REGU[illegible]ATO[illegible] INFORMATION DISTRIBU[illegible]ON [illegible]STEM (RIDS)

ACCESSION NBR: 8702110182 DOC. DATE: 87/02/06 NOTARIZED: YES DOCKET #
FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH. NAME AUTHOR AFFILIATION
MANGAN, C. V. Niagara Mohawk Power Corp.
RECIP. NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)
SEE REP 15

SUBJECT: Forwards results of asphalt based vol reduction & solidifacation sys preoperational test, per 861205 & 870119 commitments. Sys will be declared operational in 30 days. NUS Process Svc Corp will solidify wastes on interim basis.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/TELEPHONE (315) 474-1511

February 6, 1987
(NMP2L 0993)

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410

Gentlemen:

In our letters dated December 5, 1986 (NMP2L 0945) and January 19, 1987 (NMP2L 0975), Niagara Mohawk committed to submit the results of the asphalt based volume reduction and solidification system preoperational test.

The preoperational testing of the asphalt based volume reduction and solidification system has now been completed, reviewed, and approved. This preoperational test was performed in accordance with the approved Nine Mile Point Unit 2 Preoperation Test Procedure (N2-POT-41-1), and test results were reviewed by the Joint Test Group and Site Operations Review Committee. The test results are provided in the enclosure for your review and use.

The asphalt based volume reduction and solidification system will be declared operational in about thirty (30) days. The system will be available for use at that time unless further comment is received from your staff.

As the Safety Evaluation Report Supplement 3 (page 11-1) indicated, we intend to use the contract services of NUS Process Service Corporation to solidify wastes on an interim basis until your staff completes its review of the preoperational test results on the asphalt based volume reduction and solidification system. In addition, we wish to continue the use of the NUS solidification service in conjunction with the asphalt solidification system.

B001 0/0 Limited Dist

8702110182 870206
PDR ADOCK 05000410
P PDR

The NUS system will also serve as a backup in the event that operational difficulty is experienced in the asphalt system. We accordingly request that the potential for long-term use of the NUS solidification service be reflected in the next supplement of the Safety Evaluation Report.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

CVMangan
C. V. Mangan
Senior Vice President

LL/pns
2587G
Enclosure

xc: Regional Administrator, Region I
Ms. E. G. Adensam, Project Director
Mr. W. A. Cook, Resident Inspector
Project File (2)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of]
]
Niagara Mohawk Power Corporation] Docket No. 50-410
]
(Nine Mile Point Unit 2)]

AFFIDAVIT

C. V. Mangan, being duly sworn, states that he is Senior Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C Mangan

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 6th day of February, 1987.

Beth A. Menikheim
Notary Public in and for
Onondaga County, New York

My Commission expires:

BETH A. MENIKHEIM
Notary Public in the State of New York
Qualified in Onondaga County No. 4804074
My Commission Expires August 31, 19 88

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

1 LHR 9/10/86
2

TEST FOLDER NUMBER 41.001 0 | FRF NO. N2-POT-41-1-~~1~~

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM | No. N2-POT-41-1 | REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no 9/2/86

DESCRIPTION OF CHANGE

1) PAGE 22 OF 271, ADD THE FOLLOWING AFTER STEP 4.3.4:
   NOTE: STEPS 4.3.4.1 THROUGH 4.3.4.13 MAY BE DELETED IF THE AUX. BOILER STARTUP AND CHEMISTRY CONTROL ESTABLISHED DURING PRELIMINARY TESTING.
2) PAGE 25 OF 271, ADD THE FOLLOWING AFTER STEP 4.3.7:
   NOTE: STEPS 4.3.7.1 THROUGH 4.3.7.8 MAY BE DELETED IF THE LUBE OIL SYSTEM IS ALREADY IN OPERATION.
3) PAGE 27 OF 271, ADD NOTE AFTER STEP 4.4.1.1:
   NOTE: STEPS 4.4.1.1.1 THROUGH 4.4.1.1.10 MAY BE DELETED IF BOILER STEAM RATE VERIFICATION WAS PERFORMED AND DOCUMENTED DURING PRELIMINARY TESTING.

REASON FOR CHANGE

ITEMS 1), 2), AND 3) ABOVE: TO DELETE UNNECESSARY STEPS OF PRE-OP THAT WERE PERFORMED DURING PRELIMINARY TESTING.

AUTHORIZED BY | SSS (if applicable)
1. Dale C. McCulley date 8/29/86 | 2. N/A date N/A

APPROVED ☒ yes ☐ no | date 9-2-86 | JTG mtg no. 86-159

RETEST REQUIRED specify N/A | DR No.

REVISION INCORPORATED (if applicable) | date

8702110182

RECORD COPY

FRF. No. N2-POT-41-1

PAGE 2 OF 10

CHANGE TO PAGE 35 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) DELETE STEP 4.5.1.1.3 (ALL)

2) DELETE 2WSS-PS19A (ASPHALT RECIRC PUMP P3A SUCTION PRESS. LOW) FROM INSTALLED INSTRUMENT CALIBRATION LIST, PAGE 155 OF 271, ATTACHMENT 9.L

3) DELETE COMPUTER POINT WSS PC006 FROM COMPUTER POINT LIST, PAGE 240 OF 271, ATTACHMENT 9.5

4) DELETE 2WSS-PS19A FROM TEST MATRIX, ATTACHMENT 9.10, PAGE 254 OF 271, LCR No. IL2-WSS-047.

REASON FOR CHANGE

ITEMS 1, 2, 3 AND 4 ABOVE: THE ASPHALT RECIRC PUMP LOW SUCTION PRESSURE TRIPS WERE DELETED BY ECN WSS-610 AS A RESULT OF PROBLEM REPORT No. 5137.

RECORD COPY

FRF NO. N2-POT-41-1-

PAGE 3 OF 10

CHANGE TO PAGE 37 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) DELETE STEP 4.5.1.2.3 (ALL)

2) DELETE 2WSS-PS19B (ASPHALT RECIRC. PUMP P3B SUCTION PRESS. LOW) FROM INSTALLED INSTRUMENT CALIBRATION LIST, ATTACHMENT 9.1, PAGE 155 OF 271.

3) DELETE COMPUTER POINT WSSPC008 FROM COMPUTER POINT LIST, ATTACHMENT 9.5, PAGE 240 OF 271.

4) DELETE 2WSS-PS19B FROM TEST MATRIX, ATTACHMENT 9.10, PAGE 254 OF 271, LCR No. IL2-WSS-048.

REASON FOR CHANGE

ITEMS 1, 2, 3 AND 4 ABOVE: THE ASPHALT RECIRC. PUMP LOW SUCTION PRESSURE TRIPS WERE DELETED BY ECN WSS-610 AS A RESULT OF PROBLEM REPORT NO. 5137.

RECORD COPY

[illegible]

SD-205-GR

UNCLASSIFIED

[illegible]

FRF NO. N2-POT-41-1-
PAGE 4 OF 10

CHANGE TO PAGE 91 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.L.3.7, AFTER 2WSS-FC202, ADD "WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT."

2) STEP 4.11.L.3.10, DELETE "AFTER 10 MINUTES OF OPERATION".

REASON FOR CHANGE

ITEM 1) TO CLARIFY THE OPERATION OF THE ASPHALT FLOW CONTROLLER DUE TO EQUIPMENT CHANGE.

ITEM 2) TO DELETE UNNECESSARY REQUIREMENT FROM STEP. OPERATING EXPERIENCE HAS SHOWN THAT ASPHALT WILL DISCHARGE FROM THE EXTRUDER ALMOST IMMEDIATELY AFTER STARTING THE MACHINE.

RECORD COPY

FRF No. N2-POT-41-1-7

PAGE 5 OF 10

CHANGE TO PAGE 92 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.1.3.17 DELETE STEP, INSERT THE FOLLOWING:
" WHEN ASPHALT AND WASTE FLOW RATES HAVE STABILIZED AT
APPROXIMATELY 40 % OF CALCULATED FLOW, PLACE THE ASPHALT
FLOW CONTROLLER IN "RATIO" CONTROL."

2) STEP 4.11.1.3.18 DELETE STEP, INSERT THE FOLLOWING:
" PLACE THE ASPHALT FLOW CONTROLLER IN AUTO."

3) STEP 4.11.1.3.25 DELETE "VIA THE "R" THUMBWHEEL".

REASON FOR CHANGE

ITEMS 1, 2, AND 3 ABOVE: TO UPDATE PROCEDURE TO ALLOW
USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER
(2WSS-FC202).

1

FRF NO. N2-POT-41-1-7

PAGE 6 OF 10

CHANGE TO PAGE 93 OF 271, N2-POT-41-1.

DESCRIPTION OF CHANGE

1). STEP 4.11.1.3.30 DELETE "VIA THE "R" THUMBWHEEL."

REASON FOR CHANGE

TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

RECORD COPY

1

FRF NO. N2-POT-41-1-7

PAGE 7 OF 10

CHANGE TO PAGE 97 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.2.4.7 AFTER "2WSS-FC202", ADD THE FOLLOWING:
"... WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT."

2) STEP 4.11.2.4.10 DELETE "AFTER ABOUT 10 MINUTES OF OPERATION".

3) STEP 4.11.2.4.17 DELETE STEP, INSERT THE FOLLOWING:
"WHEN ASPHALT AND WASTE FLOW RATES HAVE STABALIZED AT APPROXIMATELY 40% OF CALCULATED FLOW, PLACE THE ASPHALT FLOW CONTROLLER IN "RATIO" CONTROL.

REASON FOR CHANGE

ITEMS 1 AND 3 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

ITEM 2: TO DELETE UNNECESSARY REQUIREMENT FROM STEP. OPERATING EXPERIENCE HAS SHOWN THAT ASPHALT WILL DISCHARGE FROM THE EXTRUDER ALMOST IMMEDIATELY AFTER STARTING THE MACHINE.

RECORD COPY

CHANGE TO PAGE 98 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.2.4.18 DELETE STEP, INSERT THE FOLLOWING:
"PLACE THE ASPHALT FLOW CONTROLLER IN "AUTO"."

2) STEP 4.11.2.4.30 (PAGE 99 OF 271) DELETE "... VIA THE "R" THUMBWHEEL."

3) STEP 4.11.2.4.36 (PAGE 100 OF 271). DELETE STEP ENTIRELY.

REASON FOR CHANGE

1) TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WS5-FC202).

2) SAME REASON AS 1) ABOVE.

3) STEP IS UNNECESSARY, AND AS WRITTEN IN PROCEDURE WILL CAUSE UNNECESSARY INDEXING OF CONTAINER TURNTABLE. THIS STEPS' INTENT IS COVERED BY STEP 4.11.2.4.40.

RECORD COPY

CHANGE TO PAGE 102 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.3.2.7 AFTER "2WSS-FC202" ADD THE FOLLOWING:
"... WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT..."

2) STEP 4.11.3.2.10 DELETE "... AFTER ABOUT 10 MINUTES OF OPERATION."

REASON FOR CHANGE

ITEMS 1 AND 2 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

RECORD COPY

FRF NO. N2-POT-41-1-1

PAGE 10 OF 10

CHANGE TO PAGE 103 OF 271, N2-POT-41.1

DESCRIPTION OF CHANGE

1) STEP 4.11.3.2.17 DELETE STEP, INSERT THE FOLLOWING:
"WHEN ASPHALT AND WASTE FLOW RATES HAVE STABILIZED AT APPROXIMATELY 40% OF CALCULATED FLOW, PLACE THE ASPHALT FLOW CONTROLLER IN "RATIO" CONTROL."

2) STEP 4.11.3.2.18 DELETE STEP, INSERT THE FOLLOWING:
"PLACE THE ASPHALT FLOW CONTROLLER IN "AUTO"."

3) STEP 4.11.3.2.24 (PAGE 104 OF 271) DELETE "VIA THE "R" THUMBWHEEL".

4) STEP 4.11.3.2.29 (PAGE 104 OF 271) DELETE "VIA THE "R" THUMBWHEEL."

REASON FOR CHANGE

ITEMS 1 THROUGH 4 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.000 0 FRF NO. N2-POT-41-1-2

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM No. N2-POT-41-1 REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no 11/3/86

DESCRIPTION OF CHANGE

REVISE THE EXTRUDER/EVAPORATOR PROCESS CONTROL TEMPERATURE LIMITS (STEPS 4.10.1.3 AND 4.10.3.1) AND TEMPERATURE PROFILE ON CHART AT THE BEGINNING OF SECTION 4.11 PER ATTACHED PAGES.

REASON FOR CHANGE

THE EXTRUDER/EVAPORATOR TEMPERATURE PROFILE REQUIREMENTS ARE GOVERNED BY THE VENDORS' (WASTE CHEM CORP.) PROCESS CONTROL PROGRAM AS APPROVED BY THE NRC. THIS CHANGE IS TO INCORPORATE THE LATEST RECOMMENDED PROFILE INTO THIS PROCEDURE.

(REFERENCE INTERNAL CORRESPONDENCE FROM OSCAR HENDERSON OF RADWASTE OPERATIONS, FILE CODE 19,905, DATED 10/27/86, COPY ATTACHED).

AUTHORIZED BY SSS (if applicable)
1. Dale A. McCullough date 11/3/86 2. N/A date N/A

APPROVED ☒ yes ☐ no date 11-3-86 JTG mtg no. 86-192

RETEST REQUIRED specify OR No.

