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

TANK AX-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3A	17" OBSV PORT	.48	OPEN	
7A	4" TEMPERATURE	.47	.60	
7B	4" TEMPERATURE	.47	.62	
7C	4" TEMPERATURE	.46	.51	
7D	4" TEMPERATURE	.46	.48	
8A	6" PLUG	.46	.46	
8B	6" PLUG	.47	4.85K	
8C	6" PLUG	.46	8.44	
8D	6" PLUG	.46	.68	
8E	6" PLUG	.46	6.24	
8F	6" PLUG	.46	469	
8G	6" PLUG	.46	19.74	
9A	6" SLUDGE MEAS	.46	.46	
9B	6" FIC	.46	.50	
9C	6" TEMPERATURE			RISER ENCASED

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RISER RESISTANCE DATA SHEET

TANK AX-102 CONTINUED

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
9D	6" LLR	.46	4.04	
9E	6" BREATHER FLTR	.46	.48	
9F	6" SPARE	.47	.51	
9G	6" SLUDGE MEAS	.47	640	
13A	4" WC			RISER ENCASED
13B	4" TEMPERATURE	.46	.53	
13C	4" WC	.46	1.43	
14	42" STEAM COIL CAISSON		16.11	
P2	1" PIPE		1.746K	
FIC	FIC BOX			
LDE3	LEAK DETECTION		.79	
WR2	WELD RCPT		6.68	
P1	2" PIPE		.56	
LDE2	LEAK DETECTION		.67	
JB1	J BOX (20 X 20)		232	
BLDG	BUILDING		.50	
WR1	WELD RCPT		33.6	
PCS	PUMP CNTRL STA		.57	
LDE1	LEAK DETECTION		.62	
WR3	WELD RCPT		3.35	
WR4	60A RCPT		1.66	
VH1	VALVE HANDLE	*52.52	157.3	*CASING

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RISER RESISTANCE DATA SHEET

TANK AX-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3A	16" OBSV PORT			NO ACCESS
7A	4" TEMPERATURE	.50	.55	
7B	4" TEMPERATURE	.45	.49	
7C	4" TEMPERATURE	.45	.62	
7D	4" TEMPERATURE	.48	.60	
8A	6" DRYWELL	.46	11.7	
8B	6" PLUG	.45	.55	
8D	6" SPARE	.46	.50	
8E	6" SPARE	.45	.54	
8F	6" SPARE	.45	1.89	
8G	6" SPARE	.47	1.13	
9A	6" SPARE	.47	5.6K	
9B	6" TEMPERATURE	.46	.58	
9C	6" ENRAF	.50	.50	
9D	6" SLUDGE MEAS	.45	118.3	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK AX-103 CONTINUED FROM SH 1

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
9E	6" BREATHER FLTR	.46	.47	
9F	6" SPARE	.45	.47	
9G	6" SPARE	.46	.49	
13A	4" TEMPERATURE	.46	.53	
13B	4" WC			RISER ENCASED
13C	4" TEMPERATURE			RISER ENCASED
V2	VALVE HANDLE	*.65	1.14	*CASING
LD4	LEAK DETECTION		.58	
V1	VALVE HANDLE		3.55	
JB1	24" X 30" J-BOX		.16	
JB2	JUNCTION BOX		8.97	
BLDG	BUILDING		.45	
SC	SHMS		.56	
PCS	PUMP CONTROL STA		.79	
P3	1" PIPE/VALVE		63.4	
TB1	TEMP BOX		413	
P1	8" PIPE		50.9	
P2	8" PIPE		165.2	
EU	ENRAF UNISTRUT		.50	
LD2	LEAK DETECTION		.46	
LD3	LEAK DETECTION		.54	
LD1	LEAK DETECTION		.50	

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RISER RESISTANCE DATA SHEET

TANK AX-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3A	14" OBSV PORT	.47	.47	
7A	4" TEMPERATURE	.44	.56	
7B	4" TEMPERATURE	.46	.47	
8A	6" DRYWELL	.45	.52	
8B	6" SPARE	.46	.52	
8C	6" DRYWELL	.47	.56	
8D	6" DRYWELL	.45	484	
8E	6" DRYWELL	.46	.46	
8F	6" PLUG	.45	1.82	
8G	6" PLUG		5.14	BOTTOM NO ACCESS
9A	6" REEL	.45	.45	
9B	6" FIC	.47	.52	
9C	6" TEMPERATURE	.45	1.67	
9E	6" BREATHER FLTR	.50	.50	
9F	6"	.46	27.6	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK AX-104 CONTINUED FROM SHEET 1

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
9G	6" SLUDGE MEAS		1.64	BOTTOM NO ACCESS
13A	4" WC			RISER ENCASED
13B	4" WC			RISER ENCASED
13C	4" WC			RISER ENCASED
(16A)	4" BG, 2" W/FLG	42.6	44.7	U.G.R.
(16B)	4" SPARE, 2" W/FLG	44.2	44.2	U.G.R.
(16C)	4" SPARE, 2" W/FLG	4.70	4.70	
P7	3" PIPE		41.4	
P5	2" PIPE		.53	
P9	2" PIPE		1.7K	
P8	2" PIPE		1.41K	
LD1	LEAK DETECTION		.52	
LD3	LEAK DETECTION		.58	
V4	VALVE HANDLE		12.4	
LD2	LEAK DETECTION		.57	
P4	1" PIPE		218	
V3	VALVE HANDLE		12.7	
V2	VALVE HANDLE		12.6	
V5	1" PIPE W/VALVE		368	
WR1	WELDING RECEPTACLE		4.85	
P6	2" PIPE		.52	
FIC	FIC BOX		.48	
PCS	PUMP CONTROL STA		.58	

CONTINUED ON SHEET 3

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RISER RESISTANCE DATA SHEET

TANK AX-104 CONTINUED FROM SHEET 2

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RISER RESISTANCE DATA SHEET

TANK B-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHING FLTR	.37	.64	
2	12" OBSV PORT	.36	.37	
7	12" RISER SPARE	.38	.38	
8	4" FIC	.39	.39	
⑨	4" TEMPERATURE	.37	.38	
JB1	JUNCTION BOX		4.61	
JB2	(2) JUNCTION BOXES		2.84	
P1	2" PIPE		.37	
P2	1 1/2" PIPE		.75	
PCS	PUMP CONTROL STA		.85	
WR1	WELDING RECEPTACLE		.51	
WR2	WELDING RECEPTACLE		.50	

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TANK B-103

[illegible]

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK B-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	12" DIP TUBE	.47	94.7	
3	12" SPARE	.52	.52	
5	4" TEMP PROBE	.48	.49	
6	12" FIB LOW	.46	.48	
7	12" BREATHER FLTR	.50	.50	
8	4" REEL	.51	OPEN	
JB1	JUNCTION BOX		118.7	

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RISER RESISTANCE DATA SHEET

TANK B-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" CAISSON		128	NO ACCESS TO RISER
2	12" PUMP	1.02	52.8	
3	12" SPARE	1.03	1.03	
4	4" CAISSON		188.5	NO ACCESS TO RISER
5	4" FIBERGLASS LOW	1.01		
6	12" SPARE	1.12	1.12	
7	12" OBSV PORT	1.03	1.07	
8	4" BREATHER FLTR	1.02	1.02	
(14)	4" LIQUID LEVEL	1.18	1.18	
(15)	4" TEMP PROBE	1.22	1.29	BROKEN
JB1	(2) JUNCTION BOXES		128.3	

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RISER RESISTANCE DATA SHEET

TANK B-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" FIC	.35	.35	
2	12" SPARE	.34	.34	
3	12" OBSV PORT	.44	.51	
4	4" TEMP PROBE	.35	.45	
7	12" SPARE	.34	.35	
8	4" BREATHER FLTR	.37	.37	
P1	2" PIPE W/ FLANGE		.36	
P2	3" PIPE W/ FLG		.41	

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RISER RESISTANCE DATA SHEET

TANK B-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" WEATHER			RISER ENCASED
2	12" OBSV PORT	.49	.57	
3	12" TEMP PROBE	.44	.45	
4	4" BREATHER FLTR	.50	2.20	
5	4" SPARE	.47	.47	
6	12" SPARE	.49	27.3	
7	4" DIP TUBE	.46	.83	
8	4" REEL	.45	8.30(P)	PEDESTAL

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RISER RESISTANCE DATA SHEET

TANK B-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" SPARE	.35	.35	
4	4" BREATHER FLTR	.36	.36	
5	4" TEMP PROBE	.35	.35	
6	12" SPARE	.35	.37	
7	12" OBSV PORT	.33	.34	
8	4" FIC	.34	1.87	
JB1	(2) JUNCTION BOXES		8.64	

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RISER RESISTANCE DATA SHEET

TANK B-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.35	.35	
2	12" OBSV PORT	.33	.33	
3	12" REEL	.34	8.28(P)	PEDESTAL
4	4" BREATHER FLTR	.35	.35	
7	12" SPARE	.35	.35	

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RISER RESISTANCE DATA SHEET

TANK B-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.45	.47	
3	12" SPARE	.45	.46	
4	4" SPARE	.46	.46	
5	4" REEL	.47	11.8(P)	PEDESTAL
6	12" SPARE	.47	.47	
7	12" OBSV PORT	.47	.47	W/ BREATHER FLTR
8	4" TEMP PROBE	.45	.47	
JB1	JUNCTION BOX		2.47	

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RISER RESISTANCE DATA SHEET

TANK B-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" FIC	.74	8.31	
2	12" DIP TUBES	.71	1.09	
3	12" OBSV PORT	.68	1.62	
4	4" SPARE	.69	.69	
5	4" BREATHER FLTR	.71	.72	
6	12" SPARE			COVERED BY DRUM
7	12" DIP TUBES	.70	.78	
8	4" TEMP PROBE	.70	.72	
JB1	(2) JUNCTION BOXES		1.30	