REVISION INCORPORATED (if applicable) date

RECORD COPY

FRF NO. N2-POT-41-1-2

PAGE 2 OF 4

CHANGE TO PAGE 68 OF 271; N2-POT-41-1

DESCRIPTION OF CHANGE

STEP 4.10.1.3- DELETE THE TEMPERATURE BANDS LISTED FOR THE EXTRUDER/EVAPORATOR BARRELS AND INSERT THE FOLLOWING REVISED BANDS:

BARREL 1 TEMP.	180 TO 220 °F
BARREL 2 TEMP.	252 TO 308 °F
BARREL 3 TEMP.	288 TO 352 °F
BARREL 4 TEMP.	315 TO 385 °F
BARREL 5 TEMP.	315 TO 385 °F
BARREL 6 TEMP.	315 TO 385 °F
BARREL 7 TEMP.	252 TO 308 °F

REASON FOR CHANGE

SEE REASON FOR CHANGE ON PAGE 1 OF THIS FRF.

RECORD COPY

FRF NO. N2-POT-41-1-2
PAGE 3 OF 4

CHANGE TO PAGE 73 OF 271 ; N2-POT-41-1

DESCRIPTION OF CHANGE

STEP 4.10.3.1 DELETE THE TEMPERATURE BANDS LISTED FOR THE EXTRUDER/EVAPORATOR BARRELS AND INSERT THE FOLLOWING REVISED BANDS:

BARREL 1 TEMP. 180 TO 220 °F
BARREL 2 TEMP. 252 TO 308 °F
BARREL 3 TEMP. 288 TO 352 °F
BARREL 4 TEMP. 315 TO 385 °F
BARREL 5 TEMP. 270 TO 330 °F
BARREL 6 TEMP. 270 TO 330 °F
BARREL 7 TEMP. 171 TO 209 °F

REASON FOR CHANGE

SEE REASON FOR CHANGE ON PAGE 1 OF THIS FRF.

CHANGE TO PAGE 87 OF 271 ; N2-POT-41-1

DESCRIPTION OF CHANGE

DELETE THE TEMPERATURE PROFILES FROM THE CHART FOR SECTION 4.11, INSERT THE FOLLOWING:

BARREL SECTION	BEAD RESIN	FILTER SLUDGE	WASTE CONCENTRATES
1	200	200	200
2	280	280	280
3	320	320	320
4	350	350	350
5	300	300	350
6	300	300	350
7	190	190	280

NOTE: FILTER SLUDGE TEMPERATURES ARE FOR FILTER CAKE WITH POWDERED RESIN. IF FILTER CAKE WITH DIATOMACEOUS EARTH IS USED, THE WASTE CONCENTRATES TEMPERATURES SHALL BE USED.

REASON FOR CHANGE

SEE REASON FOR CHANGE ON PAGE 1 OF THIS FRF.

INTERNAL CORRESPONDENCE
FORM 112-2 R 02-80 55-01-013

NIAGARA MOHAWK

OM Oscar Henderson
DISTRICT Nine Mile Point Unit 2

Dale McCollough
DATE 10/27/86
FILE CODE 19,905

SUBJECT Extruder Temp Profile

Per conversation with Waste Chem Corporation Thursday, October 9th and Tuesday, October 21st, 1986 NMPC should use tne temp profile outlined on the PCP submittal to the NRC.

Waste Chem also stated that temperature profiles on barrels 2-8 should be used as barrel 1-7 on the system employed at NMP 2. Bill Kline of Waste Chem further stated that a revision to show NMP 2 's seven barrel extruder temp profile will be submitted to the NRC when they respond to the Commissions first round of questions in regards to the PCP.

Oscar Henderson
Supervisor Radwaste Operations

cc:
B. Cushman
H. Motta

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0
FRF NO. N2-POT-41-1-3

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM
NO. N2-POT-41-1
REV. 0

PROCEDURE REVISION REQUIRED /X/yes / /no/ 11/24/86

DESCRIPTION OF CHANGE

DELETE STEPS 4.11 1 2 THROUGH 4.11 1.2.20.

INSERT THE FOLLOWING:

4.11.1.2 SAMPLE THE WASTE SLUDGE TANK FOR SPECIFIC GRAVITY, SOLID CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-OP-41, AND N2-CSP-14.

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY
1. Dale A. McCulloch date 11/24/86
SSS (if applicable)
2. ______ date ______

APPROVED /X/yes / /no date 1-25-86 JTG mtg no.

RETEST REQUIRED specify ______ OR No. ______

REVISION INCORPORATED (if applicable) date

PAGE 1 OF 3

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NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0
FRF NO. N2-POT-41-1.3

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM
No. N2-POT-41-1
REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no

DESCRIPTION OF CHANGE

DELETE STEPS 4.11.2.3 THROUGH 4.11.2.3.20.
INSERT THE FOLLOWING:

4.11.2.3 SAMPLE THE WASTE SLUDGE TANK FOR SPECIFIC GRAVITY, SOLID CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-OP-41, AND N2-CSP-14.

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY
1. Dale G. McCully date 11/24/86
SSS (if applicable)
2. date

APPROVED ☒ yes ☐ no date 11-25-86 JTG mtg no.

RETEST REQUIRED specify OR No.

REVISION INCORPORATED (if applicable) date

PAGE 2 of 3

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NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0
FRF NO. N2-POT-41-1-3

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM
NO. N2-POT-41-1
REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no

DESCRIPTION OF CHANGE

DELETE STEPS 4.11.3 1 2 THROUGH 4.11.3 1.21.

INSERT THE FOLLOWING:

4.11.3 1.2 SAMPLE THE EVAPORATOR BOTTOMS TANK FOR SPECIFIC GRAVITY, SOLID. CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-OP-41, AND N2-CSP-14.

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY
1. Dal A. McCully date 11/24/86
SSS (if applicable)
2. ______ date ______

APPROVED ☒ yes ☐ no date 11-25-86 JTG mtg no.

RETEST REQUIRED specify ______ OR No. ______

REVISION INCORPORATED (if applicable) date

Page. 3 of 3

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

13 pages attached

TEST FOLDER NUMBER
41.001 0

FRF NO.
N2-POT-41-1-K ~~3~~ 4 CWR 12/5/86

PROCEDURE TITLE
WASTE SOLIDIFICATION SYSTEM

No.
N2-POT-41-1

REV.
0

PROCEDURE REVISION REQUIRED ☒/yes ☐/no/ 12/4/86

DESCRIPTION OF CHANGE

DELETE ALL OF SECTION 4.11, PAGES 87 THROUGH 106, WITH THE EXCEPTION OF THE FILLED LINER INSPECTIONS REQUIRED BY STEPS 4.11.4.3.1, 4.11.4.3.2, AND 4.11.4.3.3 AND INSERT THE ATTACHED SECTIONS 4.11.1, 4.11.2, AND 4.11.3. ~~ALSO DELETE DATA SHEETS 5.13 AND 5.20.~~ DW 12/4/86

REASON FOR CHANGE

TO UPDATE PROCEDURE TO MORE CLOSELY REFLECT ACTUAL SYSTEM OPERATIONS AND TO DELETE UNNECESSARY REQUIREMENTS, AND ALLOW USE OF APPROVED PLANT OPERATING AND CHEMISTRY PROCEDURES.

AUTHORIZED BY
1. Dale R. McCullough date 12/4/86
SSS (if applicable)
2. N/A date

APPROVED ☒/yes ☐/no date 12-5-86 JTG mtg no. 86-207

RETEST REQUIRED specify

DR No.

REVISION INCORPORATED (if applicable) date

RECORD COPY

4.11 Performance Section

NOTE!
When processing waste the following parameters* must be maintained

Barrel Temperature Profile

Barrel Section		SLUDGE	RESIN	WASTE CONCENTRA
	1	200 *	200 *	200 *
	2	280 *	280 *	290 *
	3	320 *	320 *	320 *
	4	350 *	350 *	350 *
	5	300 *	300 *	350 *
	6	300 *	300 *	350 *
	7	190 *	190 *	280 *

* ± 25% or 75° F

MAXIMUM FEED IS THAT SPECIFIED ON N2-CSP-14 but TO EXCEED .65 GPM SLUDGE or RESIN
.56 GPM WASTE CONCENTRATES

RECORD COPY

[illegible] Mixed Resin and Filter [illegible] (Including [illegible] [illegible])

[illegible] THE WASTE STREAM [illegible] PROCESSED IN ACCORDANCE WITH [illegible]2-OP-40 AND [illegible]. ________/________

4.11 [illegible] PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER [illegible]2-CSP-14. ________/________

4.11 [illegible] SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING Mixed Resin [illegible] ________/________

4.11. .4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. ________________

4.11. 1 .5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. ________________

4.11. .6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. ________________

4.11. .6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). ________________

4.11. 1 .7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. ________________

4.11. 1 .8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. ________________

RECORD COPY

4.11.1.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER. ______/______

4.11.1.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.1.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE SLUDGE" POSITION. ______

4.11.1.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV203. ______

4.11.1.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV9A AND HV8A OR 2WSS-HV9B AND HV8B). ______

4.11.1.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP. ______

4.11.1.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14). ______

4.11.1.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET. ______

4.11.1.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

RECORD COPY

4.11.1 13 1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH N2-OP-41. ______

4.11.1.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES. ______

4.11.1.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP. THE ASPHALT METERING PUMP. ______

4.11.1.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY. ______

4.11.1.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING. ______

[illegible] WATER CURE [illegible]
[illegible]

ASPHALT METERING PUMP ZUSS- ______

WATER METERING PUMP ZUSS- ______

EXTRUDER SPEED ______ RPM

TIME	BARREL #1	BARREL #2	BARREL #3	BARREL #4	BARREL #5/6	BARREL #7	RESIN FLOW	WASTE FLOW	TANK LEVEL

REMARKS:

RECORD COPY

4.11.2 Bead [illegible] [illegible]ATION

4.11.2.1 PREPARE THE WASTE STREAM TO BE PROCESSED IN ACCORDANCE WITH N2-[illegible] AND N2-OP-41. ____________/____________

4.11.2.2 PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER N2-CSP-14. ____________/____________

4.11.2.3 SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING Bead RESINS. ____________/____________

4.11.2.4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. ________________________

4.11.2.5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. ________________________

4.11.2.6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. ________________________

4.11.2.6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). ________________________

4.11.2.7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. ________________________

4.11.2.8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. ________________________

RECORD COPY

4.11.2.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER. ______/______

4.11.2.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.2.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE SLUDGE" POSITION. ____________

4.11.2.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV203. ____________

4.11.2.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV 9 A AND HV 8 A OR 2WSS-HV 9 B AND HV 8 B). ____________

4.11.2.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP. ____________

4.11.2.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14). ____________

4.11.2.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET. ____________

4.11.2.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

4.11.2.13.1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH NL-OP-41.

4.11.2.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES.

4.11.2.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP THE ASPHALT METERING PUMP.

4.11.2.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY.

4.11.2.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING.

[illegible] [illegible] SPECIFICATION

ASPHALT METERING PUMP ROSS-____

PASTE METERING PUMP ROSS-____

EXTRUDER SPEED ____ RPM

TIME	BARREL #1	BARREL #2	BARREL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	PASTE FLOW	TANK LEVEL

REMARKS:

RECORD COPY

4.11.3 WASTE CONCENTRATES SOLIDIFICATION

4.11.3.1 PREPARE THE WASTE STREAM TO BE PROCESSED IN ACCORDANCE WITH N2-OP-40 AND N2-OP-41. ________/________

4.11.3.2 PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER N2-CSP-14. ________/________

4.11.3.3 SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING WASTE CONCENTRATES. ________/________

4.11.3.4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. ________________

4.11.3.5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. ________________

4.11.3.6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. ________________

4.11.3.6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). ________________

4.11.3.7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. ________________

4.11.3.8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. ________________

RECORD COPY

4.11.3.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER. ________/________

4.11.3.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.3.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE CONCENTRATES" POSITION. ________________

4.11.3.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV204. ________________

4.11.3.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV11A AND HV10A OR 2WSS-HV11B AND HV10B). ________________

4.11.3.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP. ________________

4.11.3.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14). ________________

4.11.3.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET. ________________

4.11.3.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

4.11.3.13.1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH N2-OP-41.

____

4.11.3.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES.

____

4.11.3.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP THE ASPHALT METERING PUMP.

____

4.11.3.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY.

____

4.11.3.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING.

____

WASTE CONCENTRATES SOLIDIFICATION

ASPHALT METERING PUMP 2WSS- ____

WASTE METERING PUMP 2WSS- ____

EXTRUDER SPEED ____ RPM

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL

REMARKS:

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0 FRF NO. N2-POT-41-1-5

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM No. N2-POT-41-1 REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no 1/14/87

DESCRIPTION OF CHANGE

DELETE THE FOLLOWING DATA SHEETS:

1) DATA SHEET 5.3 VERIFICATION OF ASPHALT STEAM TRACING
2) DATA SHEET 5.5 VERIFICATION OF BOILER PRESSURE CONTROL
3) DATA SHEET 5.12 LINER STORAGE LOCATION

REASON FOR CHANGE

MLC 1/14/87

1) ~~AND 2) ABOVE~~ :- SYSTEM INSULATION IS COMPLETE, SYSTEM OPERATING 6 MONTHS WITHOUT PROBLEMS. REFER TO EXCEPTION E14.

2) INFORMATION REQUIRED BY DATA SHEET IS MEANINGLESS PROPER OPERATION OF ~~BOILER~~ MLC 1/14/87 PRESSURE CONTROLLER WAS VERIFIED DURING PERFORMANCE OF STEP 4.4.12.3.

3) DATA SHEET WAS INTENDED AS A LOCATION GUIDE FOR FILLED TEST LINERS. ONLY 3 LINERS WERE POURED AND ALL 3 WERE REMOVED FROM THE BUILDING FOR INSPECTION.

THESE CHANGES DO NOT AFFECT THE INTENT OR ACCEPTANCE CRITERIA OF THIS TEST.

AUTHORIZED BY SSS (if applicable)

1. date 1/15/87 2. N/A date

APPROVED ☒ yes ☐ no date 1-15-87 JTG mtg no. 87-4

RETEST REQUIRED specify . OR No.

REVISION INCORPORATED (if applicable) date

RECORD COPY

TEST FOLDER # 41.001 0
Equipment Name NA
[illegible] NA

PROCEDURE COVER SHEET

NIAGARA MOHAWK POWER CORPORATION

CIRCLE APPROP. CAT.
QA. CAT. I [✓ II] III

PROCEDURE TYPE	APPROVAL AUTHORITY	PROCEDURE NO.
Preoperational	JTG	N2-POT-41-1

PROCEDURE TITLE
WASTE SOLIDIFICATION SYSTEM

REVIEWED and APPROVED

rev no.	approved by	date	JTG mtg no.	reviewed-QA Nuclear (POTS only)
0	GK Afflerbach	6-10-86	86-76	for WH 6/11/86
1				
2				
3				
4				
5				
6				

RELEASE FOR PERFORMANCE (required for POT's and AT's only)

Pretest review completed by ______ date 7/23/86
Approved for performance GK Afflerbach date 7/23/86

RESULTS REVIEW and APPROVAL (required for specific Prelim., POT and AT only)

Conducted by ______ date 1/5/87
Reviewed by Dale A. McCall LFH 1-15-87 1-15-87 date 1/5/87
QA Review by (POTS only) ______ date 1-30-87
Approved by GK Afflerbach date 1-30-87
Title Startup Manager JTG mtg. no. ~~87-04~~ 87-08 CHR 1/15/87

OPERATIONAL ACCEPTANCE (required for POT's and AT's only)

Review and Accepted ______ date 1/30/87
SORC Chairman SORC mtg. no. 87-12

System Operational ______ date ______
Station Superintendent

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PROCEDURE NUMBER N2-POT-41-1

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N2-POT-41-1

WASTE SOLIDIFICATION SYSTEM

0.0 INTRODUCTION

0.1 Purpose

0.1.1 To demonstrate the operability of the Waste Solidification System (WSS) and Components.

0.1.2 To ensure the system is properly designed and constructed.

0.1.3 To evaluate the Waste Solidification System operation procedures.

0.1.4 To verify the adequacy of the process control scheme in maintaining product quality.

0.2 Test Conditions

The system shall be lined up for initial operating conditions. Waste streams produced during the Pre-Operational Test of the Liquid Waste System (LWS) will be used for verifying the process flow paths and the waste solidification process. Flush water will be used for verifying the evaporation capacity of the Extruder-Evaporator.

0.3 Scope

0.3.1 The WSS Control Panel and the PLC programming are checked to ensure that it controls the mechanical process sequence.

0.3.2 All interlocks, alarms, set points and annunciators for equipment are verified for proper operation by means of simulated signal or actual parameter variation.

0.3.3 All set points and alarms associated with radwaste chemistry are verified by process stream variation.

0.3.4 The WSS auxiliary steam subsystem is operated to ensure that it is adequate for the operation of the WSS equipment.

0.3.5 All equipment is operated to verify flow paths and adequacy of the mechanical design.

0.3.6 The Extruder-Evaporator is operated to verify the design evaporation rate. The amount of oil, if any, carried over in the distillate is determined.

0.3.7 The various waste forms are solidified at the design feed rates and tested to demonstrate that water-free, homogeneous and stable products are produced.

0.3.8 One-pass and three-pass filling are tested to evaluate methods of minimizing voids in the liners.

0.3.9 Cooling time prior to liner capping which is required without affecting the integrity of the liner is also determined.

0.4 General Acceptance Criteria

0.4.1 The Extruder/Evaporator produces a water-free, monolithic and stable end product per the manufacturers' topical report.

1.0 References

1.1 SWEC Documents

1.1.1 Flow Diagrams

FSK	REV	TITLE	OUTSTANDING ECN
31-3.0	3	Fundamental	
31-3A	3	Waste Sludge Transfer & Decant Pumps	
31-3B	3	Waste Sludge Metering Pumps	
31-3C	3	Waste Concentrate Transfer Pump	
31-3D	3	Waste Concentrate Metering Pumps	
31-3E	3	Asphalt Recirculation Pumps	
31-3F	3	Asphalt Metering Pumps	
31-3G	3	Extruder Evaporator Manifold Skid	
31-3H	3	Extruder Evaporator	
31-3J	3	Distillate Collection Skid	
31-3K	3	Lube Oil Skid	
31-3L	3	Auxiliary Boiler Skid	
31-3M	3	Steam Distribution to the Asphalt Subsystem	
31-3N	3	Flush Water Distribution & Steam Tracing Stations	
31-3P	3	Waste Concentrate Metering Pumps Hot Flush Water Subsystem	
31-3Q	3	Waste Concentrate Recirculation Piping Hot Flush Water Subsystem	
31-3R	3	Waste Sludge & Waste Concentrate Sampling Stations	
31-3S	2	Radwaste Container Handling	
31-3T	0	Radwaste Backup Facility	ECN WSS-015,018
31-6B	2	Radwaste Seal Water Distribution	
31-6C	2	Radwaste Seal Water Distribution	
31-6E	2	Radwaste Seal Water Control Stations	

1.1.2 Elementary Diagrams

ESK	REV	DESCRIPTION	OUTSTANDING ECN
6WSS01	3	Pumps P3A/B & P6	
6WSS02	3	Mixer MIX9, Pumps P10 & 11	
6WSS03	3	Pumps P13A/B, Lube Oil Heaters H34 A/B	
6WSS04	3	Pumps P18A/B, Turntable Motor CNV27	
6WSS05	4	Capper Skid Motor CNV35	
7WSS01	2	Waste Sludge Sampling Valves	
7WSS02	3	Waste Concentration Sampling Valves	
11WSS01	2	Pump Start Switches	
6SWR01	1	Radwaste Seal Pump	
7SWR01	2	Radwaste Seal Water System-Elementary Diagrams - AC	
7SWR02	3	Radwaste Seal Water System-Elementary Diagrams - AC	
12SWR01	2	Radwaste Seal Water System-Elementary Diagrams-Contact Inputs	
12SWR02	2	Radwaste Seal Water System-Elementary Diagrams-Contact Inputs	
12SWR03	1	Radwaste Seal Water System-Elementary Diagrams-Contact Inputs	
12SWR04	2	Radwaste Seal Water System-Elementary Diagrams-Contact Inputs	

1.1.3 Logic Diagrams

LSK	REV	DESCRIPTION	OUTSTANDING ECN
31-3A	2	Feed Radiation Monitors	
31-3B	2	Feed Sampling	
31-6A	2	Seal Water	
31-6B	2	Seal Water	
31-6C	2	Seal Water	
31-6D	2	Seal Water	
31-6E	2	Seal Water	
31-6F	2	Seal Water	
31-6G	2	Seal Water	
31-6H	2	Seal Water	

1.1.4 Design Drawings

DWG.	REV	DESCRIPTION	OUTSTANDING ECN
DP593A	2	General Notes & References	
DP593AA	2	General Notes & References	
EM-9A	10	Machine Location	
EM-9B	10	Machine Location	
EM-9C	11	Machine Location	
EM-9D	8	Machine Location	
EP-93Q	1	Steam Tracing	

1.1.4 Design Drawings (con't)

EP-93R	1	Monitor Station

1.2 Equipment Specifications

1.2.1 Mechanical & Packaged Equipment

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
NMP2-P243T	2	-	Werner & Pfleiderer	Waste Solidification System Components
NMP2-P243Z	2	-	John Crane/Modular Sys.	Seal Water System Components
NMP2-M070A	16	-	NEI182 Pittsburg-Corning	Foamglas Insulation for Asphalt Tank Bottom
			NEI270/271 Prince	Backdraft Damper 2WSS-DMP72/117
			NEI293/294 Ametak-Schutte & Koerting	Ejectors 2WSS-J73/74
			NEI514 American Standard	Condensate Cooler 2WSS-E75

1.2.2 Valves and Piping Specialties

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
NMP2-P302E	1	2	Velan	Carbon Steel Valve, 2 in & smaller.
NMP2-P302H	1	3	Velan	Stainless Steel Valve, 2 in & smaller.
NMP2-P302J	1	3	Velan	Carbon Steel Valve, 2 1/2"& larger.
NMP2-P302W	0	5	Target Rock	Solenoid Valves, 2 in & smaller

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1.2.2 Valves and Piping Specialities (con't)

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
NMP2-P303X	1	-	Durion	Air Operated & Manual Plug Valves
NMP2-P305A	0	3	Velan	Steam Traps & Auto Drainers.
NMP2-P305H	0	6	Mueller	Y-Type Strainers
NMP2-M070A	16	-	NEI284 Flexonics	2WSS-HOSE106-111
			NEI556 Atwood & Morrill	WSS 4-Way Sampling Valves
			NEI496 Burns Brother	Steam Tracing Globe Valves
			NEI495 Stritt & Priebe	Steam Tracing Check Valves

1.2.3 Instrumentation and Control

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
NMP2-C012N	0	5	Vickery Simms	Orifice Plates
NMP2-C022R	1	2	Masoneilan	Displacer Level Transmitter 2WSS-LIX115
NMP2-C032M	0	6	Helicoid	Pressure Indicators
NMP2-C032R	0	6	Dresser	Pressure Switches
NMP2-C052A	0	8	Dresser	Safety & Relief Valves
NMP2-C062P	0	5	Johnson Controls	Local Panel, 2SWR-IPNL100
NMP2-C072M	0	8	Rosemount	Pressure Transmitter
NMP2-P281F	2	1	Kaman	Radiation Monitors 2WSS-RE207/208
NMP2-M070A	16	-	NEI 357 Fisher	2WSS-PCV394/396
			NEI 358 Robert Shaw	2WSS-TCV395/397

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1.2.3 Instrumentation and Control

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
			NEI 402 Polysonics	Ultrasonic Flow Instruments: 2WSS-FE106/107 111/162/304/305
			NEI 403 Hills-McCanna	Asphalt System Relief Valves

1.2.4 Electric Heat Tracing

SPECIFICATION	REV	ADDENDUM	VENDOR	EQUIPMENT
NMP2-E092B	1	1	Thermon	Electric Tracing and Panels

1.3 FSAR Sections

VOLUME	SECTION	SUBJECT
2	1.8	Conformance to NRC Regulatory Guides
25	11.4	Solid Waste Management Systems
25	11.5	Process and Effluent Radiological Monitoring and Sampling Systems
26	Table 14.2-58	Preoperational Test

1.4 Manufacturer's Drawings

1.4.1 Radwaste Seal Water System (SWR)

SWEC FILE NO.	DESCRIPTION
0016.514-820-007E	Seal Water Skid-Flow Schematic
0016.514-820-001C	Seal Water Control Station-Type A
0016.514-820-002C	Seal Water Control Station-Type B-1
0016.514-820-003C	Seal Water Control Station-Type B-2
0016.514-820-004D	Seal Water Control Station-Type C
0016.514-820-005C	Seal Water Control Station-Type D
0007.511-414-406A	Seal Water Control Panel (2SWR-IPNL100) Front Layout

1.4.2 Waste Solidification System (WSS)

1.4.2.1 Flow Diagrams

SWEC FILE NO.	DESCRIPTION
0016.520-939-004D	Process Flow Diagram
0016.520-939-010F	Piping & Instrument Diagram Sh. 1
0016.520-939-011F	Piping & Instrument Diagram Sh. 2
0016.520-939-012F	Piping & Instrument Diagram Sh. 3
0016.520-939-233D	Auxiliary Boiler Skid 42:Diagram Process and Instrumentation

1.4.2.2 Elementary Diagrams

SWEC FILE NO.	DESCRIPTION
0016.520-939-268F	Notes, Legend and Symbols
0016.520-939-269E	Valve and Limit Switch Development
0016.520-939-270E	Motor Control Center
0016.520-939-271D	Panel Power Supply
0016.520-939-272E	Waste Sludge Tank & Recirc. Loop Instrument
0016.520-939-273E	Waste Sludge Tank & Recirc. Loop Instrument
0016.520-939-274E	Waste Sludge Recirc. Loop & Waste Conc. Flow Instruments
0016.520-939-275E	Waste Sludge Tank Agitator & AOV
0016.520-939-276E	Waste Sludge Metering Pumps P12A & B
0016.520-939-277D	Waste Sludge Transfer Pump P11 and Metering Loop AOV
0016.520-939-278E	Waste Sludge Metering Flush AOV
0016.520-939-279E	pH Instruments & Waste Conc. Flow Switch
0016.520-939-280E	Waste Conc. Transfer Pump P6 & AOV
0016.520-939-281E	Waste Conc. Metering Pumps
0016.520-939-282D	Waste Conc. Metering AOV
0016.520-939-283E	Waste Conc. Metering Flush AOV
0016.520-939-284E	Asphalt Tank Instruments
0016.520-939-285E	Asphalt Metering Pumps P5A/B