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RISER RESISTANCE DATA SHEET

TANK B-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.33	.35	
2	12" SPARE	.34	2.48	
3	12" OBSV PORT	.35	.36	
4	4" ENRAF	.34	.84	
7	12" SPARE	.37	.37	
8	4" BREATHER FLTR	.34	.34	
(13)	12" NF	34.0	34.1	U.G.R.
EU	ENRAF UNISTRUT		.84	

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RISER RESISTANCE DATA SHEET

TANK B-201

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMOCOUPLE	.72	.59	G.T.W.
2	12" OBSV PORT	25.3	25.3	U.G.R.
5	4" TEMP	.72	.52	G.T.W.
6	12" BREATHER FLTR	.53	.53	
7	12" SPARE	26.7	26.8	U.G.R.
8	4" REEL	47.7	84.1(P)	PEDESTAL, U.G.R.
JB1	JUNCTION BOX		.52	
PCS	PUMP CONTROL STA		3.04	

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RISER RESISTANCE DATA SHEET

TANK B-202

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMOCOUPLE	42.5	.57	U.G.R. / G.T.W.
2	12" OBSV PORT	26.7	26.9	U.G.R.
3	12" SPARE	31.0	31.0	U.G.R.
4	4" BREATHER FLTR	54.2	54.2	U.G.R.
5	4" SPARE	40.1	40.1	U.G.R.
6	12" SPARE	.83	.83	
7	12" SPARE	25.2	25.2	U.G.R.
8	4" REEL	40.1	84.2(P)	PEDESTAL, U.G.R.

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RISER RESISTANCE DATA SHEET

TANK B-203

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMOCOUPLE	.51	.50	G.T.W.
2	12" OBSV PORT	23.0	23.0	U.G.R.
3	12" SPARE	33.4	37.6	U.G.R.
4	4" BREATHER FLTR	47.4	47.4	U.G.R.
5	4" SPARE	36.0	113.6	U.G.R.
6	12" SPARE	.58	.58	
7	12" DIP TUBES	21.7	21.7	U.G.R.
8	4" REEL	38.1	53.7(P)	PEDESTAL, U.G.R.

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RISER RESISTANCE DATA SHEET

TANK B-204

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMOCOUPLE	.61	.53	G.T.W.
2	12" OBSV PORT	23.0	23.0	U.G.R.
3	12" SPARE	24.9	25.0	U.G.R.
4	4" BREATHER FLTR	.59	.59	
5	4" SPARE	30.8	3.5K	U.G.R.
6	12" SPARE	24.0	24.0	U.G.R.
7	12" SPARE	22.4	22.4	U.G.R.
8	4" REEL	39.8	83.0(P)	PEDESTAL, U.G.R.

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RISER RESISTANCE DATA SHEET

TANK BX-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	.67	.67	
2	12" TEMP PROBE		.96	RISER ENCASED
7	12" OBSV PORT	.75	.88	
8	4" REEL	.65	1.89(P)	PEDESTAL
CC	RCPT STAND	.79	1.01	
DD	2" PIPE		208	
EE	RECPT STAND	*85.1	85.1	*GND WIRE
FF	PUMP CNTRL STA		.78	
JB1	J BOXES		.67	
JB2	J BOXES		.74	
JB3	J BOXES		11.56	
	TMACS		.87	

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RISER RESISTANCE DATA SHEET

TANK BX-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.65	.66	
2	12" REEL	.66	.66(P)	PEDESTAL
7	12" OBSV PORT AND BREATHER	.71	.84	
8	4" TEMP PROBE	.65	.65	
BB	METAL ANGLE		80.4	
CC	RCPT STAND	*.77	.84	*GND WIRE
DD	RECPT STAND	*.79	7.9	*GND WIRE
JB1	J BOX		28.6	
	TMACS		.73	

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RISER RESISTANCE DATA SHEET

TANK BX-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.67	.79	
2	12" SPARE	.67	.70	
6	12" SPARE	.79	.79	
7	12" TEMP PROBE	.67	.87	
8	4" BREATHER FLTR	.68	.75	
EU	ENRAF UNISTRUT		.77	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO TREE	.69	.70	
2	BREATHER	.71	46.3	
6	12" SPARE	.67	.73	
7	12" TEMP PROBE	.68	.92	
8	4" ENRAF	.68	.86	
EU	ENRAF UNISTRUT		.84	
MCC	MCC	*.68		*GND PAD
	TMACS		.71	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	12" BREATHER FLTR	1.37	1.37	
3	12" SPARE	1.36	1.36	
4	4" TEMP PROBE	1.36	.92	
5	4" SPARE	1.38	1.38	
6	12" OBSV PORT	1.37	1.41	
7	12" SPARE	1.41	1.41	
8	4" FIC	1.36	1.12	
CA1	4' DIA CAISSON		2.83	
CA2	4' DIA CAISSON		.92	
	CULVERT			
PCS	PUMP CNTRL STA		.83	
WFE	WF ECNLOSURE		1.03	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	1.67	1.67	
2	12" SPARE	1.70	1.77	
5	4" TEMP PROBE	1.75	1.69	
6	12" OBSV PORT	1.68	1.82	
7	12" REEL	1.73	581	
8	4" SPARE	1.67	OPEN	
⑬	12" SPARE	5.56	5.57	UGR
AA	HEAT TRACE CNTRL		2.63	
BB	FIC			
JB1	J BOX			
JB2	J BOX		1.02	
JB3	PHOSPHORIC J BOX			
REC	RECEPTACLE		238	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.79	.81	
2	12" SPARE	.79	.79	
3	12" TEMP PROBE	.79	.80	
4	4" BREATHER FLTR	.79	.80	
5	4" TEMP PROBE	.80	.79	
6	12" SPARE	.79	.79	
7	12" OBSV PORT	.79	.81	
8	4" ENRAF	.81	.81	
EU	ENRAF UNISTRUT		.81	
JB	J BOX		.87	
PCS	PUMP CNTRL STA		.82	
	TMACS		.85	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.83	.83	
2	12" REEL	.87	*96.7	*PEDESTAL
3	12" OBSV PORT	.86	.85	
4	4" BREATHER FLTR	.84	.84	
6	12" SPARE	.84	.85	
5	4" SLUDGE MEAS	.82	.96	
R5	4" PIPE RISER	3.67	3.67	
R6	4" PIPE RISER	3.67	3.67	
AA	PUMP CONTROLLER		.84	
PCS	PUMP CNTRL STA		.88	
	TMACS		.99	
V1	VALVE HANDLE		OPEN	
V2	VALVE HANDLE		OPEN	
V3	VALVE HANDLE		34.5	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.83	.83	
2	12" REEL	.82	.97	
3	12" OBSV PORT	.83	9330	
4	4" BREATHER FLTR	.82	.91	
5	4" LOW	.82		
6	12" SPARE	.82	.82	
R3	4" PIPE RISER	3.63	3.63	
R4	4" PIPE RISER	3.64	3.72	
AA	PUMP CONTROLLER		.83	
PCS	PUMP CNTRL STA		.89	
	TMACS		.94	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BX-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.75	.75	
2	12" SPARE	.75	.75	
3	12" SPARE	.75	.76	
4	4" BREATHER FLTR	.76	.82	
7	12" OBSV PORT	.78	.88	
8	4" ENRAF	.75	.88	
R1	4" PIPE RISER	3.61	3.61	
R2	4" PIPE RISER	3.62	3.62	
EU	ENRAF UNISTRUT		.81	
PCS	PUMP CNTRL STA		.77	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.98	.98	
4	4" BREATHTR FLTR		103	NO ACCESS TO RISER
5	4" WITH J-BOX	.86	3.08	
9A	4" LOW	16.45	16.48	U.G.R.
9B	18" OBSV PORT	1.28	75.3	
10A	12" OBSV PORT	1.67	1.72	
10B	4" SPARE	.69	1.69	
10C	4" REEL	1.93	OPEN	
10D	4" SPARE	1.72	1.72	
JB	JUNCTION BOX		.89	
PCS	PUMP CONTROL STA		.95	
TM	TMACS		.88	

TEST EQUIP # 785-77-47-001CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LOW	14.5		U.G.R.
5	4" REEL	.84	OPEN	
10A	12" SHMS CONN	.85	.88	
14	4" BREATHER FLTR	23.5	23.5	U.G.R.
CB	CONTROL BOX		1.25	
RS1	RECEPTACLE STAND		1.08	
RS2	RECEPTACLE STAND		28.3	
WF	WF ENCLOSURE		.94	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.80	.82	
4	4" TO SHMS	.81	.91	
5	4" WITH J-BOX	.80	.80	
10A	4" REEL	.81	.90(P)	PEDESTAL
10B	12" OBSV PORT	.83	.83	
10C	4" IN FIB LOW	.83		
12A	4" BREATHER	.80	.81	
PC	PUMP CONTROL		76.0	
PCS	PUMP CONTROL STA		.81	
RS	RECEPTACLE STAND		195.1	
SC	SHMS		.81	
TM	TMACS		.80	
WF	WF ENCLOSURE		.83	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.84	.88	
4	4" BREATHER FLTR	.83	.95	
5	4" SPARE	.83	.84	
10D	4" SHMS SETUP	.85	.86	
10A	18" OBSV PORT	.84	.85	
10C	4" FIB LOW	.84		
10B	3" AIR CIRC	325	325	U.G.R.
11	8" SPARE	.84	.84	
PCS	PUMP CONTROL STA		.95	
TM	TMACS		.85	
TPS	TEMP PROBE STAND		.84	