1.4.2.2 Elementary Diagrams (con't)

SWEC FILE NO.	DESCRIPTION
0016.520-939-286D	Asphalt Recirc. P3A/B and Metering AOV
0016.520-939-287E	E/E Barrel Temperature Control & AOV
0016.520-939-288D	E/E Barrel Temperature AOV
0016.520-939-289E	E/E Steam Dome & Boilout TK Level
0016.520-939-290D	E/E Steam Dome & Boilout TK AOV and Lighting
0016.520-939-291E	E/E Drive and RPM/Torque Recorder
0016.520-939-292D	Lube Oil Skid Instruments & Heaters
0016.520-939-293D	Lube Oil Pumps P13A/B and Instruments
0016.520-939-294C	Distillate Pumps & Tank Instruments
0016.520-939-295D	Drip Pan Mechanism and Liner Level Instruments
0016.520-939-296E	Turntable Motor & Instruments, Evap. Btm. TK Level and Boiler Load
0016.520-939-297E	WSS Panel Audible Alarm and Phone Jack
0016.520-939-298E	WSS Programmable Logic Controller Input-Output
0016.520-939-299F	WSS Programmable Logic Controller Input-Output
0016.520-939-300E	WSS Programmable Logic Controller Input-Output
0016.520-939-301E	WSS Programmable Logic Controller Input-Output
0016.520-939-302E	Waste Sludge Tank Influent & Decant AOV
0016.520-939-303E	Waste Sludge Pump & Flush AOV
0016.520-939-304E	Waste Sludge Tank Flush AOV
0016.520-939-305D	Waste Sludge Agitator & Metering Pump Instruments
0016.520-939-306C	Waste Sludge Metering Pump and AOV
0016.520-939-307C	Waste Sludge Metering Pump Flush AOV
0016.520-939-308E	Waste Sludge Flush Valve, Waste Conc. Pump & AOV
0016.520-939-309D	Waste Conc. Transfer AOV & Waste Sludge TK Bottom Valve
0016.520-939-310E	Waste Sludge & Conc. Metering Pumps Interlocks
0016.520-939-311C	Waste Conc. Metering P7A/B
0016.520-939-312C	Waste Conc. Metering P7A/B AOV
0016.520-939-313C	Waste Conc. Metering Pump Flush Valves
0016.520-939-314D	Extruder Motor and P3A/B and P5A/B
0016.520-939-315D	Asphalt Recirc. & Metering Pumps
0016.520-939-316D	Asphalt System and Extruder Motor
0016.520-939-317D	Extruder, Steam Dome, Barrel Temp. and Lube Oil Filter Interlocks
0016.520-939-318E	Lube Oil and Distillate Skid Interlocks
0016.520-939-319E	Distillate and Fill Station
0016.520-939-320C	Turntable and Steam Domes
0016.520-939-321E	Fill Station and Steam Domes
0016.520-939-322E	Steam Domes, Turntable and Utilities
0016.520-939-323E	Seal and Flush Water

1.4.2.2 Elementary Diagrams (con't)

SWEC FILE NO.	DESCRIPTION
0016.520-939-324E	Miscellaneous Interlocks
0016.520-939-325E	Miscellaneous Interlocks
0016.520-939-326D	CCTV
0016.520-939-327E	PLC Input/Output Summary
0016.520-939-328E	PLC Input/Output Summary
0016.520-939-329D	PLC Input/Output Summary
0016.520-939-330E	PLC Input/Output Summary
0016.520-939-331D	PLC Input/Output Summary
0016.520-939-334D	WSS Boiler
0016.520-939-335E	WSS Boiler
0016.520-939-336C	WSS Boiler
0016.520-939-404C	SCR Drive - PNL 220
0016.520-939-405C	SCR Drive - PNL 220
0016.520-939-406D	SCR Drive - PNL 220
0016.520-939-413D	SCR Drive - Extruder-Evaporator Drive PNL 219
0016.520-939-418C	PLC Input/Output Summary
0016.520-939-419D	PLC Input/Output Summary
0016.520-939-420D	PLC Input/Output Summary
0016.520-939-421D	PLC Input/Output Summary
0016.520-939-422C	Elementary Diagram
0016.520-939-423D	PLC Logic
0016.520-939-424C	PLC Logic
0016.520-939-425D	PLC Logic
0016.520-939-426D	PLC Logic
0016.520-939-427C	PLC Logic
0016.520-939-428C	PLC Logic
0016.520-939-429D	PLC Logic
0016.520-939-430D	PLC Logic
0016.520-939-431C	SCR Drive - PNL 220
0016.520-939-432C	SCR Drive - PNL 220
0016.520-939-433B	SCR Drive - PNL 220
0016.520-939-434B	SCR Drive - PNL 220
0016.520-939-435B	SCR Drive - PNL 220
0016.520-939-436C	SCR Drive - PNL 220
0016.520-939-437D	SCR Drive - PNL 220

1.4.2.2 Elementary Diagrams (con't)

SWEC FILE NO.	DESCRIPTION
0016.520-939-438D	SCR Drive - PNL 220
0016.520-939-439D	SCR Drive - PNL 220
0016.520-939-440D	SCR Drive - PNL 220
0016.520-939-441D	SCR Drive - PNL 220
0016.520-939-442D	SCR Drive - PNL 220
0016.520-939-443C	SCR Drive - PNL 220
0016.520-939-444C	SCR Drive - PNL 220
0016.520-939-445C	SCR Drive - PNL 220
0016.520-939-446C	SCR Drive - PNL 220
0016.520-939-447C	SCR Drive - PNL 220
0016.520-939-448C	SCR Drive - PNL 220
0016.520-939-449A	SCR Drive - PNL 220
0016.520-939-450B	SCR Drive - PNL 220
0016.520-939-451B	SCR Drive - PNL 220
0016.520-939-452B	SCR Drive - PNL 220
0016.520-939-453A	SCR Drive - PNL 219
0016.520-939-454B	SCR Drive - PNL 219
0016.520-939-455A	SCR Drive - PNL 219
0016.520-939-456A	SCR Drive - PNL 219
0016.520-939-457B	SCR Drive - PNL 219
0016.520-939-458B	SCR Drive - PNL 219
0016.520-939-459A	SCR Drive - PNL 219
0016.520-939-460A	SCR Drive - PNL 219
0016.520-939-461A	SCR Drive - PNL 219
0016.520-939-462A	SCR Drive - PNL 219
0016.520-939-463A	SCR Drive - PNL 219
0016.520-939-494A	SCR Drive - PNL 220
0016.520-939-620C	Cold & Hot Water Flush Valves
0016.520-939-621C	PLC Logic
0016.520-939-622B	PLC Logic
0016.520-939-623C	PLC Logic
0016.520-939-624C	PLC Logic
0016.520-939-625C	PLC Logic
0016.520-939-626C	PLC Logic
0016.520-939-627B	PLC Logic
0016.520-939-628C	PLC Logic
0016.520-939-643C	PLC Logic
0016.520-939-644C	PLC Logic
0016.520-939-645C	PLC Logic
0016.520-939-651B	Miscellaneous Interlocks
0016.520-939-657A	PLC Logic

1.4.2.3 Logic Diagrams

SWEC FILE NO.	DESCRIPTION
16.520-939-079F	Logic Diagram Symbols
16.520-939-080F	Logic Diagram Symbols
16.520-939-081F	Waste Sludge Recirc. & Decant System
16.520-939-082F	Waste Sludge Recirc. & Decant System
16.520-939-083F	Waste Sludge Recirc. & Decant System
16.520-939-084F	Waste Sludge Recirc. & Decant System
16.520-939-085F	Waste Sludge Recirc. & Decant System
16.520-939-086F	Waste Sludge Recirc. & Decant System
16.520-939-087F	Waste Sludge Recirc. & Decant System
16.520-939-088F	Waste Sludge Recirc. & Decant System
16.520-939-089F	Waste Sludge Recirc. & Decant System
16.520-939-090F	Waste Sludge Recirc. & Decant System
16.520-939-091F	Waste Conc. Recirc. System
16.520-939-092F	Waste Conc. Recirc. System
16.520-939-093F	Waste Conc. Recirc. System
16.520-939-094F	Waste Sludge Recirc. System
16.520-939-095F	Waste Sludge Recirc. System
16.520-939-096F	Waste Sludge Recirc. System
16.520-939-097F	Waste Sludge Recirc. System
16.520-939-098F	Waste Sludge Recirc. System
16.520-939-099F	Waste Sludge Recirc. System
16.520-939-100G	Waste Sludge Recirc. System
16.520-939-101F	Waste Sludge Recirc. System
16.520-939-102F	Waste Sludge Recirc. System
16.520-939-103F	Waste Conc. Recirc. System
16.520-939-104F	Waste Conc. Recirc. System
16.520-939-105F	Waste Conc. Recirc. System
16.520-939-106F	Waste Conc. Recirc. System
16.520-939-107F	Waste Conc. Recirc. System
16.520-939-108E	Waste Conc. Recirc. System
16.520-939-109G	Waste Conc. Recirc. System
16.520-939-110F	Waste Conc. Recirc. System
16.520-939-111F	Waste Conc. Recirc. System
16.520-939-112F	Asphalt Feed System
16.520-939-113F	Asphalt Feed System
16.520-939-114E	Asphalt Feed System
16.520-939-115G	Asphalt Feed System
16.520-939-116G	Asphalt Feed System
16.520-939-117F	Asphalt Feed System
16.520-939-118F	Extruder/Evaporator System
16.520-939-119F	Extruder/Evaporator System
16.520-939-120F	Extruder/Evaporator System
16.520-939-120F	Extruder/Evaporator System
16.520-939-121F	Extruder/Evaporator System
16.520-939-122E	Lube Oil System
16.520-939-123F	Lube Oil System
16.520-939-124F	Lube Oil System
16.520-939-126F	Utility Annunciation
16.520-939-127F	Distillate Collection System

1.4.2.3 Logic Diagrams (con't)

SWEC FILE NO.	DESCRIPTION
16.520-939-128F	Distillate Collection System
16.520-939-129E	Distillate Collection System
16.520-939-130F	Fill Station
16.520-939-131E	Fill Station
16.520-939-132F	Fill Station
16.520-939-133E	Fill Station
16.520-939-134E	Fill Station
16.520-939-215C	Steam Dome Cleaning
16.520-939-216D	E/E Cooling Water Supply
16.520-939-217C	Steam Dome Boilout
16.520-939-218D	Steam Dome Boilout
16.520-939-219D	Logic Diagram Index
16.520-939-333E	Radwaste Auxiliary Boiler
16.520-939-334D	Elect. Drawing Radwaste Aux. Boiler
16.520-939-335E	Elect. Drawing Radwaste Aux. Boiler
16.520-939-506C	Hot Flush Water System

1.4.2.4 Major Equipment & Instrumentation

SWEC FILE NO.	DESCRIPTION
0016.520-939-015C	Monitor Station Layout.
0016.520-939-018E	Extruder/Evaporator Outline
0016.520-939-020D	Extruder-Evaporator Utility Manifold Assembly
0016.520-939-135E	Control Panel Graphic Outline
0016.520-939-234D	Aux. Boiler Installation
0016.520-939-396C	Extruder Outline & Assembly
0016.520-939-509A	Instrument Index
0016.520-939-510A	Instrument Index
0016.520-939-512A	Instrument Index
0016.520-939-518A	Instrument Index
0016.520-939-520A	Instrument Index
0016.520-939-521A	Instrument Index
0016.520-939-522A	Instrument Index
0016.520-939-526A	Instrument Index
0016.520-939-527A	Instrument Index
0016.520-939-532A	Instrument Index
0016.520-939-533A	Instrument Index
0016.520-939-535A	Instrument Index
0016.520-939-537A	Instrument Index
0016.520-939-539A	Instrument Index
0016.520-939-540A	Instrument Index
0016.520-939-541A	Instrument Index
0016.520-939-542A	Instrument Index
0016.520-939-543A	Instrument Index
0016.520-939-544A	Instrument Index
0016.520-939-545A	Instrument Index
0016.520-939-547A	Instrument Index

1.4.3 Electric Heat Tracing

SWEC FILE NO.	DESCRIPTION
0001.620-800-46A	Panel HTS-103
0001.620-800-47B	Panel HTS-103
0001.620-800-48A	Panel HTS-103
0001.620-800-49A	Panel HTS-103
0001.620-800-51A	Panel HTS-107
0001.620-800-52B	Panel HTS-107
0001.620-800-53A	Panel HTS-107
0001.620-800-54C	Panel HTS-107
0001.620-800-59C	Design Data for Circuits in Panel 103
0001.620-800-69A	Design Data for Circuits in Panel 107
0001.620-800-63B	WSS Line Tracer Layout
0001.620-800-64A	WSS Line Tracer Layout
0001.620-800-65A	WSS Line Tracer Layout
0001.620-800-66A	WSS Line Tracer Layout
0001.620-800-67B	WSS Line Tracer Layout
0001.620-800-68B	WSS Line Tracer Layout

1.5 Applicable Regulatory Guides

REG. GUIDE	TITLE
1.21	Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants.
1.68	Initial Test Programs for Water-Cooled Reactor Power Plants.
1.97	Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident.
1.143	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plant.