TEST EQUIP # 785-77-47-001CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.82	.82	
4	6" BREATHER	.85	.97	
5	4" REEL	.83	OPEN	
10A	TEMP PROBE	.86	.86	
10B	18" AIR CIRC	.87	.87	
10C	4" FIB LOW	.88		
11A	4" SPARE	.97	.97	
11B	4" SPARE	39.6	39.6	U.G.R.
12A	4" SPARE	.83	.83	
12B	18" SHMS CONNECTION	.83	.83	
JB	JUNCTION BOXES		1.39K	
PC	PUMP CONTROL		.84	
PCS	PUMP CONTROL STA		.89	
TM	TMACS		.84	
TPS	TEMP PROBE STAND		341	

CONTINUED ON SH 2

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	6" TEMP PROBE	.84	.88	
4	4" BREATHER	.84	.87	
5	4" REEL	.83	OPEN	
10A	18" AIR CIRC	.84	.87	
10B	4" SHMS CONNECTION	.84	.86	
10C	4" FIB LOW	.84		
12C	4" SPARE	.83	1.38	
P4	42" EXHAUST DUCT		780	
PCS	PUMP CONTROL STA		1.04	
PS	PUMP STA		.81	
SC	SHMS		.82	
TM	TMACS		.82	
TPS	TEMP PROBE STAND		.83	
WF	WF ENCLOSURE		.83	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.84	.84	
3	4" BREATHER FLTR	*	16.45	*NO ACCESS
4	4" REEL	.84	OPEN	
5	4" WITH J-BOX	.84	.85	
7	12" LOW	.82		
8	12" OBSV PORT	.84	82.3	
9B	18" SPARE	.98	OPEN	
10B	12" DIP TUBES	.84	.94	
11	12" SPARE	1.72	1.75	
12A	12" AIR CIRC	.84	.84	
JB	JUNCTION BOX		16.12	
P1	3" PIPE		.88	
P2	3" PIPE		.84	
PC	PUMP CONTROL		7.29	
LD	LEAK DETECTOR		7.29	
TM	TMACS		.84	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER	.85	.86	
3	4" WITH J-BOX	.87	.87	
4	4" REEL	.86	OPEN	
5	4" SPARE	.85	.91	
7	12" SPARE	.84	.85	
8	12" TEMP BOX	.84	.91	
9B	12" SPARE	.87	.97	
10A	12" SPARE	.85	.86	
11B	4" SPARE	1.07	1.97	
12A	12" SHMS CONN	.84	.87	
PCS	PUMP CONTROL STA		.87	
TM	TMACS		.85	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" FIC	.82	1.52	
9A	12" TO SHMS	1.18	1.18	
10A	12" BREATHER	6.26	6.26	U.G.R.
10B	12" OBSV PORT	6.27	6.27	U.G.R.
12A	4" 90° ELBOW	.83	.83	
12B	12" FIB LOW	.84		
12C	12" SPARE	.84	.84	
PCS	PUMP CONTROL STA		.84	
SC	SHMS		1.08	
WF	WF ENCLOSURE		.90	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.82	.82	
3	4" LOW	.83		
4	4" SPARE	.81	.81	
5	4" REEL	.82	OPEN	
7	12" SPARE	.83	.83	
8	12" SPARE	.85	.85	
10A	12" TO BREATHER	.84	.94	
10B	18" OBSV PORT	.86	1.14	
12B	12" AIR CIRC	1.56	1.57	
P1	BREATHER		562	
P	P BOX		.94	
PCS	PUMP CONTROL STA		.99	
TM	TMACS		.86	

TEST EQUIP # 785-77-47-001CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LOW	37.1		U.G.R.
4	4" BREATHER FLTR	239	240	U.G.R.
5	4" SPARE	.89	.89	
10B	12" AIR CIRC	1.14	2.03	
12A	12" OBSV PORT	56.2	56.2	U.G.R.
14	6" TEMP PROBE	3.42	1.11	G.T.W.
15	6" REEL	45.1	OPEN	U.G.R.
PCS	PUMP CONTROL STA		.85	
TM	TMACS		.90	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK BY-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	.90	.94	
2	4" TEMP PROBE	.87	.97	
10A	12" OBSV PORT	1.54	2.03	
10B	12" SPARE	1.50	1.50	
14	6" WC	36.9	36.9	U.G.R.
15	4" FIB LOW	6.48		U.G.R.
18	4" SPARE	9.22	9.23	U.G.R.
19	4" LIQUID LEVEL	386	OPEN	U.G.R.
20	4" SPARE	291	296	U.G.R.
21	4" SPARE	174.6	174.7	U.G.R.
JB1	BIG JUNCTION BOX		273	
JB2	JUNCTION BOX		.88	
PCS	PUMP CONTROL STA		.87	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.46	230	
2	12" REEL & TEMP PROBE	.45	.46	
7	12" SPARE	.48	.48	
8	4" BREATHER FLTR	.45	.46	
JB1	J-BOX WITH RCPT		.59	
P1	2" PIPE		.59	
P2	2" PIPE		.41	
P3	2" PIPE		.39	
P4	2" PIPE		.44	
P5	2" PIPE		.40	
P6	2" PIPE		.40	
P7	2" PIPE		.40	
P8	2" PIPE		.38	
P9	2" PIPE		.40	
P10	2" PIPE		.40	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.07	.17	
2	12" FIC	.07	.09	
3	BREATHER	1.38	1.38	
7	12" TEMP PROBE	.07	.07	
8	4" SPARE	.07	2.45	
JB1	JUNCTION BOX		.06	
P1	2" PIPE		.08	
P2	2" PIPE		.08	
P3	2" PIPE		81.0	
P4	2" PIPE		.08	
P5	2" PIPE		.13	
P6	2" PIPE		.07	
P7	2" PIPE		.07	
P8	2" PIPE		.08	
P9	2" PIPE		.08	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.08	.11	
2	12" BREATHER FLTR	.08	.09	
7	12" TEMP PROBE	.08	.08	
8	4" FIC	.09	.13	
JB1	JUNCTION BOX		150	
P4	2" PIPE		89.3	
P5	2" PIPE		.12	
P6	2" PIPE		.08	
P7	2" PIPE		.08	
PCS	PUMP CONTROL STA		.28	
R1	RECEPTACLE		8.8	
WF	WF ENCLOSURE		.25	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	12" BREATHER FLTR	.39	.40	
③	12" RISER SPARE	36.3	36.3	U.G.R.
⑦	TEMP PROBE	.44	.45	
8	4" FIC	.39	.65	
JB1	J-BOX		684	
JB2	FIC J-BOX		.58	
LD1	LEAK DET ENCL		1.22	
P1	2" PIPE		.43	
P2	2" PIPE		.40	
P3	2" PIPE		.40	
P4	2" PIPE		.40	
P5	2" PIPE		.46	
P6	2" PIPE		.41	
P7	2" PIPE		.38	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	.40	.41	
2	12" INLET FILTER	.42	.42	
8	4" FIC	.40	.42	
EX1	EXHAUST		.43	
EX2	EXHAUST DUCT RISER		.40	
JB1	FIC J-BOX		.58	
LD1	LEAK DET ENCL		1.37	
P1	2" PIPE		.41	
P2	2" PIPE		.42	
P3	2" PIPE		.42	
P4	2" PIPE		.40	
P5	2" PIPE		.40	
P6	2" PIPE		.40	
P7	2" PIPE		.39	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.08	.19	
2	12" EXH RISER	*	.09	*COVERED
7	12" OBSV PORT	.07	.12	
8	4" TEMP PROBE	.07	.09	
(14)	4" TEMP PROBE	17.26	.12	U.G.R., G.T.W.
EU	ENRAF UNISTRUT		.18	
LD1	LEAK DETECTOR		469	
P1	PIPE		.07	
P2	PIPE		.07	
P3	PIPE		.07	
P4	PIPE		.07	
P5	PIPE		.08	
P6	PIPE		.07	
PCS1	PUMP CONTROL STA		489	
PCS2	PUMP CONTROL STA		.09	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	12" SPARE			RISER ENCASED
3	12" SPARE	.45	.47	
4	4" BREATHER FLTR	.45	.46	
5	4" TEMP PROBE	.45	.51	
7	12" OBSV PORT	.47	142.2	
8	4" ENRAF	.46	.49	
CA1	4' CAISSON		.59	
EU	ENRAF UNISTRUT		.49	
JB1	JUNCTION BOX		.49	
PCS1	PUMP CONTROL STA		11.89	
PCS2	PUMP CONTROL STA		.73	
TM	TMACS		.50	
TP	TEMP PROBE BOX		.51	
WF	WF ENCLOSURE		.43	
WR1	WELDING RECEPTACLE		271	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO TREE	.44	.44	
2	12" DIP TUBES	.43	.44	
3	12" SPARE	.44	.44	
4	4" BREATHER FLTR	.44	.67	
5	4" TEMP PROBE	.45	.59	
6	12" SPARE	.52	.54	
7	12" OBSV PORT	.49	.70	
8	4" REEL	.44	.50(P)	PEDESTAL
P1	2" PIPE		.43	
P2	2" PIPE		.43	
P3	1" CONDUIT		.48	
PCS	PUMP CONTROL STA		.75	
TM	TMACS		.47	
WR1	WELDING RECEPTACLE		.83	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" REEL	.43	.49(P)	PEDESTAL
2	12" SPARE	.42	.43	
3	12" TEMP PROBE	.43	.43	
4	4" BREATHER FLTR	.42	.43	
5	4" SPARE	.43	6.47	
6	12" SPARE	.41	.41	
7	12" OBSV PORT	.42	.42	
8	4" TEMP PROBE	.44	.45	
ER	ELEC RACK		.45	
P1	2" PIPE		.44	
P2	2" PIPE		.45	
PCS	PUMP CONTROL STA		.65	
TM	TMACS		.45	
WR1	WELDING RECEPTACLE		.90	

TEST EQUIP # 785-77-47-001

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK C-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SLUDGE MEAS	.42	.43	
2	12" SPARE	.42	.43	
3	12" BREATHER FLTR	.44	.46	
4	4" REEL	.43	.43(P)	PEDESTAL
5	4" SPARE	.43	.43	
6	12" SPARE	.42	.52	
7	12" OBSV PORT	.43	.43	
8	4" TEMP PROBE	.42	.43	
P1	2" PIPE		.42	
P2	2" PIPE		.42	
P3	1" CONDUIT		.59	
PCS	PUMP CONTROL STA		.45	
	PUMP PIT		1.6K	
WF	WF ENCLOSURE		.44	
WR1	WELDING RECEPTACLE		.80	

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RISER RESISTANCE DATA SHEET

TANK C-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.46	.54	
2	12" SPARE	.44	.44	
3	12" BREATHER	.44	.49	
4	4" SPARE	.46	.56	
5	4" TEMP PROBE	.44	.48	
6	12" OBSV PORT	.44	.47	
7	12" SPARE	.45	.55	
8	4" REEL	.44	138.8	
P1	2" PIPE		.45	
P2	2" PIPE		.45	
PCS	PUMP CONTROL STA		.73	
TM	TMACS		.45	
WR1	WELDING RECEPTACLE		.86	

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#

RISER RESISTANCE DATA SHEET

TANK C-203

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
5	4" REEL	.58	7.45	
6	12" TEMPERATURE	.52	2.24	
7	12" OBSV PORT	21.7	21.7	U.G.R.
8	4" BREATHER FLTR	.56	.56	

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CALIB DUE DATE 3-12-97

TANK C-204

[illegible]

CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK S-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" LOW	.23		
3	4" ENRAF	.22	.50	
4	4" SPARE	.21	.21	
6	12" OBSV PORT	.24	3.79	
7	12" EXHAUST DUCT	.21	.22	
8	12" PLUG	.22	.30	
(11)	4" SLUDGE MEAS	31.3	31.4	U.G.R.
(14)	4" TEMP PROBE	.21	.21	
(16)	4" BREATHER FLTR	54.6	54.6	U.G.R.
JB	PROBE J-BOX		177.4	
PCS	PUMP CONTROL STA.		2.09	
EU	ENRAF UNISTRUT		.49	
WF	WF ENCLOSURE		.54	

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RISER RESISTANCE DATA SHEET

TANK S-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	.18	.18	
2	4" ENRAF	.18	.41	
3	4" TEMP PROBE	.19	.24	
5	12" LOW	.19		
6	12" EXHAUST DUCT	.22	.22	
7	12" OBSV PORT	.22	.20	
⑪	4" SLUDGE MEAS	36.0	36.0	U.G.R.
⑭	4" SLUDGE MEAS	48.6	48.5	U.G.R.
⑯	4" SLUDGE MEAS	27.6	27.8	U.G.R.
PCS	PUMP CONTROL STA		1.83	
JB1	PROBE J-BOX		1.56	
P2	1" PIPING		.12	

CONTINUED ON SHEET 2

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RISER RESISTANCE DATA SHEET

TANK S-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" LOW	.13		
3	4" ENRAF	.14	.17	
4	4" TEMP PROBE	.12	.18	
6	12" PLUG	.16	.16	
7	12" EXHAUST DUCT	.13	.14	
8	12" OBSV PORT	.12	1.26	
(11)	4" SLUDGE MEAS	37	37	U.G.R.
(14)	4" BREATHER FLTR	28.5	28.5	U.G.R.
(16)	4" SLUDGE MEAS	37.8	37.8	U.G.R.
PCS	PUMP CONTROL STA		1.85	
JB1	PROBE J-BOX		3.42	
EU	ENRAF UNISTRUT		.17	
JB2	JUNCTION BOXES		.27	
P1	PIPE		1.5K	

CONTINUED ON SHEET 2

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RISER RESISTANCE DATA SHEET

TANK S-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.13	.20	
3	4" BREATHER FLTR	.13	.29	
4	4" TEMP PROBE	.15	.29	
5	12" REEL	.13	1.78(P)	PEDESTAL
6	4" SPARE	.14	.14	
7	12" OBSV PORT	.12	.21	
PCS	PUMP CONTROL STA		.53	

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RISER RESISTANCE DATA SHEET

TANK S-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" SAMPLE LINE	.16	.16	
3	4" ENRAF	.15	.38	
4	4" TEMP PROBE	.16	.15	
6	12" SPARE	.17	.18	
7	12" EXHAUST DUCT	.16	.16	
8	12" OBSV PORT	.16	.46	
⑪	4" SLUDGE MEAS	29.7	29.7	U.G.R.
⑭	4" LOW	41.8		U.G.R.
⑮	4" BREATHR FLTR	32.8	32.8	U.G.R.
EU	ENRAF UNISTRUT		.54	
JB1	JUNCTION BOX		.47	
TM	TMACS		.16	

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RISER RESISTANCE DATA SHEET

TANK S-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" TEMP PROBE	.16	.16	
3	4" ENRAF	.18	.17	
4	4" LOW	.18		
7	12" EXHAUST DUCT	.24	.40	
8	12" OBSV PORT	.17	1.45	
⑪	4" SLUDGE MEAS	37.5	37.5	U.G.R.
⑭	4" SLUDGE MEAS	36.8	37.8	U.G.R.
⑯	4" BREATHER FLTR	35.3	35.3	U.G.R.
EU	ENRAF UNISTRUT		.16	
V1	VALVE HANDLES			
PCS2	PUMP CONTROL SKID		.18	
PCS1	PUMP CONTROL STA		.14	
WF	WF ENCLOSURE		.32	

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RISER RESISTANCE DATA SHEET

TANK S-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" BREATHER	.11	.17	
3	4" ENRAF	.12	.66	
4	4" TEMP PROBE	.11	.15	
6	12" OBSV PORT	.11	.11	
7	12" SPARE	.11	.12	
(11)	4" SLUDGE MEAS	29.3	29.3	U.G.R.
(14)	4" SLUDGE MEAS	34.1	122.8	U.G.R.
(16)	4" SPARE	29.4	29.3	U.G.R.
PSE	POWER SUPPLY & FLOW METER ENCL		.23	
JB1	PROBE J-BOX		.22	
PCS	PUMP CONTROL SKID		.23	
HTE	HEAT TRACE & PUMP CONTROL ENCL		.31	
EN	ENCLOSURE		.57	

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RISER RESISTANCE DATA SHEET

TANK S-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.22	5.06K	
3	4" ENRAF	.14	.87	
4	4" TEMP PROBE	.14	.15	
6	12" SPARE	.14	.15	
7	12" OBSV PORT	.14	667	
(11)	4" SLUDGE MEAS	38.4	38.4	U.G.R.
(14)	4" BREATHER FLTR	47.1	47.2	U.G.R.
(16)	4" LOW	35.6		U.G.R.
PCS	PUMP CONTROL STA		.20	
WF	WF ENCLOSURE		.20	

CONTINUED ON SHEET 2

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RISER RESISTANCE DATA SHEET

TANK S-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" BREATHER FLTR	.12	.44	
3	4" ENRAF	.11	.29	
4	4" TEMP PROBE	.12	.12	
6	12" OBSV PORT	.12	.13	
7	12" SPARE	.11	.12	
8	12" LOW	.13		
⑪	4" SLUDGE MEAS	42.1	42.1	U.G.R.
⑭	4" SLUDGE MEAS	32.4	32.4	U.G.R.
⑯	4" SLUDGE MEAS	33.4	33.4	U.G.R.
JB1	JUNCTION BOXES		2.92	

CONTINUED ON SHEET 2

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK S-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" LOW	.17		
3	4" ENRAF	.11	.28	
4	4" TEMP PROBE	.11	.11	
7	12" OBSV PORT	.11	.12	
8	12" SPARE	.14	.14	
(16)	4" BREATHER FLTR	.18	.18	
JB1	PROBE J-BOX		.28	
EU	ENRAF UNISTRUT		.27	
EN1	ENCLOSURE		.16	
EN2	ENCLOSURE		.16	
EN3	ENCLOSURE		.16	

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RISER RESISTANCE DATA SHEET

TANK S-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" FIC	.12	.11	
3	4" ENRAF	.13	.21	
4	4" TEMP PROBE	.11	.13	
6	12" SPARE	.11	.11	
7	12" SPARE	.11	.12	
8	12" OBSV PORT	.10	.14	
(11)	4" SPARE	.12	.29	
(14)	4" BREATHER FLTR	.17	.18	
(16)	4" LOW	29.7		U.G.R.
SC	SHMS CABINET		.38	

CONTINUED ON SHEET 2

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RISER RESISTANCE DATA SHEET

TANK S-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" SPARE	.11	52.9	
3	4" FIC	.12	.36	
4	4" TEMP PROBE	.12	.11	
6	12" OBSV PORT	.11	.17	
7	12" SPARE	.10	.25	
8	12" LOW	.11	.11	
⑪	4" SLUDGE MEAS	27.3	27.3	U.G.R.
⑭	4" BREATHR FLTR	.20	.20	
⑯	4" SLUDGE MEAS	29.8	3.3K	U.G.R.
SC	SHMS CABINET		.12	

CONTINUED ON SHEET 2

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RISER RESISTANCE DATA SHEET

TANK SX-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" SPARE	.13	.13	
4	4" ENRAF	.12	.67	
10	3" SPARE	.13	9.55	
11	8" FLANGE	.16	.18	
14	4" FIBERGLASS LOW	37.8		U.G.R.
15	4" TEMP PROBE	.31	.33	
	TEMP STAND		.29	
18	10" BREATHER FLTR	.38	.41	
19	12" OBSV PORT	38.9	47.3	U.G.R.
AA	VALVE STAND		.15	
BB	6" SPARE	32.5	32.5	U.G.R.
EU	ENRAF UNISTRUT		.66	
JB	J BOX		1.196K	
PC	PUMP CONTROL		.29	
SC	SHMS CABINET		.24	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK SX-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" BREATHER FLTR	.13	.21	
4	4" ENRAF	.17	.49	
8	12" OBSV PORT	.12	.28	
(11)	4" SPARE	27.2	27.1	U.G.R.
(14)	4" FIBERGLASS LOW	23.3		U.G.R.
(16)	4" TEMP PROBE	29.1	.21	U.G.R./G.T.W.
AA	VALVE STAND		.16	
EU	ENRAF UNISTRUT		.49	
PC	PUMP CONTROL		.28	
SC	SHMS CABINET		.14	
	TMACS		.18	
TP	TEMP STAND		.30	
WFE	WF ENCLOSURE		.31	