1.6 Other Reference Material

EQUIPMENT	SWEC FILE NO/DOCUMENT NO.	DESCRIPTION
2WSS-Various	N2-OP-40	Operating Procedure - Liquid Waste System
2WSS-Various	N2-OP-41	Operating Procedure- Waste Solidification System
2LWS-Various	N2-POT-40	Preoperational Test Procedure- Liquid Waste System
2WSS-Various	N2-POT-41-2	Preoperational Test Procedure- Radwaste Backup Handling Facilities
2SWR-Various	INST 16.514-5000A	Seal Water System Instruction Manual
2WSS-Various	INST 16.520-5017A	IOM Manual Vol. 1-Installation Instr.
2WSS-Various	INST 16.520-5016A	IOM Manual Vol. 2-Operating Instr.
2WSS-Various	INST 16.520-5015A	IOM Manual Vol. 3-Extruder/Evaporator
2WSS-Various	INST 16.520-5014A	IOM Manual Vol. 4-Auxiliary Systems
2WSS-Various	INST 16.520-5013A	IOM Manual Vol. 5-Fill Station
2WSS-Various	INST 16.520-5012A	IOM Manual Vol. 6-Vent Hood, Capper, CCTV.
2WSS-Various	INST 16.520-5011A	IOM Manual Vol. 7-Main Control Panel.
2WSS-Various	INST 16.520-5010A	IOM Manual Vol. 8-Main Control Panel.
2WSS-Various	INST 16.520-5009A	IOM Manual Vol. 9-Instrumentation.
2WSS-Various	INST 16.520-5008A	IOM Manual Vol. 10-Instrumentation.
2WSS-Various	INST 16.520-5007A	IOM Manual Vol. 11-Instrumentation.
2WSS-Various	INST 16.520-5006A	IOM Manual Vol. 12-Instrumentation.
2WSS-Various	INST 16.520-5005A	IOM Manual Vol. 13-Pumps, Motors, Plug Valves
2WSS-Various	INST 16.520-5004A	IOM Manual Vol. 14-Valves, Appendices, Storage Procedure.
2WSS-B24	---	ASME Steam Tables
---	---	Topical Report, Volume Reduction System, Wermer & Pfleiderer Corp.

2.0 SPECIAL SAFETY PRECAUTIONS/LIMITATIONS

2.1 Adhere to all NMPC Accident Prevention Rules per operating manuals.

2.2 Positive-displacement pumps are used in the Waste Solidification System for handling solids. Since relief valves cannot be used, these pumps are protected only by high discharge pressure trips. It is essential to avoid a blocked discharge condition.

2.3 Viscosity of the solidifying medium, asphalt, increases rapidly with a drop in temperature. In order not to overload the transfer pumps, the asphalt and the asphalt handling equipment must be at operating temperature prior to operation.

2.4 Vent of Asphalt Storage Tank, 2WSS-TK2, is susceptible to clogging by asphalt vapor. Periodical checks must be made to prevent blockage of the vent.

2.5 Manual valves, 2WSS-V85/86/87/88/535/89, on the lube oil lines to the Extruder drive must be open for the Extruder to operate. These valves are to be locked open.

2.6 Great care must be exercised in operating the Radwaste Building Crane, especially in obstacle avoidance. These include the shield walls, CCTV cameras, Steam Dome Boilout Tank and fire water piping at the Liner Fill Station.

2.7 In handling the radwaste liners with the Liner Grab Mechanism:

-Pickup liners only at the lift ring.

-Proper engagement of the Grab Mechanism to the lift ring must be established to avoid dropping liner. There is no provision to upright the liner when dropped.

-Exercise great care in the placement of the liners in the storage area. There is only 3 in. spacing between adjacent liners. The liner must descend slowly to avoid excessive sway.

2.8 Stop all waste processing operation in the event of loss of cooling water.

2.9 Shut off power supply to major equipment during power outage.

2.10 Ensure the Extruder-Evaporator temperature profile is maintained during processing to guarantee product quality. There is no provision to reprocess solidified waste.

2.11 Do not operate Floor Drain Filter, 2LWS-FLT101, unless index inhibit function is executed, when processing from Waste Sludge Tank, 2WSS-TK8.

2.12 Check integrity of liners prior to solidification.

2.13 Ensure that sufficient water is present in the WSS Aux. Boiler before switching on the heating elements. Heating elements will be damaged otherwise.

3.0 SPECIAL TEST EQUIPMENT

TS#125

-Timer M&TE # 2330 #2 Cal. Date ~~NOT USED~~ 5/1/87 JM 1/19/87

-Flow Totalizer Cal. Procedure NOT USED

-Thermometer-M&TE # ________ Cal. Date NOT USED

-Graduated cylinders (100 ml and 250 ml)

-Pressure gauge (0-100 psig) M&TE # ________ Cal. Date NOT USED

3.0 (Cont'd)

-4-20 ma D.C. power supply M&TE # ______ Cal. Date NOT USED

-Compression gauge (0-100 psig) M&TE # 08507-16 Cal. Date 6/4/87

4.0 TEST PROCEDURE

INITIALS/DATE

4.1 Prerequisites

4.1.1 Tests

Verify that preliminary testing is complete on the following equipment:

WSS Auxiliary Boiler and Distribution System.

E6, E7 Waste Sludge Tank and Pumps.

Evaporator Bottoms Tank (2LWS-TK10) of the Liquid Waste System and the Waste Concentrate Pumps.

E4 Asphalt Tank and Pumps

E1, E3, E5 Extruder-Evaporator and the associated equipment including the Manifold Skid, Steam Dome Boilout Tank, Lube Oil Skid and Distillate Tank.

Hot Flush Water Subsystem.

Waste Sludge and Waste Concentrate Sampling Stations.

E2 Liner Fill Stations

Liner Monitoring, Cap and Swipe Station.

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4.1.2 Environmental Conditions

No special condition is required. Normal indoor temperature (65-104°F) is acceptable.

4.1.3 Related System Status

Verify that the following related systems are in operation and available to the Radwaste Building:

Electrical Supply

Instrument Air (IAS)

Service Air (SAS)

INITIALS/DATE

4.1.3 (Cont'd)

Service Water (SWS)

Makeup Water (MWS)

Condensate & Makeup (CNS)

Radwaste Ventilation (HVW)

Radwaste Equipment and Floor Drainage (DFW)

Radiation Monitoring System, in particular, 2WSS-RE207/208, on the waste feed lines.

Radwaste Bldg. Crane

Radwaste Bldg. Fire Detection Panel (2FPM-PNL131)

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4.1.4 System Status

4.1.4.1 The following boundary identification packages (BIPs) have been turned over in accordance with SAP-107 "System Turnover":

BIP	SYSTEM
041.001	Waste Solidification System
101.000	Radwaste Bldg. Crane and Associated Equipment
040.004	Caustic/Acid Addition Systems, Heat Tracing Panels
040.005	Radwaste Auxiliary Steam System
040.006	Radwaste Computer
040.007	Radwaste Seal Water System
004.002	Condensate & Makeup Supply to Radwaste Building
004.004	Condensate & Makeup Distribution in Radwaste Bldg
011.007	Service Water Distribution
010.B01	Acid Supply
015.001	Caustic Supply
014.002	Closed Loop Cooling Water Supply
016.001	Makeup Water System
019.004	Instrument Air Supply
019.005	Service Air Supply
048.001	Auxiliary Boiler and Contact Condenser (2ABM-TK1)
050.004	Domestic Water Supply to Radwaste Building
056.001	Radwaste Building Ventilation
065.001	Radwaste Building Floor Drain
065.002	Radwaste Building Equipment Drain
071.A10	600V Unit Substation 2NJS-US1
071.A11	600V MCC 2NHS-MCC001 and Heat Tracing Panels
071.B07	600V Distribution Panels for Pumps, SOV, AOVs.

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INITIALS/DATE

4.1.4.2 The deficiency list for the Waste Solidification System (Attachment 9.8) has been reviewed and none of the open items affect the validity of the test.

TS#7

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4.1.4.3 Verify that the system instrumentation listed on the installed instrumentation calibration list (Attachment 9.1) is within current calibration.

E1, E2, E3, E4, E5, E8, E9, E10, E11, TS#4

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4.1.4.4 Verify that the annunciators listed on the annunciator list (Attachment 9.4), as required for this test, are in service.

10/6/86

4.1.4.5 Verify that the computer points identified on the computer point list (Attachment 9.5), as required for this test, are in service.

10/6/86

4.1.4.6 Verify that any temporary conditions on the system as listed in the jumper/block log or the SSS equipment status log will not affect the validity of the test and attach a copy of the applicable sections of each to this procedure.

10/6/86

4.1.4.7 Verify that the initial valve lineup is in accordance with Attachment 9.2.

TS#2

10/5/86

4.1.4.8 Verify that the electrical lineup is in accordance with Attachment 9.3.

TS#3

10/5/86

4.1.5 Other Prerequisites

4.1.5.1 Notify Quality Assurance-Nuclear of the scheduled start of this test.

W.A. SCHOLTENS
Individual Notified

1400 / 10/6/86
Time/Date

4.1.5.2 Conduct a pretest briefing of the personnel involved in performance of the test.

10/6/86

4.1.5.3 Evaluate the need for any additional markups not already called for in this procedure. Note in the test summary if any markups were required. TS#5 (Test summary note number).

10/6/86

INITIALS/DATE

4.1.5.4 Attach a copy of all markups required to perform this procedure.

10/6/86

4.1.5.5 SSS review of plant status and permission to perform the test.

10/6/86

CAUTION: Notify manufacturer's representatives of the test schedule.

4.1.5.6 Verify that all materials for the preoperational test are on site.

TS#6

10/6/86

4.1.5.7 With the system in normal mode, walkdown the system and key a two-way radio in the vicinity of the system's electrical control components outside of the control room. Observe and record in the test summary the results of the walkdown and/or any equipment operation due to the RF signal. This keying should be done at what would be normal operating/maintenance positions and not by placing the radio directly on, or adjacent to the equipment or component.

TS#8

10/6/86

4.2 TEST ORGANIZATION

4.2.1 Subsystems to be Tested

The Waste Solidification System is composed of the subsystems listed below:

4.2.1.1 Auxiliary Steam Subsystem-which provides the heating requirements for the Extruder-Evaporation and the asphalt system.

4.2.1.2 Asphalt Subsystem-Asphalt is used as binder for the radwaste. The system stores, prepares and feeds asphalt to the Extruder-Evaporator.

4.2.1.3 Waste Sludge Subsystem-The Waste Sludge Tank, 2WSS-TK8, receives the following streams from the Liquid Waste Subsystem:

-Floor Drain Filter, 2LWS-FLT101, filter cake
-Radwaste Filter Backwash Tank, 2LWS-TK16, discharge
-Spent Resin Tank, 2LWS-TK7, discharge

4.2.1.4 Waste Concentrate Subsystem-which prepares evaporator bottom wastes from the Liquid Waste System and feeds the wastes to the Extruder-Evaporator.

4.2.1.5 Extruder-Evaporator Subsystem-The heated Extruder-Evaporator is used to mix the radioactive waste slurries with asphalt; to evaporate free water from the mixture and homogenously disperse the waste residues in the asphalt matrix; and to discharge the product into 50 cu ft. liners.

4.2.1.6 Fill Station-The Extruder discharges the radwaste-asphalt mixture into a liner placed on the Container Turntable.

4.2.1.7 Monitoring and Capping Station-The station consists of Capping Machine, a Swipe Drawer and a Remote Manipulator located in a shielded area and can be viewed through a shield window from the monitor station. It provides means of remotely capping the liners and swiping for surface contamination.

4.2.2 Organization of Tests

Tests are to be organized in accordance with the various subsystem. Each subsystem is to be tested separately to verify its operability, capacity, set points, interlocks, computer interface if any and performance.

If the tests have been performed in the preliminary tests, credit will be taken and these will not be repeated where possible.

Tests may be performed in sequences different from this procedure depending on the test conditions and provided the prerequisites for the subsystem being tested are met.

Finally, an integrated system performance test is carried out to demonstrate the capability of the system to produce solidified waste of acceptable quality at the rated throughput. The effects of operating parameters such as feed rate, radwaste-to-asphalt ratio, one pass versus three passes filling are examined to determine the optimum operating conditions.

4.3 VERIFICATION OF SYSTEM CONFIGURATION

NOTE: The Prestartup Verification should be completed prior to the operability and performance tests.

NOTE: The testing of the various subsystems can be conducted simultaneously or in any order provided that all of the prerequisites and test conditions are met.

NOTE: Controls of the various systems are from control panels at the following locations:

Control Panel	Description	Location
2WSS-IPNL210	Waste Solidification Control Panel	Radwaste Control Room
2LWS-IPNL400	LWS Computer Operator Console	Radwaste Control Room
2LWS-IPNL333	Floor Drain Filter Control Panel	Radwaste Control Room
2LWS-PNL349	Chemical Addition Panel	Radwaste Building El. 279'
2SWR-IPNL100	Seal Water Control Panel	Radwaste Building El. 289'
2WSS-IPNL221	Capper Control Panel	Radwaste Building El. 279'

RECORD COPY

INITIALS/DATE

NOTE: Waste Feeds Sampling Valves are controlled from the following:

Control Panel	Description	Location
2WSS-LCS402	Waste Sludge Sampling Station Control Station	Radwaste Building El. 279'
2WSS-LCS403	Waste Concentrate Sampling Control Station	Radwaste Building El. 279'

TS#9 4.3.1 Electric Heat Tracing

4.3.1.1 Verify that the primary heat tracing Panel 2HTS-103, is energized and the redundant heat tracing panel 2HTS-107 is on standby. Record the temperature of the waste concentrate lines and equipment on Data Sheet 5.1.