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RISER RESISTANCE DATA SHEET

TANK SX-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" TEMP PROBE	.20	.20	
3	4" ENRAF	.13	.36	
7	12" OBSV PORT	.13	247	
(11)	4" SLUDGE MEAS	42.1	42.1	U.G.R.
(14)	4" FIBERGLASS LOW	30.5		U.G.R.
(16)	4" BREATHER FLTR	.21	.38	
AA	VALVE STAND		.18	
BB	VALVE RISER		117.3	
EU	ENRAF UNISTRUT		.33	
PC	PUMP CONTROL		.39	
SC	SHMS CABINET		.14	
TP	TEMP STAND		.24	
WFE	WF ENCLOSURE		.40	

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RISER RESISTANCE DATA SHEET

TANK SX-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" TEMP PROBE	.22	1.14K	
3	4" SPARE	.22	.22	
4	4" ENRAF	.22	.72	
7	12" OBSV PORT	.22	242	
⑪	4" BREATHER FLTR	.31	.32	
⑭	4" TEFZEL LOW	40		U.G.R.
⑯	4" FIBERGLASS LOW	.27	.36	
AA	VALVE STAND		.37	
CC	2" PIPE		73	
EU	ENRAF UNISTRUT		.73	
JB2	J BOX		108	
PC	PUMP CONTROL		.44	
SC	SHMS CABINET		.25	
WFE	WF ENCLOSURE		.48	

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RISER RESISTANCE DATA SHEET

TANK SX-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" TEMP PROBE	.22	.22	
3	4" SPARE	.22	752	
4	4" ENRAF	.21	.56	
6	12" OBSV PORT	.21	.48	
7	12" BM	.21	122	
(11)	4" BREATHER FLTR	.34	.34	
(12)	4" SPARE	2.16	2.17	
(14)	4" SPARE	41	41	U.G.R.
(15)	2.5" SPARE	40	40	U.G.R.
(16)	4" FIBERGLASS LOW	48		U.G.R.
AA	VALVE STAND		.26	
BB	VALVE HANDLE		OPEN	
CC	2" PIPE		262	
COB1	CLEAN OUT BOX		.21	
EU	ENRAF UNISTRUT		.56	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK SX-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" SPARE	.12	.47	
3	4" ENRAF	.12	.15	
6	12" OBSV PORT	.13	.17	
7	12" SPARE	.13	116.6	
⑪	4" BREATHER FLTR	.21	.21	
⑭	4" SPARE	34.5	34.5	U.G.R.
⑯	2.5" TEMP PROBE	.17	.18	
BB	TEMP STAND		.18	
EU	ENRAF UNISTRUT		.13	
PC	PUMP CONTROL		.53	
SC	SHMS CABINET		.15	
VH	VALVE HANDLE		68.6	
WFE	WF ENCLOSURE		.55	

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RISER RESISTANCE DATA SHEET

TANK SX-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.21	OPEN	
6	12" OBSV PORT	.21	12.34	
⑨	2.5" TEMP PROBE	35	35	U.G.R.
⑩	2.5" TEMP PROBE	.28	.28	
⑪	2.5" TEMP PROBE	3.46	3.46	
⑫	2.5" TEMP PROBE	3.99	3.99	
13A	18" INLET FILTER	.21	.21	
⑭	2.5" TEMP PROBE	.30	.30	
⑮	2.5" TEMP PROBE	3.47	3.47	
⑯	12" SPARE	58	59	U.G.R.
⑰	12" SPARE	67	737	U.G.R.
⑱	2.5" TEMP PROBE	3.72	3.72	
⑲	2.5" TEMP PROBE	75		U.G.R.
⑳	18" EXH PORT	.21	.21	
IB1	INSTRUMENT BLDG		.40	

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RISER RESISTANCE DATA SHEET

TANK SX-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	638	637	U.G.R.
3	4" W/ THERMOMETER	.22	.22	
6	12" WEATHER	*	7.84	NO ACCESS TO RISER
7	12" SPARE	.22	.22	
⑨	2.5" TEMP PROBE	.25	.25	
⑩	2.5" TEMP PROBE	21.9	21.9	U.G.R.
⑪	2.5" TEMP PROBE	7.5	3.73	U.G.R.
⑫	2.5" TEMP PROBE	2.97	2.97	
13A	18" INLET FILTER	.20	.20	
⑭	2.5" TEMP PROBE	3.95	3.95	
⑮	2.5" TEMP PROBE	3.09	3.09	
⑯	12" SPARE	39.8	39.8	U.G.R.
⑰	12" OBSV PORT	44.5	44.5	U.G.R.
⑱	2.5" TEMP PROBE	2.53	2.53	
⑲	2.5" TEMP PROBE	22	22	U.G.R.

CONTINUED NEXT SHEET

TEST EQUIP # 785-77-47-001

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RISER RESISTANCE DATA SHEET

TANK SX-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.21	OPEN	
3	4" TEMP PROBE	.22	.23	
6	12"	.22	1.55	
7	12" DIP TUBE	.21	1.64	
⑨	2.5" TEMP PROBE	.23	8.5	
⑩	2.5" TEMP PROBE	9.8	3.2	U.G.R.
⑫	2.5" TEMP PROBE	240	230	U.G.R.
13A	18" INLET FILTER	.22	.22	
⑭	2.5" TEMP PROBE	6.87	3.26	G.T.W./U.G.R.
⑮	2.5" TEMP PROBE	2.96	2.93	
16	12" SPARE	.22	.22	
17	12" OBSV PORT	.23	.38	
⑱	2.5" TEMP PROBE	27	2.81	G.T.W./U.G.R.
⑲	2.5" TEMP PROBE	51	2.75	G.T.W./U.G.R.
⑳	2.5" TEMP PROBE	23	240	U.G.R.

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK SX-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	1.66K	OPEN	U.G.R.
3	4" WITH THERMOMETER	.21	5.37	
6	12" SPARE	.60	.60	
7	12" SPARE	.22	.34	
⑨	2.5" TEMP PROBE	2.07	2.07	
⑩	2.5" TEMP PROBE	2.26	2.64	
⑪	2.5" TEMP PROBE	2.26	2.22	
⑫	2.5" TEMP PROBE	1.33	1.33	
13A	18" INLET FILTER	.23	.23	
⑭	2.5" TEMP PROBE	7.23	7.23	U.G.R.
⑮	2.5" TEMP PROBE	2.27	2.27	
16	12" OBSV PORT	.21	.61	
17	12" SPARE	.21	.21	
⑱	2.5" TEMP PROBE	2.09	2.09	
⑲	2.5" TEMP PROBE	.58	.58	
⑳	12" EXH PORT	.22	.22	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK SX-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.21	OPEN	
3	4" WITH THERMOMETER		.22	RISER ENCASED
6	12" OBSV PORT	.22	1.91K	
⑨	2.5" TEMP PROBE	.49	.49	
⑩	2.5" TEMP PROBE	.51	.51	
⑪	2.5" TEMP PROBE	2.02	2.02	
⑫	2.5" TEMP PROBE	1.66	1.66	
13A	18" INLET FILTER	.23	.23	
⑭	2.5" TEMP PROBE	1.36	1.36	
⑮	2.5" TEMP PROBE	.29	.29	
⑱	2.5" TEMP PROBE	.81	.81	
⑲	2.5" TEMP PROBE	4.8	4.79	
⑳	12" EXH PORT	.21	.21	
AA	VALVE		.31	
CC	FLANGE		293	

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RISER RESISTANCE DATA SHEET

TANK SX-113

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.22	OPEN	
3	4" TEMP PROBE WITH THERMOMETER	.23	.23	
4	4" SPARE/BOX	.22	.22	
6	12" BREATHER FLTR	.24	.22	
7	12" OBSV PORT	.22	1.83	
CC	1 1/2" PIPE/BOX		8.16	
JB1	J BOX		562	
LP	LIQUID LEVEL REEL POST		553	

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RISER RESISTANCE DATA SHEET

TANK SX-114

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" REEL	.22	OPEN	
3	4" THERMOMETER	.22	.22	
6	12" SPRINKLER	.23	909	
7	12" SPARE	*	2.06	*NO ACCESS TO RISER
⑨	2.5" TEMP PROBE	.26	.26	
⑩	2.5" TEMP PROBE	.27	.27	
⑪	2.5" TEMP PROBE	.27	.27	
⑫	2.5" TEMP PROBE	.32	.32	
13A	18" INLET FILTER	.21	.21	
⑭	2.5" TEMP PROBE	.29	.29	
⑮	2.5" TEMP PROBE	.27	.27	
⑯	12" PLUG	.23	.32	
⑰	23" OBSV PORT	30	218	U.G.R.
⑱	2.5" TEMP PROBE	.32	.32	
⑲	2.5" TEMP PROBE	.26	.25	

CONTINUED NEXT SHEET

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RISER RESISTANCE DATA SHEET

TANK T-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	1.21	1.57	
2	12" OBSV PORT	1.21	1.22	
7	12" BREATHER MANUAL TAPE	1.22	1.23	
8	4" TEMP PROBE	1.22	1.24	
EU	ENRAF UNISTRUT		1.64	
WR	WELDING RCPT MTG HARDWARE		40.1	
EE	ELEC ENCLOSURE		4.68	
RS	RECEPTACLE STAND		4.75	
WF	WF CABINET		1.35	
PCS	PUMP CONTROL STA		1.23	
TM	TMACS		1.24	