JM 10/7/86
JM 10/7/86

4.3.2 Pump Seal Water

4.3.2.1 Verify seal water is available to the following:

4.3.2.1.1 2SWR-RAK48A (2WSS-P7A) JM 10/7/86

4.3.2.1.2 2SWR-RAK48B (2WSS-P7B) JM 10/7/86

4.3.2.1.3 2SWR-RAK49A (2WSS-P12A) JM 10/7/86

4.3.2.1.4 2SWR-RAK49B (2WSS-P12B) JM 10/7/86

4.3.2.1.5 2SWR-RAK208 (2WSS-P6) JM 10/7/86

4.3.2.1.6 2SWR-RAK-209 (2WSS-P11) JM 10/7/86

4.3.2.2 Record data on Data Sheet 5.2 JM 10/7/86

4.3.3 Closed Loop Cooling Water

4.3.3.1 Verify that cooling water (CCS) is circulating through the following equipment:

Condensate Cooler, 2WSS-E75 JM 10/7/86
Manifold Skid, 2WSS-SKD38 JM 10/7/86
Distillate Cooler, 2WSS-E20 JM 10/7/86
Lube Oil Cooler, 2WSS-E16 JM 10/7/86

INITIALS/DATE

JM 11/86

4.3.4 Auxiliary Steam

NOTE: REFER TO FRF N2-POT-41-1-1

4.3.4.1 Sample feed water in Condensate Return Tank, 2WSS-TK22, and forward it to the Chemistry Department for analysis and recommendation for chemical treatment. After startup sample the boiler water via the boiler sample cooler.

TS#11

_____/_____

4.3.4.2 Verify that Makeup Water to Condensate Return Tank Block Valve, 2WSS-V616, is open and that the Condensate Return Tank is filled to its normal level visible from the level gauge, 2WSS-LG230.

_____/_____

4.3.4.2 Fill chemical feed tank with water conditioning chemical per recommendation from the Chemistry Department and add water by opening 2WSS-V184, if required:
Chemical used ______________ Concentration ____wt%
Tank Level, Dilution Water only ______________
Tank Level, Chemical & Dilution Water ______________.
Final Concentration ______________wt%.

_____/_____

4.3.4.4 Verify Boiler Vent Valve, 2WSS-V158, shut. _____/_____

4.3.4.5 Close the local disconnect then depress the "start" pushbutton.

_____/_____

4.3.4.6 Place Agitator switch, 2WSS-MIX49, "on". _____/_____

4.3.4.7 Place the Chemical Feed Pump 2WSS-P43, switch in the auto position.

_____/_____

4.3.4.8 Verify the Boiler Feed Pump starts and cycles to maintain water level in Boiler as visible from the level gauge, 2WSS-LG221. Verify that Boiler level is maintained in its normal operating range.

_____/_____

4.3.4.9 Energize the Boiler heating elements by placing the ten heater control switches in "auto".

_____/_____

4.3.4.10 Verify that Boiler pressure indicated by 2WSS-PI224 increases to approx. the set pressure of PC225 and stabilizes. Operating pressure should be about 230 psig.

_____/_____

4.3.4.11 Verify that the steam header valve to Manifold Skid, 2WSS-V706, and steam header valve to asphalt subsystem, 2WSS-V697 are shut.

_____/_____

RECORD COPY

INITIALS/DATE

4.3.4.12 Open boiler steam isolation valve 2WSS-V441, then "slowly" open the stop valve 2WSS-V442. ______/______

4.3.4.13 Verify that main steam pressure indicated on control panel 2WSS-IPNL210, is about 230 psig. ______/______

4.3.5 Asphalt Storage Tank

T3#12

NOTE: The following steps can be deleted if tank is already filled and tested during Preliminary Test.

NOTE: Use only asphalt that meets the requirements of ASTM D-312-71, Type 111, or vendor approved equivalent.

4.3.5.1 Verify that the asphalt tank temperature is at least 225 F as indicated on 2WSS-TI114 prior to loading asphalt. ______/______

4.3.5.2 Attach asphalt truck hose at fill station and open fill valve, 2WSS-V2. Start timer. ______/______

4.3.5.3 Pump up to 9000 gallons of asphalt. ______/______

4.3.5.4 Record the following:

a) Truck discharge pressure _____psig. ______/______
b) Pressure indicated by PI113 _______psig. ______/______
c) Fill Strainer differential pressure ______psig. ______/______

4.3.5.5 Monitor tank level during pumping by following tank level indicator LIT115X/Y either at the tank or at the fill connection outside building. ______/______

4.3.5.6 When asphalt transfer is completed, stop truck pump, close Fill Valve 2WSS-V2. Disconnect fill hose and recap fill connection.
Record time required to fill tank __________minutes
Record tank level ____________________%. ______/______

4.3.5.7 Verify that the Asphalt Tank temperature is approximately 325°F.
Tank temperature _____________°F. ______/______

INITIALS/DATE

4.3.5.8 Verify that the asphalt subsystem steam tracing is operational and maintaining the line temperature at about 325°F. Record temperature readings in Section 5.3.

____/____

4.3.5.9 Manually open the Suction and Discharge Valves 2WSS-V5 and 2WSS-V6 for the Asphalt Recirculation Pump 2WSS-P3A.

____/____

4.3.5.10 On WSS Panel, 2WSS-IPNL210, start pump 2WSS-P3A. Red indication.

____/____

4.3.5.11 Immediately after initiating recirculation flow, manually vent recirculation piping by opening 2WSS-V377 to remove air, then close it.

____/____

NOTE: If the asphalt strainer becomes clogged as indicated by annunciator window "Asphalt Recirc. Strainer Pressure Hi", the operator must manually switch to the standby strainer. Also verify high differential pressure reading on 2WSS-PDIS116.

4.3.6 Distillate Skid

4.3.6.1 Verify that the Roughing and Polishing Filters have been charged with the Vendor's recommended filter media.

Roughing Filter Medium IMBIBER BEADS
Polishing Filter Medium GRANULATED CHARCOAL

/ 10/7/86

4.3.6.2 Verify the following on the Distillate Collection Skid:

Device	Control Mode
2WSS-FIC180	auto
2WSS-LIC179	auto

/ 10/7/86

4.3.6.3 Open the following Filter Vent Valves:

2WSS-V128
2WSS-V129
2WSS-V506
2WSS-V507
2WSS-V710
2WSS-V711

/ 10/7/86

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INITIALS/DATE

4.3.6.4 Open the following Flush Water Valves to the Collector Tank and Roughing Filters:

2WSS-V136
2WSS-V137
2WSS-V138

JM / 10/7/86

4.3.6.5 Close 2WSS-V138 when tank level reaches 18 in. as indicated on 2WSS-LIC179.

JM / 10/7/86

4.3.6.6 Close each Vent Valve as water begins to flow from the vent.

JM / 10/7/86

JM
9/11/86
TS#13

4.3.7 Lube Oil Skid

NOTE: REFER TO FRF N2-POT-41-1-1

4.3.7.1 Verify that filter element is installed in lube oil filter.

/

4.3.7.2 Verify that the Lube Oil Tank, 2WSS-TK14, oil level is between 6 1/2" and 10" from the top of tank as indicated by 2WSS-LG176.

/

4.3.7.3 On panel 2WSS-IPNL210, verify that Temperature Controller 2WSS-TIC174 is set at 122°F and in "auto".

/

4.3.7.4 Close Lube Oil Supply Valve 2WSS-V85, then open Bypass Valve, 2WSS-V90.

/

4.3.7.5 Start one Lube Oil Pump (2WSS-P13A or B) /

4.3.7.6 Energize Lube Oil Heaters 2WSS-H34A&B. /

4.3.7.7 Open Filter Vent Valve 2WSS-V93 until no bubble appears in 2WSS-FG164, then close 2WSS-V93.

/

INITIALS/DATE

4.3.7.8 Continue to recirculate lube oil until the temperature reaches 110°F, then open 2WSS-V85 and close 2WSS-V90 to allow oil flow to the gear box.

_____/_____

4.3.7.9 Verify or adjust lube oil flow rates as follows:

Destination	Flow Indication	Flow Rate (Approx.)
To Support Bearing	2WSS-FE21A	0.035 gpm
To Support Bearing	2WSS-FE21B	0.035 gpm
To Support Gear Box	2WSS-FI175	1.3 gpm
Recirculating Flow	2WSS-FI167	13.2 gpm

/ 10/15/86

4.3.7.10 Verify that differential pressure across the Lube Oil Filter as indicated by 2WSS-PDIS170 is less than 20 psid. If not, filter element should be changed. Record Pressure Drop 4 psid.

/ 10/15/86

4.3.7.12 Verify that the following valves are open to ensure uninterrupted supply of lube oil to the bearings and gear box:

2WSS-V85
2WSS-V86
2WSS-V87
2WSS-V88
2WSS-V89
2WSS-V535

/ 10/15/86

4.3.8 Liner Fill Station

4.3.8.1 Load about 20 drip pans on the drip pan stack magazine.

/ 10/15/86

4.3.8.2 Energize Liner Turntable. / 10/15/86

4.3.8.3 Verify number of drip pans on the drip pan counter 2WSS-2QI191.

E15

_____/_____

4.3.8.4 Verify that "drip pan available" white indicating light is lit.

E16

_____/_____

4.3.8.5 Verify that "pan in place" white indicating light is lit.

/ 10/15/86

INITIALS/DATE

S#28 4.3.9 Capping Station

4.3.9.1 Place about 5 liner caps in the cap stack. JM / 10/14/86

4.3.9.2 Energize Capper Panel 2WSS-IPNL221. JM / 10/14/86

4.3.9.3 Verify that Capper jib lift switch is in "left (A) position". JM / 10/14/86

4.4 TEST PROCEDURE FOR THE WSS AUXILIARY STEAM SUBSYSTEM

4.4.1 WSS Auxiliary Boiler

JM 9/11/86 TS#16

4.4.1.1 Steam Rate Verification

NOTE: REFER TO FRF N2-POT-41-1-1

4.4.1.1.1 Verify that the steam relief header and the Contact Condenser, 2ABM-TK1 are operational. ________ / ________

4.4.1.1.2 Verify that Boiler pressure is at operating pressure via 2WSS-PI303.
Record pressure ________ psig. ________ / ________

4.4.1.1.3 Verify that the Condensate Return Tank, 2WSS-TK22, is full. Shutoff makeup valve 2WSS-V616. ________ / ________

4.4.1.1.4 Lift the steam relief valve, 2WSS-SV240, to allow steam to be released to the Contact Condenser. ________ / ________

4.4.1.1.5 Allow water level in the Boiler to fall to the makeup level. Verify that Boiler Feed Pump, 2WSS-P23A starts at approximately 41". Record level in Boiler from 2WSS-LG221. ________ ________ / ________

4.4.1.1.6 Verify that the Boiler is filled and the Boiler Feed Pump stops at approximately 47". Record level in Boiler ________ and from 2WSS-LG221 in Condensate Return Tanks ________ from 2WSS-LG230. ________ / ________

4.4.1.1.7 Calculate the amount of water used per makeup from the Condensate Return Tank, using table given in Data Sheet 5.4. ________ / ________

4.4.1.1.8 Open the makeup water block valve, 2WSS-V616, and allow the system operation to stabilize. Adjust the steam relief rate such that the boiler pressure will not fall below 230 psig. Record the boiler pressure ________. ________ / ________

INITIALS/DATE

4.4.1.1.9 Record the time duration between the end of a makeup cycle to the beginning of the 5th makeup cycle. Record the readings and compute the steam rate in Data Sheet 5.4.

______/______

4.4.1.1.10 Close the relief valve, 2WSS-SV240. ______/______

QA
WITNESS
WN 10-28-86
INITIALS/DATE

4.4.1.2 Verification of Interlocks

4.4.1.2.1 Activate Steam Pressure High/High High pressure 2WSS-PS223 by lifting wire No. 9 inside boiler control panel and verify:

TS#18
TS#36

Alarm "Auxiliary Boiler Malfunction" on panel 2WSS-IPNL210.

Message "WSSPC005 Auxiliary Boiler B24 Pressure" on LWS Alarm CRT.

Auxiliary Boiler heating elements step control resets to no-load.

Red indication at Auxiliary Boiler Control panel. JM / 10/28/86

4.4.1.2.2 Re-land Wire No. 9 in control panel and acknowledge alarm.

JM / 10/28/86

E#22

4.4.1.2.3 Adjust boiler pressure setpoint controller 2WSS-PC225 in approx. 10 psi increments between 150 and 260 psi and verify that the operation of the pressure controller is acceptable. Record data in Data Sheet 5.5.

JM / 10/28/86

4.4.1.2.3.1 Verify the following with boiler pressure at 150 psig:

TS#36

Alarms "Auxiliary Boiler Malfunction" and "Auxiliary Boiler Steam Pressure Low" on panel 2WSS-IPNL210. JM / 10/28/86

TS#121

Message "WSSPC005 Aux. Boiler B24 Pressure Low" on LWS Alarm CRT. Acknowledge alarm

______/______

4.4.1.2.4 Restore controller setting to 230 psig. JM / 10/28/86

4.4.1.2.5 Test Chemical Feed Tank, 2WSS-TK44, low level by draining the tank. Verify:

Alarm "Auxiliary Boiler Malfunction" on panel 2WSS-IPNL210.

JM / 10/28/86

Agitator 2WSS-MIX49 stops and cannot be started. JM / 10/28/86

Chemical Feed Pump 2WSS-P43 stops and cannot be started. JM / 10/28/86

INITIALS/DATE

4.4.1.2.6 Refill TK44 and acknowledge alarm. JM / 10/28/86

4.4.1.3 Blowdown

4.4.1.3.1 Open quench water supply valve 2CNS-V508. JM / 10/13/86

4.4.1.3.2 Open 2WSS-V181 to verify that excess water overflows to drain from the Blowdown Separator. Shut 2WSS-V181 when separator is full. JM / 10/13/86

4.4.1.3.3 Open the Boiler Blowdown Valves 2WSS-V168 and V169 for 20 seconds, then close again. JM / 10/13/86

4.4.1.3.4 Verify that the water displaced from the Separator does not exceed 150°F as indicated on 2WSS-T1227.

Temperature 148 °F JM / 10/13/86

4.4.2 Steam Distribution

4.4.2.1 Asphalt Storage and Recirculation Subsystem

4.4.2.1.1 Open Supply Steam Header Valve, V697, at Aux Boiler. Verify pressure of steam supply to asphalt subsystem is about 230 psig as indicated by 2WSS-PI330. Record pressure 230 psig. JM / 10/13/86

4.4.2.1.2 Open Steam Inlet Valve, V541. Verify that steam pressure after Regulating Valve 2WSS-PCV247 is about 150 psig as indicated by 2WSS-PI112.

Record pressure 160 psig. JM / 10/13/86

4.4.2.1.3 Verify temperature of asphalt in Asphalt Tank is about 325°F as indicated by TI359.

Temperature 328 °F JM / 10/13/86

INITIALS/DATE

4.4.2.1.4 Verify that all the steam tracers are operational and line temperature is about 325°F. Record mean line temperature on Data Sheet 5.3.

E14

10/13/86

4.4.2.2 Manifold Skid and Extruder-Evaporator

4.4.2.2.1 Record pressure of steam supply of about 200 psig to Manifold Skid as indicated by 2WSS-PI157. Record pressure 225 psig.

10/13/86

4.4.3 Condensate Collection

4.4.3.1 Steam Traps

Verify that the steam traps and drain traps operate properly and are periodically discharging condensate only to the condensate collection header. The traps are located at:

a) The Manifold Skid, 2WSS-SKD38.
b) Steam jackets or Heaters for Asphalt Tank, Pumps, Strainers and Flow meter.
c) Steam pressure relief valves discharge lines (drain traps).
d) Steam tracers.

NOTE: A properly operating trap will:

- collect the condensate in the cooling leg and exhibit a lower surface temperature than the upstream steam line.
- opens and closes periodically to discharge condensate.
- discharge condensate and the associated flash steam only. There should not be a continuous flow of steam.

Record the verification of trap operation in Data Sheet 5.7.

10/14/86

4.4.3.2 Condensate Cooler and Condensate Collection Tank

NOTE: A cooler, 2WSS-E75, has been provided to subcool the condensate so that the Condensate Return Tank, 2WSS-TK22, will not be pressurized and that flash steam will not escape to the atmosphere.

INITIALS/DATE

4.4.3.2.1 Verify the cooling water flow to the cooler, increase if necessary by adjusting the manual control valve. Verify that the condensate temperature in the Condensate Return Tank as indicated by 2WSS-TI232, remains below 180°F. Record the temperature 170 °F. /10/13/86

4.4.4 The ASR Auxiliary Steam Supply

NOTE: ASR Auxiliary Steam is provided to the Waste Solidification System for making hot flush water and as an emergency steam supply to maintain the Asphalt Subsystem in hot standby in the event of failure of the WSS Auxiliary Steam.

TS#115

4.4.4.1 Hot Flush Water Ejectors

4.4.4.1.1 Hot Flush Water to Waste Concentrate Metering Pumps:

4.4.4.1.1.1 With all the destination valves on the flush water header closed set Flush Water Timer, 2WSS-KC304, to 5 minutes and verify that Flush Water Valve, 2WSS-SOV304, is energized and open. /12/22/86

E43

4.4.4.1.1.2 Verify that Flush Water Valve, 2WSS-SOV304 is de-energized and closed after about 2 seconds due to tripping of low flow switch, 2WSS-FSL304. ______/______

4.4.4.1.1.3 Verify alarm "Hot Flush Water to Waste Conc. P7A & B Malfunction" on panel 2WSS-IPNL210. Acknowledge alarm. /12/22/86

4.4.4.1.1.4 Open Flush Valve 2WSS-HV364 and reset timer, 2WSS-KC304, to 5 minutes. /12/22/86

4.4.4.1.1.5 Verify that:

TS#115

Flush Water Valve, 2WSS-SOV304 opens.
Flush Water Temperature Control Valve, 2WSS-TCV395, opens to admit steam to the Ejector 2WSS-J74.
Flush Water Temperature Indicator, 2WSS-TI304, indicates flush water temperature of about 125°F.

/12/22/86

4.4.4.1.1.6 Adjust the flow rate via the manual flow control valve, 2WSS-V426. Verify that Temperature Control Valve, 2WSS-TCV395, modulates the steam flow and maintains the flush water temperature at about 125°F. /12/22/86

INITIALS/DATE

4.4.4.1.1.7 Close steam supply valve, 2ASR-V55. Verify that:

E44

Temperature of the flush water drops. _______/_______

Flush Water Valve, 2WSS-SOV304 closes after 5 sec. time delay. Alarm "Hot Flush Water to Waste Conc P7A&B Malfunction". Acknowledge alarm.

_______/_______

4.4.4.1.1.8 Open steam valve 2ASR-V55, reset Flush Water Timer, 2WSS-KC304, and re-establish flow.

E44

_______/_______

4.4.4.1.1.9 Activate high temperature switch, 2WSS-TSH304 by lifting wire off terminal 100321 of Ch. 3 TB-1 of panel 2WSS-IPNL210. Verify that:

Flush Water Valve, 2WSS-SOV304, closes after 5 sec. time delay.

/ 12/22/86

Alarm "Hot Flush Water To Waste Conc P7A&B Malfunction". Acknowledge alarm.

/ 12/22/86

4.4.4.1.1.10 Reterminate wire at terminal 100321.

/ 12/22/86

4.4.4.1.2 Hot Flush Water to Waste Concentrate Recirculation Loop:

4.4.4.1.2.1 Verify that the destination valve, 2WSS-HV350, on the flush water header is closed, set Flush Water Timer, 2WSS-KC305, to 5 minutes and verify that Flush Water Valve, 2WSS-SOV305, is energized and open.

/ 12/22/86

4.4.4.1.2.2 Verify that Flush Water Valve, 2WSS-SOV305, is de-energized and closed after 2 seconds due to tripping of low flow switch, 2WSS-FSL305.

E43

_______/_______

4.4.4.1.2.3 Verify alarm "Hot Flush Water to Waste Concentrate Recirculation Loop Piping Malfunction" on panel 2WSS-IPNL210. Acknowledge alarm.

/ 12/22/86

4.4.4.1.2.4 Open 2WSS-HV350 and 2WSS-HV131 and reset timer, 2WSS-KC305 to 5 minutes.

/ 12/22/86

INITIALS/DATE

4.4.4.1.2.5 Verify that:

Flush Water Valve, 2WSS-SOV305 opens. JM / 12/22/86

Flush Water Temperature Control Valve, 2WSS-TCV397, opens to admit steam to the Ejector, 2WSS-J73. JM / 12/22/86

Flush Water Temperature Indicator, 2WSS-TI305, indicates flush water temperature of about 125°F.

TS#115 JM / 12/22/86

4.4.4.1.2.6 Adjust the flow rate via the manual flow control valve, 2WSS-V432. Verify that Temperature Control Valve, 2WSS-TCV397, modulates the steam flow and maintains the flush water temperature at about 125°F.

JM / 12/22/86

4.4.4.1.2.7 Close steam supply valve, 2ASR-V51. Verify that:

E44

Temperature of the flush water drops. ________ / ________

Flush Water Valve, 2WSS-SOV305, closes after 5 second time delay.

________ / ________

Alarm "Hot Flush Water to Waste Concentrate Recirculation Loop Piping Malfunction".

Acknowledge alarm. ________ / ________

4.4.4.1.2.8 Open steam valve, 2ASR-V51, reset Flush Water Timer, 2WSS-KC305, and re-establish flow.

E44

________ / ________

4.4.4.1.2.9 Activate High Temperature Switch, 2WSS-TSH305 by placing jumper across terminals L15 and 10324 of Ch. 3 TB-1 in panel 2WSS-IPNL210. Verify that:

Flush Water Valve, 2WSS-SOV305, closes after 5 sec. time delay.

JM / 12/22/86

Alarm "Hot Flush Water to Waste Concentrate Recirculation Loop Malfunction".
Remove jumper.
Acknowledge alarm. JM / 12/22/86

INITIALS/DATE

TS#17

4.4.4.2 Emergency Supply to the Asphalt Subsystem Steam Header

NOTE: This section need not be performed if heatup time has already been determined.

4.4.4.2.1 To line up .ASR steam supply to the asphalt subsystem: Close double Steam Header Stop Valves, 2WSS-V441/V442 to isolate WSS Boiler, 2WSS-B24.

4.4.4.2.2 Close Inlet Valve, 2WSS-V446, to Condensate Return Tank, 2WSS-TK22.

4.4.4.2.3 Relocate removable pipe spool from steam header and reinstall it on the ASR supply header between Stop Valves, 2WSS-V443/444.

4.4.4.2.4 Relocate removable pipe spool from condensate header at inlet to Condensate Return Tank to the bypass line.

4.4.4.2.5 Open Stop Valves 2WSS-V443/444/448 so that ASR steam is fed to the steam headers. Condensate after cooling by the Condensate Cooler is bypassed to the Blowdown Separator. ________ / ________

4.4.4.2.6 Verify that:

Alarm "Asphalt Steam Inlet Pressure Low", is activated. Acknowledge alarm.

Record steam pressure at 2WSS-PI330 ________ psig, and 2WSS-PI112 ________ psig.

Condensate is drained to the Blowdown Separator, 2WSS-D45, where it is quenched if necessary. Record temperature of discharge via 2WSS-TI227. ______ °F.

________ / ________

4.4.4.2.6.1 Leave the steam system as is for the determination of heatup time for the asphalt subsystem, Section 4.5.2 and record the tank temperature drop with time in Data Sheet 5.8.

________ / ________

TS#15

4.5 TEST PROCEDURE FOR THE ASPHALT SUBSYSTEM

4.5.1 Recirculation Pump Operation

4.5.1.1 Asphalt Recirculation Pump 2WSS-P3A

4.5.1.1.1 Verify that flow path via Strainer, 2WSS-STR4A, is established.
Start Asphalt Recirc Pump, 2WSS-P3A. Red indication.
Record suction pressure from 2WSS-PI19A. __0__ psig.
Record discharge pressure from 2WSS-PI3A. __55__ psig.
Verify computer point 2WSSBC001, ASPHALT RECIRC. P3A STAT "RUN"

BAW 10/8/86

INITIALS/DATE

4.5.1.1.2 Activate Asphalt Tank level switch, 2WSS-LSL115, by placing jumper across contact R1 of LS115 in panel 2WSS-IPNL210.

Verify alarm "Asphalt Tank 2 Level Lo" on panel 2WSS-IPNL210.

BAW 10/18/86

Verify message "WSSLC008 Asphalt TK2 Level Low" on LWS Alarm CRT.

BAW 10/18/86

Verify Asphalt Recirc. Pump 2WSS-P3A, stops. Green indication.

BAW 10/18/86

Verify Computer point 2WSSBC001, ASPHALT RECIRC P3A STAT "STOP".

BAW 10/18/86

Remove jumper.

Acknowledge alarm/alarm clears. BAW 10/18/86

~~4.5.1.1.3 Restart Asphalt Recirc. Pump 2WSS-P3A. Red indication.~~

~~Activate pump suction line pressure switch, 2WSS-PS19A, by placing jumper across terminals L14 and 10165 of Ch. 2, TB-1 of 2WSS-IPNL210.~~

________/________

~~Verify alarm "Asphalt Recirc Pump 2WSS-P3A Suction Pressure Lo", on panel 2WSS-IPNL210.~~

________/________

~~Verify message "WSSPG006 Asphalt Pump, P3A Suction Press Low" on Alarm CRT.~~

________/________

~~Verify that Asphalt Recirc Pump, 2WSS-P3A, stops. Green indication.~~

________/________

~~Remove jumper.~~ ________/________

~~Acknowledge alarm/alarm clears.~~ ________/________

→ STEP DELETED, SEE FRF N2-POT-41-1-1

JM 9/11/86

INITIALS/DATE

4.5.1.1.4 Restart Asphalt Recirc Pump, 2WSS-P3A. Red indication. Activate pump discharge line pressure switch, 2WSS-PS3A, by placing jumper across terminals L14 and 10166 of Ch. 2, TB-1 of 2WSS-IPNL210.

Verify alarm "Asphalt Recirc Pump 2WSS-P3A Discharge Pressure" on panel 2WSS-IPNL210.

BAW 10 18/86

Verify message "WSSPC007 Asphalt Pump P3A Disch. Press High" on LWS Alarm CRT

BAW 10 18/86

Verify that Asphalt Recirc Pump 2WSS-P3A, stops. Green indication.

Remove jumper.

Acknowledge alarm/alarm clears. BAW 10 18/86

4.5.1.1.5 Restart Asphalt Recirc pump, 2WSS-P3A. Red indication. At fire protection panel, 2FPM-PNL131, place jumper across terminals 419 and 420 of circuit 2WSS-N13 to simulate output from fire detectors 2FPW-PS820, 822, 823 and 825 at Asphalt Pumps Room. Verify Asphalt Recirc Pump, 2WSS-P3A, stops. Green indication. Remove jumper.