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RISER RESISTANCE DATA SHEET

TANK T-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER	1.21	3.68	
2	12" OBSV PORT	1.22	1.22	
8	4" ENRAF	1.22	1.22	
BR	BURIED RAIL		13.87	
IC	INSTR CABINET		4.70	
RS2	RECEPTACLE STAND		4.70	
PCS	PUMP CONTROL STA		143.9	
RS1	RECEPTACLE STAND		4.7	
EU	ENRAF UNISTRUT		1.22	

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RISER RESISTANCE DATA SHEET

TANK T-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.35	.70	
2	12" OBSV PORT	.35	.35	
7	12" BREATHER	.41	.50	
8	4" TEMP PROBE	.35	.33	
EU	ENRAF UNISTRUT		.69	
RS1	RECEPTACLE STAND		10.68	
RS2	RECEPTACLE STAND		10.60	
P1	3/4" PIPE		4.56	

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RISER RESISTANCE DATA SHEET

TANK T-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LOW BM	.86		
2	12" DIP TUBE	.85	.85	
3	12" TEMP VPR PROBE	.89	1.39	
4	4" TEMP PROBE	.86		BONDING JUMPER TO SWM
5	4" ENRAF	.89	.92	
6	12" OBSV PORT	.90	1.00	
7	12" CONC PLUG	.90	12.37	
8	4" BREATHER	1.00	76.2	
SWM	SALTWELL MONITORING & EQUIPMENT		.86	
TM	TMACS		.91	
EU	ENRAF UNISTRUT		.96	
WF	WF CABINET		1.27	
PCS	PUMP CONTROL STA		.93	

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RISER RESISTANCE DATA SHEET

TANK T-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	1.10	1.02	
2	12" OBSV PORT	1.10	17.76	
3	12" FLG W/ LEAD	1.11	1.13	
4	4" TEMP (CUT)	1.11	1.12	
5	4" BREATHER	1.11	1.13	
6	12" RECIRC DIP TUBE	1.10	1.11	
7	12" FLG W/ LEAD			TEMP COVER
8	4" SPARE	1.10	4.10	
EU	ENRAF UNISTRUT		1.07	

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RISER RESISTANCE DATA SHEET

TANK T-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.41	.42	
2	12" SPARE	.40	296	
3	12" OBSV PORT	.43	.43	
4	4" SPARE	.50	455	
5	4" SPARE	.44	.47	
6	12" SPARE	.42	.43	
7	12" SPARE	.41	.41	
8	4" TEMP PROBE	.43	.46	
⑬	12" BREATHER	63.6	63.7	U.G.R
EU	ENRAF UNISTRUT		.42	
SP	2" STEEL POST	.50		WELDED TO 4" RISER
TM	TMACS		.47	

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RISER RESISTANCE DATA SHEET

TANK T-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.67	.67	
2	12" SPARE	.67	82.7	
3	12" DIP TUBES	.70	.70	
4	4" TEMP PROBE	.68	.66	
5	4" TBX-107-T-05	.67	.67	
6	12" SPARE	.72	97.8	
7	12" SPARE	.66	570	
8	4" BREATHER	.67	.76	
SC	STORAGE CABINET		405	
R1	4" RISER	.64	1.95	
EU	ENRAF UNISTRUT		.70	
TM	TMACS		.66	
SS	STABILIZATION SKID		.70	
SBC	SALTWELL BELLHAVEN CABINET		.71	

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RISER RESISTANCE DATA SHEET

TANK T-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" CAPPED RISER	.73	4950	
2	12" SPARE	.73	.73	
3	12" OBSV PORT	.80	12.60	
4	4" TEMP PROBE	.75	.71	
5	4" SPARE	10.88K	OPEN	U.G.R
6	12" SPARE	.73	.73	
7	12" SPARE	.73	.75	
8	4" BREATHER	OPEN	OPEN	U.G.R
⑬	12" ENRAF	.89	.82	
EJ	ENRAF JUNCTION BOX		.81	
JB	JUNCTION BOX STAND		.76	
EU	ENRAF UNISTRUT		.82	

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RISER RESISTANCE DATA SHEET

TANK T-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.82	.86	
2	12" DIP TUBES	.80	.81	
3	12" BREATHER	.80	.93	
4	4" SPARE	.82	.87	
5	4" SPARE	.81	.81	
6	12" SPARE	.83	.83	
7	12" SPARE	.83	.84	
8	4" TEMP PROBE	.80	.81	
EU	ENRAF UNISTRUT		.86	
SWC	SALTWELL COVER		24.4	

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RISER RESISTANCE DATA SHEET

TANK T-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	2.8K	.70	U.G.R
2	12" DIP TUBES	.60	2.16	
3	12" BREATHER	.58	.65	
5	4" OBSV WELL	6.9K	6.9K	U.G.R
6	12" OBSV PORT	.57	13.16	
8	4" TEMP PROBE	.58	.57	
EU	ENRAF UNISTRUT		.70	
SPR	SHMS POWER RACK		.63	
SM	SHMS MONITOR		.65	
CA1	4' CASSON COVER		.75	NO ACCESS
SWC	SALTWELL COVER		.73	
WF	WF ENCLOSURE		.76	
PCS	PUMP CONTROL STA		.65	
P1	3" ELBOW	.58	128	
CA2	4' CASSON COVER		.72	NO ACCESS
TM	TMACS		.56	

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RISER RESISTANCE DATA SHEET

TANK T-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	12" SPARE	.50	.52	
3	12" OBSV PORT/ BREATHER	.51	.51	
4	4" ENRAF	1690	4.6*	*FIRST SPOOL U.G.R.
5	4" TEMP PROBE	.69	.32	G.T.W.
6	12" SPARE	.51	.51	
7	12" LOW	.53	.54	
JB	JUNCTION BOXES		.45	
P1	3" ELBOW	.30	.30	
EU	ENRAF UNISTRUT		.49	
SWC	SALTWELL COVER		.46	
PCS	PUMP CONTROL STA		.40	
WF	WF CABINET		.59	
RC	RECEPTACLE		18.95	
TM	TMACS		.28	

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RISER RESISTANCE DATA SHEET

TANK T-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" CAPPED	OPEN	OPEN	U.G.R.
2	12" OBSV PORT	.48	.48	
3	12" RECIRC DIP TUBES	.47	.47	
4	4" SPARE	732	732	U.G.R
5	4" SPARE	.47	.48	
6	12" BREATHER	.47	14.86	
7	12" PLUGGED	.47	.63	
8	4" TEMP PROBE	.46	.46	
(13)	12" ENRAF	.70		
EJ	ENRAF JUNCTION BOX		.66	
P1	3" ELBOW	.43	93.8	
P2	2" PIPE	.49		
EU	ENRAF UNISTRUT	.68		
CS	CONTROL STAND		45.1	
TM	TMACS		.43	

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RISER RESISTANCE DATA SHEET

TANK T-201

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" SPARE	32.8	87.0	U.G.R
4	4" LIQ LEVEL REEL	54.5	7900	U.G.R
5	4" TEMP PROBE	.93	.89	G.T.W.
6	12" BREATHER	34.4	34.4	U.G.R
7	12" OBSV PORT	32	747	U.G.R
8	4" SPARE	43.5	494	U.G.R
TM	TMACS		.90	
PCS	PUMP CONTROL STA		66.4	

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RISER RESISTANCE DATA SHEET

TANK T-202

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" SPARE	39.6	2060	U.G.R.
4	4" LIQ LEVEL REEL	8030	OPEN	U.G.R.
6	12" BREATHER	1.04	1.05	
5	4" TEMP PROBE	1.02	.91	
7	12" OBSV PORT	1.14	1.18	
8	4" SPARE	OPEN	OPEN	U.G.R.
PCS	PUMP CONTROL STA		73.2	

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RISER RESISTANCE DATA SHEET

TANK T-203

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" SPARE	1.1	746	
4	4" LIQ LEVEL REEL	20K	OPEN	U.G.R.
5	4" TEMP PROBE	60.7	1140	U.G.R.
6	12" BREATHER	1.09	1.15	
7	12" OBSV PORT	1.10	1.37	
8	4" THERMOCOUPLE	1.08	.92	G.T.W.
TM	TMACS		.88	
PCS	PUMP CONTROL STA		25.9	

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RISER RESISTANCE DATA SHEET

TANK T-204

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" DIP TUBES	40.0	41.5	U.G.R.
4	4" LIQ LEVEL REEL	91.9	OPEN	U.G.R.
6	12" BREATHER	38.3	39.5	U.G.R.
7	12" OBSV PORT	53.8	522	U.G.R.
8	4" THERMOCOUPLE	.70	.59	G.T.W.
PCS	PUMP CONTROL STA		89.8	

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RISER RESISTANCE DATA SHEET

TANK TX-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" ENRAF	2.51	2.60	
8	4" BREATHER	2.49	2.51	
12B	12" OBSV PORT	30.7	941	U.G.R.
EU	ENRAF UNISTRUT		2.63	

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RISER RESISTANCE DATA SHEET

TANK TX-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	2.46	2.46	
9A	4" BREATHER	2.46	2.46	
10A	4" LLR TAPE	17.94	OPEN	U.G.R
11A	4" FIBERGLASS LOW	2.81		
13A	12" OBSV PORT	2.49	2.60	
EU	ENRAF UNISTRUT		490	

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RISER RESISTANCE DATA SHEET

TANK TX-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	.55	.55	
8	4" ENRAF	.55	.67	
9A	4" BREATHER	.56	.56	
13A	12" OBSV PORT	.55	.55	
EU	ENRAF UNISTRUT		.66	
J1	8X8X6 JB		.67	
J2	8X8X6 JB		.70	
J3	8X8X6 JB		.65	
J4	8X8X6 JB		.68	
TM	TMACS		.67	

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RISER RESISTANCE DATA SHEET

TANK TX-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	.89	.89	
8	4" ENRAF	.57	.85	
9A	4" BREATHER	.54	.54	
13A	12" OBSV PORT	4.68	4.68	
EU	ENRAF UNISTRUT		.84	

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RISER RESISTANCE DATA SHEET

TANK TX-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" CAPPED RISER	2.74	2.74	
8	4" LIQ LEVEL REEL	3.12	OPEN	
11A	4" BREATHER	2.78	2.82	
13A	12" OBSV PORT	2.52	3.10	
EU	ENRAF UNISTRUT		2.66	
TM	TMACS		3.69	

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RISER RESISTANCE DATA SHEET

TANK TX-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	.52	.52	
8	4" LIQ LEVEL REEL	.50	.91	
9A	4" SPARE	.47	.52	
10A	4" BREATHER	4.7K	4.7K	U.G.R.
11A	4" FIBERGLASS LOW	.53		
13A	12" OBSV PORT	.64	.64	

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RISER RESISTANCE DATA SHEET

TANK TX-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	.70	.70	
8	4" FIC	.61	.61	
9A	4" SPARE	.71	.71	
10B	12" OBSV PORT	6.02	6.02	U.G.R.
11A	4" BREATHER	.58	.58	
EU	ENRAF UNISTRUT		6.7K	
TM	TMACS		.59	
US	UNISTRUT STAND		.77	

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RISER RESISTANCE DATA SHEET

TANK TX-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
4	4" TEMP PROBE	1.03	1.03	
8	4" FIC	.64	.64	
9A	4" SMP LOW	5.46		U.G.R.
11A	4" BREATHER	1.03	1.03	
11B	12" OBSV PORT	1.03	1.03	
EU	ENRAF UNISTRUT		6.5K	

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RISER RESISTANCE DATA SHEET

TANK TX-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.57	.75(P)	PEDESTAL
3	4" FIBERGLASS LOW	.27		
4	4" ENRAF	.54	.87	
5	12" SPARE	.55	1.37	
7	12" OBSV PORT	.27	.27	
8	4" TEMP PROBE	.53	1.09	
12A	4" BREATHER	.88	.88	
TM	TMACS		.41	

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RISER RESISTANCE DATA SHEET

TANK TX-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
5	12" OBSV PORT	.69	.69	
7	12" LIQ LEVEL REEL	.48	.48(P)	PEDESTAL
10A	4" SPARE	.49	.49	
11B	4" SPARE	.63	4.05	
12A	4" BREATHER	.44	.44	
13B	4" FIBERGLASS LOW	1.06		

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RISER RESISTANCE DATA SHEET

TANK TX-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.49	.49	
5	12" SPARE	.50	.50	
7	12" OBSV PORT	.58	.58	
8	4" TEMP PROBE	.54	.54	
9B	4" SPARE	.52	140	
10A	4" SPARE	.54	.54	
11B	4" FIBERGLASS LOW	2.33		
12A	4" BREATHER	.51	.51	
13B	4" SPARE	.54	.54	
EU	ENRAF UNISTRUT		4.83	

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RISER RESISTANCE DATA SHEET

TANK TX-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.82	OPEN	
5	12" OBSV PORT	.51	98.9	
8	4" TEMP PROBE	.56	.56	
10A	4" BREATHER	4.36	4.45	
12A	4" FIBERGLASS LOW	.56		

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RISER RESISTANCE DATA SHEET

TANK TX-113

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.33	.36	
3	4" SPARE	.31	.33	
4	4" FIBERGLASS LOW	.30		
5	12" OBSV PORT	.32	.34	
7	12" BREATHER	.28	.41	
8	4" TEMP PROBE	.33	.35	

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RISER RESISTANCE DATA SHEET

TANK TX-114

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER	.49	.49	
3	4" SPARE	.49	OPEN	
5	12" OBSV PORT	.41	.46	
7	12" FIBERGLASS LOW	.49		
8	4" LIQ LEVEL REEL	.45	1.41K	
9A	4" SPARE	10.9	10.9	U.G.R.
12A	4" SPARE	.49	1K	
13	4" SPARE	.31	.33	
EU	ENRAF UNISTRUT		1.28K	

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RISER RESISTANCE DATA SHEET

TANK TX-115

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.59	5.55(P)	PEDESTAL
3	4" TEMP PROBE	.58	.58	
8	4" BREATHER	.55	646	
9A	4" FIBERGLASS LOW	540		U.G.R.
12B	18" OBSV PORT	.55	.55	
EU	ENRAF UNISTRUT		.59	

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RISER RESISTANCE DATA SHEET

TANK TX-116

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" LIQ LEVEL REEL	.92		
4	4" FLANGE TEMP CUT IN RISER	.90	1.01	
5	12" OBSV PORT	.91	.92	
7	ENRAF UNISTRUT	.92	1.04	
8	4" FLANGE TEMP CUT IN RISER	.91	1.01	
10A	4" BREATHER	334	338	U.G.R.
EU	ENRAF UNISTRUT		492	

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RISER RESISTANCE DATA SHEET

TANK TX-117

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" SPARE	.90	.91	
3	4" SPARE	.90	.90	
5	12" OBSV PORT	.89	498	
7	12" FIBERGLASS LOW	2.53		
10A	4" SPARE	90	90	U.G.R.
10B	12" BREATHER	90	106.9	U.G.R.
11A	4" LIQ LEVEL REEL	459	OPEN	U.G.R.

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RISER RESISTANCE DATA SHEET

TANK TX-118

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO-TREE	.54	.66	
3	4" TEMP PROBE	.52	.52	
4	4" ENRAF	.58	.58	
5	12" FIBERGLASS LOW	.52		
7	12" SPARE	.51	11.22	
8	4" BREATHER	.57	1.47	
9A	4" SPARE	.81	.81	
9B	12" SPARE	.75	.75	
10A	4" SPARE	.52	.52	
10B	12" SPARE	.52	.52	
11B	12" OBSV PORT	.56	.56	
12A	4" SPARE	.54	.54	
12B	12" SPARE	.55	.55	
TM	TMACS		.52	

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RISER RESISTANCE DATA SHEET

TANK TY-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.29	.29	
3	4" TBX	.27	.27	
4	4" TEMP PROBE	.37	.37	
5	12" OBSV PORT	.48	.48	
7	12" BREATHER	.48	.48	
8	12" SPARE	.48	OPEN	
EU	ENRAF UNISTRUT		.29	
TM	TMACS		.30	
P1	2" ELBOW		.47	
P2	2" ELBOW		.51	

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RISER RESISTANCE DATA SHEET

TANK TY-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.97	.97	
3	4" SPARE	1.92	1.92	
4	4" TEMP PROBE	1.15	1.18	
5	12" BREATHER	1.05	1.05	
8	12" SPARE	1.04	1.04	
EU	ENRAF UNISTRUT		1.12	

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RISER RESISTANCE DATA SHEET

TANK TY-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" ENRAF	.25	.25	
3	4" LOW	.23		
4	4" TEMP PROBE	.24	.24	
5	12" CONC PLUG		345	NO ACCESS TO RISER
7	12" TBX	.23	.23	
8	12" OBSV PORT	14.34	14.34	U.G.R.
(12)	12" SPARE	6.87	6.87	U.G.R.
(15)	4" BREATHER	65.8	65.8	U.G.R.
(18)	4" SLUDGE MEAS	31.2	31.8	U.G.R.
EU	ENRAF UNISTRUT		3.06	
TM	TMACS		.22	
P1	2" ELBOW		.54	

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CALIB DUE DATE 3-12-97

RISER RESISTANCE DATA SHEET

TANK TY-104

RISER	DESCRIPTION		RESISTANCE(OHMS)		COMMENTS
			RISER	TOP	
1	4" ENRAF		.83	.85	
3	4" TBX		.82	.82	
4	4" TEMP PROBE		1.36	1.42	
7	12" SPARE		.95	.95	
8	12" BREATHER		1.13	1.13	
⑪	12" SPARE		15.23	15.23	U.G.R.
⑮	4" SLUDGE MEAS		31.2	31.2	U.G.R.
EU	ENRAF UNISTRUT			.84	
TM	TMACS			.82	

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RISER RESISTANCE DATA SHEET

TANK TY-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
2	4" SPARE	.30	.30	
3	4" TEMP PROBE	.29	.29	
4	4" ENRAF	.30	.30	
6	12" BREATHER	.31	.31	
7	12" PLUGGED	.31	.31	
8	12" SPARE	.30	.30	
⑩	4" SPARE	61.1	61.1	U.G.R.
⑫	4" SPARE	105.2	114.7	U.G.R.
EU	ENRAF UNISTRUT		.30	

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RISER RESISTANCE DATA SHEET

TANK TY-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER	1.09	113	
2	4" TEMP PROBE	.92	4.01	
3	4" SPARE	.92	.92	
4	4" ENRAF	.91	.91	
5	12" FLG W/ LEAD	.92	.92	
6	12" FLG W/ LEAD	.92	.92	
7	12" OBSV PORT	.92	.92	
8	12" FLG W/ LEAD	.92	.92	
(S1)	12" SPARE	43.6	43.6	U.G.R.
EU	ENRAF UNISTRUT		1.15	

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RISER RESISTANCE DATA SHEET

TANK U-101

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	3.1	3.9	
2	12" TEMP PROBE	3.0	3.3	
7	12" OBSV PORT	3.0	3.1	
8	4" REEL	3.0	79.7	
E	UNISTRUT ELECTRICAL OUTLET		131.2	

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RISER RESISTANCE DATA SHEET

TANK U-102

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	3.02	3.02	
2	12" LOW	3.02		
7	12" OBSV PORT	3.00	3.02	
8	4" ENRAF	3.07	3.17	
⑨	4" BREATHER FLTR	3.08	3.08	
①9	4" SLUDGE MEAS	40.1	40.6	U.G.R.
EU	ENRAF UNISTRUT		3.07	
LD	LEAK DET STATION		349	
LS	LEAK DET STAND		3.31	
PC	PUMP CONT STA		3.24	
T1	INSTR TUBING		299	
WFE	WF ENCLOSURE		3.22	

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RISER RESISTANCE DATA SHEET

TANK U-103

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	2.83	2.90	
2	12" OBSV PORT	2.83	3.05	
7	12" OBSV PORT	2.87	2.87	
8	4" ENRAF	2.87	3.96	
⑨	4" BREATHER FLTR	2.90	3.11	
⑲	4" LOW	7.95		U.G.R.
EU	ENRAF UNISTRUT		3.91	
LD	LEAK DET STATION		7.45	
LS	LEAK DET STAND		230	
PC	PUMP CONT STA		3.61	
SHMS	SHMS CABINET		2.90	
WFE	WF ENCLOSURE		3.68	

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RISER RESISTANCE DATA SHEET

TANK U-104

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	80.2	80.4	U.G.R.
2	12" OBSV PORT	2.81	3.46	
7	12" LIQ LEV REEL	3.0	3.0(P)	PEDESTAL
8	4" TEMP PROBE	2.97	2.97	
P1	PIPE		18.8	
T1	INSTR TUNING		79.6	

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RISER RESISTANCE DATA SHEET

TANK U-105

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	2.93	2.93	
7	12" OBSV PORT	2.83	2.90	
8	4" ENRAF	3.5	5.3	
⑨	4" BREATHER FLTR	3.2	3.2	
⑪	4" LOW	35.6		U.G.R.
CA1	12" CAISSON		7.0	
CA2	4' CAISSON		25.3	
EU	ENRAF UNISTRUT		4.91	
LD	LEAK DET STA		3.32	
LS	LEAK DET STAND		127.3	
PC	PUMP CONT STA		3.32	
SHMS	SHMS CABINET		3.0	
T1	INSTR TUBING		262	
TM	TMACS		3.1	
WFE	WF ENCLOSURE		3.5	

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RISER RESISTANCE DATA SHEET

TANK U-106

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" TEMP PROBE	2.87	2.87	
2	12" SPARE	2.84	3.26	
7	12" OBSV PORT	2.84	2.86	
8	4" ENRAF	2.84	2.93	
⑨	4" LOW	29.8		U.G.R.
①⑨	4" BREATHER FLTR	40.4	40.4	U.G.R.
EU	ENRAF UNISTRUT		2.93	
PC	PUMP CONT STA		3.02	
WFE	WF ENCLOSURE		3.88	

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RISER RESISTANCE DATA SHEET

TANK U-107

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
TMACS	TMACS		3.09	
1	4" TEMP PROBE	2.84	2.84	
2	12" SPARE	2.81	2.84	
7	12" SPARE	2.83	2.87	
8	4" ENRAF	2.89	2.94	
⑨	4" FLANGE	39.9	40.0	U.G.R.
⑩	4" BREATHER FLTR	3.10	3.12	
⑪	4" LOW	41.8		U.G.R.
EU	ENRAF UNISTRUT		2.96	
PCS	PUMP CONT STA		3.66	
SHMS	SHMS CABINET		3.04	
WFE	WF ENCLOSURE		3.62	

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RISER RESISTANCE DATA SHEET

TANK U-108

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO PROBE	2.81	2.82	
2	12" SPARE	2.82	2.82	
7	12" OBSV PORT	2.81	2.81	
8	4" ENRAF	2.81	3.06	
(9)	4" SLUDGE MEAS	37.0	37.1	U.G.R.
(10)	4" BREATHER FLTR	3.01	3.01	
(19)	4" LOW	35.8		U.G.R.
E	UNISTRUT ELEC OUT		3.77	
EE	ELEC EQPT 8'X2'		2.91	
EU	ENRAF UNISTRUT		3.05	
J1	2 JBOXES		3.49	
J2	2 JBOXES		2.99	
PC	PUMP CONT STA		3.77	
SHMS	SHMS CABINET		2.91	
TM	TMACS		2.88	
WFE	WF ENCLOSURE		3.88	

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RISER RESISTANCE DATA SHEET

TANK U-109

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO PROBE	2.82	2.88	
2	12" SPARE	2.83	2.84	
7	12" OBSV PORT	2.84	2.85	
8	4" ENRAF	2.83	3.17	
⑨	4" LOW	42.1		U.G.R.
⑩	4" BREATHER FLTR	2.92	2.93	
⑪	4" SLUDGE MEAS	32.9	33.1	U.G.R.
EU	ENRAF UNISTRUT		3.15	
PC	PUMP CONT STA		3.09	
SHMS	SHMS CABINET		2.88	
T1	INSTR TUBING		174.5	
WFE	WF ENCLOSURE		3.62	

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RISER RESISTANCE DATA SHEET

TANK U-110

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" THERMO PROBE	3.05	3.09	
2	12" OBSV PORT	3.05	3.05	
7	12" SPARE	3.2	67.9	
8	4" ENRAF	3.2	3.5	
⑨	4" BREATHER FLTR	33.1	33.1	U.G.R.
⑪	4" SPARE	18.8	18.8	U.G.R.
⑬	4" SLUDGE MEAS	29.1	29.1	U.G.R.
EU	ENRAF UNISTRUT		3.6	
LD	LEAK DET STA		4.23	
PC	PUMP CONT STA		31.2	
WF	WF ENCLOSURE		3.72	

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RISER RESISTANCE DATA SHEET

TANK U-111

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
3	12" SPARE	3.3	52.6	
4	4" SLUDGE MEAS	3.08	3.10	
5	4" TEMP PROBE	3.09	3.14	
6	12" SPARE	3.3	48.4	
7	12" OBSV PORT	3.08	3.12	
8	4" ENRAF	3.11	3.17	
⑩	4" BREATHER FLTR	42.7	42.7	U.G.R.
⑪	4" LOW	38.2		U.G.R.
EU	ENRAF UNISTRUT		3.12	
J2	2 JBOXES		3.16	
PC	PUMP CONT STA		3.65	
TP	TEMP PROBE	3.10	3.10	
WF	WF ENCLOSURE		3.48	

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RISER RESISTANCE DATA SHEET

TANK U-112

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" BREATHER FLTR	3.02	3.18	
2	12" DIP TUBES	3.03	5.28	
3	12" SPARE	3.09	7.10	
5	4" THERMO PROBE	3.03	2.99	G.T.W.
6	12" SPARE	3.02	65	
7	12" OBSV PORT	3.03	3.03	
8	4" REEL	3.03	OPEN	
TM	TMACS		3.06	

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RISER RESISTANCE DATA SHEET

TANK U-201

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" REEL	46.0	OPEN	U.G.R.
2	12" 3" SM/4" SPARE	3.13	3.13	
3	12" DIP TUBES	3.18	3.20	
4	4" THERMO TREE	3.18	3.04	G.T.W.
5	4" THERMOWELL		480	RISER ENCASED
6	12" OBSV PORT	26.3	26.3	U.G.R.
7	12" DIP TUBES	27.9	27.9	U.G.R.
8	4" BREATHER FLTR	48.5	48.6	U.G.R.

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RISER RESISTANCE DATA SHEET

TANK U-202

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" REEL	46.4	OPEN	U.G.R.
2	12" 3"SM/4"SPARE	36.2	36.4	U.G.R.
3	12" DIP TUBES	34.7	437	U.G.R.
4	4" THERMO TREE	4.07	4.58	
5	4" THERMOWELL		474	RISER ENCASED
6	12" OBSV PORT	3.62	3.62	
7	12" DIP TUBES	31.6	31.7	U.G.R.
8	4" BREATHER FLTR	3.69	1.19K	

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RISER RESISTANCE DATA SHEET

TANK U-203

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" REEL	52.3	OPEN	U.G.R.
2	12" 3" SM/4" SPARE	3.67	4.82	
3	12" DIP TUBES	3.76	6.34	
4	4" THERMO TREE	3.83	3.80	G.T.W.
5	4" THERMOWELL		474	RISER ENCASED
6	12" OBSV PORT	27.4	27.4	U.G.R.
7	12" DIP TUBES	22.3	22.3	U.G.R.
8	4" BREATHTR FLTR	22.3	22.3	U.G.R.

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RISER RESISTANCE DATA SHEET

TANK U-204

RISER	DESCRIPTION	RESISTANCE(OHMS)		COMMENTS
		RISER	TOP	
1	4" REEL	49.4	OPEN	U.G.R.
2	12" 3" SM/4" SPARE	3.64	3.66	
3	12" DIP TUBES	3.41	3.43	
4	4" THERMO TREE	4.72	3.50	G.T.W.
5	4" THERMOWELL		474	RISER ENCASED
6	12" OBSV PORT	3.35	3.36	
7	12" DIP TUBES	25.3	25.3	U.G.R.
8	4" BREATHER FLTR	25.2	25.2	U.G.R.

TEST EQUIP # 785-77-47-001

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SECTION VIEW
TYPICAL GROUNDING AND BONDING SCHEME

DISTRIBUTION SHEET

To Distribution	From Plant Controls 74E41	Page 1 of 1
		Date6-16-96
Project Title/Work Order Lightning Hazard		EDT No. 614427
		ECN No.

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
L. Kiewert		S2-02	x		
W. L. Cowley		A3-37	x		
P. F. Kison		T4-07	x		
V. P. Ocampo		G3-17	x		
J. G. Propson		R2-36	x		
D. M. Stenkamp		S2-02	x		
R. A. Huckfeldt		R3-01	x		
J. E. Wells		S5-05	x		
J. J. Zach		S7-14	x		
S. H. Rifaey		R1-56	x		
W. W. Jenkins		S2-24	x		
D. A. Bragg		S5-05	x		
G. T. Frater		S7-16	x		