BAW 10 18/86

4.5.1.2 Asphalt Recirculating Pump 2WSS-P3B:

4.5.1.2.1 Verify that flow path via strainer, 2WSS-STR4B, is established.
Start Asphalt Recirc Pump, 2WSS-P3B. Red indication.
Record suction pressure via 2WSS-PI19B. 0 psig.
Record discharge pressure via 2WSS-PI3B. 35 psig.
Verify computer point 2WSSBC002, ASPHALT RECIRC P3B STAT "RUN".

BAW 10 18/86

4.5.1.2.2 Activate Asphalt Tank level switch, 2WSS-LSL115, by placing jumper across Contact R1 of LS115 in panel 2WSS-IPNL210.

Verify alarm "Asphalt Tank 2 Level Lo" on panel 2WSS-IPNL210.

BAW 10 18/86

Verify message "WSSLC008 Asphalt TK2 Level Low" on LWS Alarm CRT.

BAW 10 18/86

Verify Asphalt Recirc Pump 2WSS-P3B, stops. Green indication.

BAW 10 18/86

Verify computer point 2WSSBC002, ASPHALT RECIRC P3B STAT "STOP".

BAW 10 18/86

Remove jumper.

Acknowledge alarm/alarm clears. BAW 10 18/86

INITIALS/DATE

~~4.5.1.2.3 Restart Asphalt Recirc Pump 2WSS-P3B. Red indication.~~

~~Activate pump suction line pressure switch, 2WSS-PS19B, by placing jumper across terminals L14 and 10172 of Ch. 2, TB-1 in panel 2WSS-IPNL210.~~

~~Verify alarm "Asphalt Recirc Pump 2WSS-P3B Suction Pressure Lo" on panel 2WSS-IPNL210.~~

______/______

~~Verify message "WSSPC008 Asphalt Pump P3B Suction Press Low" on LWS Alarm CRT.~~

______/______

~~Verify that Asphalt Recirculation Pump, 2WSS-P3B, stops. Green indication.~~

______/______

~~Remove jumper.~~

~~Acknowledge alarm/alarm clears.~~ ______/______

STEP DELETED
SEE FRF N2-POT-41-1-1
9/11/86

4.5.1.2.4 Restart Asphalt Recirc Pump, 2WSS-P3B. Red indication. Activate pressure switch, 2WSS-PS3B, by placing jumper across terminals L14 and 10173 of Ch. 2, TB-1 in panel 2WSS-IPNL210.

Verify alarm "Asphalt Recirc Pump 2WSS-P3B Discharge Pressure" on panel 2WSS-IPNL210.

BAW 10 18/86

Verify that Asphalt Recirculation Pump 2WSS-P3B, stops. Green indication.

BAW 10 18/86

Remove jumper.

Acknowledge alarm/alarm clears. BAW 10 18/86

4.5.1.2.5 Restart Asphalt Recirculation Pump, 2WSS-P3B. Red indication. At fire protection panel, 2FPM-PNL131, place jumper across terminals 419 and 420 of circuit 2WSS-N13 to simulate output from fire detectors 2FPW-PS820, 822, 823 and 825 at Asphalt Pumps Room 4.5.2.2.10. Verify Asphalt Recirc Pump, 2WSS-P3B, stops. Green indication. Remove jumper.

BAW 10 18/86

4.5.2 Heatup Time

TS#17

NOTE: From Section 4.4.4.2, the Asphalt Tank is heated only by ASR steam which has a lower temperature than the normal operating temperature of 325°F.

The following steps can be deleted if heatup time is already determined in the Preliminary Test.

INITIALS/DATE

4.5.2.1 After the tank temperature has stabilized, switch the heating back to WSS Aux. Steam from ASR Steam as follows:

Close ASR Steam Supply Valves, 2WSS-V443/444. ________/________

Relocate pipe spool from ASR supply header to WSS Boiler outlet.

________/________

Close condensate return header valves 2WSS-V445/448.

________/________

Relocate pipe spool from Condensate Return Tank bypass to Condensate Return Tank inlet.

________/________

Open steam header Stop Valves 2WSS-V441/442 slowly and one at a time.

________/________

Verify that the steam header is pressurized and the steam temperature increases.

________/________

Open condensate header valve, 2WSS-V445/446 to admit condensate to Condensate Return Tank, 2WSS-TK22.

________/________

4.5.2.2 Record the temperature change as it is heated up in Data Sheet 5.8. The time required to reach operating temperature of 325°F is ________ hrs.

________/________

4.6 TEST PROCEDURE FOR THE WASTE SLUDGE SUBSYSTEM

4.6.1 Waste Influent Control

NOTE: The Waste Sludge Tank, 2WSS-TK8, receives input from:

a) Floor Drain Filter, 2WSS-FLT101, via the chute.

b) Spent Resin Tank, 2LWS-TK7, via Spent Resin Pump, 2LWS-P7, and 2WSS-HV117.

c) Radwaste Filter Backwash Tank, 2WSS-TK16, via Radwaste Filter Backwash Pumps, 2LWS-P16A/B, and 2WSS-HV118.

Flow meter 2WSS-FE100 measures flow from b and c.

INITIALS/DATE

4.6.1.1 Divert Waste Sludge Tank Bottom Valve, 2WSS-HV128, the "UP FLUSH" position.

TS#35
TS#37

JM 10/28/86
JM / 10/27/86

4.6.1.2 Reset Flush Water Batch Meter, 2WSS-FQIS104, for 1000 gal. Open Valve, 2WSS-HV121. Open Flush Water Valves, 2WSS HV119/124/125/127, to fill tank. Red indication.

E18

JM / 10/28/86

4.6.1.3 When the level reaches 20%, start the Waste Sludge Tank Agitator, 2WSS-MIX9. Red indication. Verify computer point 2WSSBC004, W. Sludge Tk MIX 9 Status "RUN".

E18

JM / 10/28/86

4.6.1.4 When tank level reaches about 85%, verify that:

Alarm "Waste Sludge Tank Level High" on panel 2WSS-IPNL210. Message "WSSLC001 Waste Sludge TK8 Level High" on LWS Alarm CRT. Floor drain Filter, 2LWS-FLT101, indexing is inhibited.

E18
TS#37

Acknowledge alarm.

JM / 10/28/86

4.6.1.5 Close Flush Water Valves, 2WSS-HV119/124/125/127. Green indication.

E18

Close 2WSS-HV121. Green indication.

JM / 10/28/86

4.6.1.6 Open 2WSS-HV117. Reset Batch Meter, 2WSS-FQIS100 for 50 gal., then start Spent Resin Pump 2LWS-P7 discharging fluid into Waste Sludge Tank, 2WSS-TK8. Red indication. Verify computer point 2WSSZC001, SP. Resin TK7 D 2WSS-HV117 "OPEN".

JM 10/28/86
JM / 10/27/86

4.6.1.7 Verify when the set point of 2WSS-FQIS100 is reached, the Spent Resin Pump 2LWS-P7 trips. Green indication.

TS#35
TS#122

/

4.6.1.8 Reset 2WSS-FQIS100 to 300 gallons and start Spent Resin Pump. When the tank level reaches about 93%, verify that:

E18
TS#37

Alarm "Waste Sludge Tank Level Hi-Hi" on panel 2WSS-IPNL210.

JM / 10/28/86

Message "WSSLC002 Waste Sludge TK 8 Level High/High" on LWS Alarm CRT.

JM / 10/28/86

Influent Valve, 2WSS-HV117, closes. Green indication.

JM / 10/28/86

INITIALS/DATE

Computer point 2WSSZC001, 2WSS-HV117 status "CLOSE".

Spent Resin Pump, 2LWS-P7 trips.

10/28/86

4.6.1.9 Acknowledge alarm.

Verify Flush Water Valves, 2WSS-HV119/124/125/127, cannot open. Green indication.

10/28/86

4.6.1.10 Lower tank level to about 85% (below the high-high level trip) by opening drain valve, 2WSS-V311, at tank bottom discharge line. Close drain valve. Reset Batch Meter 2WSS-FQIS100, for 50 gal.

E19

10/28/86

4.6.1.11 Open Influent Valve, 2WSS-HV118. Red indication. Then start Radwaste Filter Backwash Pump, 2LWS-P16A. Red indication. Computer point 2WSSZC003, 2WSS-HV118 status "OPEN".

10/28/86

4.6.1.12 Verify that when the set point of 2WSS-FQIS100 is reached, the Radwaste Filter Backwash Pump, 2LWS-P16A, trips. Green indication.

TS#37

10/28/86

4.6.1.13 Reset 2WSS-FQIS100 to 300 gallons and start Radwaste Filter Backwash Pump, 2LWS-P16A. When the tank level reaches about 93% verify that:

Alarm "Waste Sludge Tank Level Hi-Hi" on panel 2WSS-IPNL210.

10/28/86

Message "WSSLC002 Waste Sludge TK8 Level High/High" on LWS Alarm CRT.

10/28/86

Influent Valve, 2WSS-HV118, closes. Green indication.

10/28/86

Computer Point 2WSSZC003, 2WSS-HV118 status "CLOSE".

10/28/86

Radwaste Filter Backwash Pump, 2LWS-P16A, trips.

10/28/86

INITIALS/DATE

4.6.1.14 E19 Lower tank level to about 85% (below the high-high level trip) by opening drain valve, 2WSS-V311, at tank bottom discharge line. Close drain valve.

JM 10/28/86

4.6.1.15 Reset Batch Meter 2WSS-FQIS100 for 50 gal. Open Influent Valve, 2WSS-HV118. Red indication. Then start Radwaste Filter Backwash Pump 2LWS-P16B. Red indication.

JM 10/28/86

4.6.1.16 TS#37 Verify that when the set point of 2WSS-FQIS100 is reached, the Radwaste Filter Backwash Pump, trips. Green indication.

JM 10/28/86

4.6.1.17 Reset 2WSS-FQIS100 to 300 gallons and start Radwaste Filter Backwash Pump, 2LWS-P16B. When the tank level reaches about 93%, verify that:

Alarm "Waste Sludge Tank Level Hi-Hi" on panel 2WSS-IPNL210.

JM 10/28/86

Message "WSSLC002 Waste Sludge TK8 Level High/High" on LWS Alarm CRT.

JM 10/28/86

Influent Valve, 2WSS-HV118, closes. Green indication.

JM 10/28/86

Radwaste Filter Backwash Pump, 2LWS-P16B trips. JM 10/28/86

4.6.1.18 E19 Lower tank level to about 85% (below the "high-high" level trip), but above the high level trip point by opening drain valve 2WSS-V311, at tank bottom discharge line. Close drain valve.

JM 10/28/86

4.6.1.19 Reset Flush Water Batch Meter for 50 gal. Open Stop Valve 2WSS-HV121. Open Flush Valves, 2WSS-HV119/124/125/127. Red indication.

JM 10/28/86

4.6.1.20 When the set point of the Batch Meter, 2WSS-FQIS104, is reached, verify that the Flush Valves, 2WSS-HV119/124/125/127, close. Green indication.

JM 10/28/86

4.6.1.21 Reset 2WSS-FQIS104 to 300 gallons. Open Flush Water 2WSS-HV119/124/125/127. Red indication.

JM 10/28/86

4.6.1.22 When the tank level reaches about 93%, verify that:

INITIALS/DATE

Alarm "Waste Sludge Tank Level Hi-Hi" on panel 2WSS-IPNL210. 10/28/86

Message "WSSLC002 Waste Sludge TK8 Level High/High" on LWS Alarm CRT. 10/28/86

Flush Valves, 2WSS-HV119/124/125/127, close. Green indication. 10/28/86

Acknowledge alarm.

Close Stop Valve, 2WSS-HV121. Green indication. 10/28/86

4.6.1.23 Start Floor Drain Filter, 2LWS-FLT101, and verify that it does not start. 10/28/86

4.6.2 Decanting of Excess Water

4.6.2.1 Stop Waste Sludge Tank Agitator, 2WSS-MIX9. Green indication. Verify computer point 2WSSBC004, MIX 9 Status "STOP". 11/4/86

4.6.2.2 Allow the tank content to settle for 30 minutes. Verify the Spent Resin Tank Inlet Valve, 2LWS-AOV206, is open on the LWS graphics.

4.6.2.3 Open Suction Valve, 2WSS-HV121. Red indication. 11/4/86

4.6.2.4 Open Discharge Valve, 2WSS-HV126. Red indication. 11/4/86

4.6.2.5 Start Decant Pump, 2WSS-P10. Red indication. Computer point 2WSSBC005, pump 10 Status "RUN." 11/4/86

4.6.2.6 After decanting is complete, verify that:

Decant Pump, 2WSS-P10 trips. Green indication. 11/4/86

Computer point 2WSSBC005, P10 Status "STOP". 11/4/86

Alarm "Decant Pump P10 Flow Low" on panel 2WSS-IPNL210. 11/4/86

Message "WSSFC007 Decant Pump P10 Suction Flow" on LWS Alarm CRT. 11/4/86

Decant Pump Suction Valve, 2WSS-HV121, closes. Green indication. 11/4/86

INITIALS/DATE

Decant pump Discharge Valve, 2WSS-HV126, closes. Green indication. 11/4/86

Acknowledge alarm/alarm clears. 11/4/86

4.6.2.7 To back flush decant screen:

4.6.2.7.1 Open Decant Suction Valve, 2WSS-HV121. Red indication. 11/4/86

4.6.7.2 Reset Flush Water Batch Meter, 2WSS-FQIS104, for 20 gallons. 11/4/86

4.6.2.7.3 Open Flush Water Valve, 2WSS-HV125. Red indication. 11/4/86

4.6.2.8 When the Batch Meter trips, Flush Valve, 2WSS-HV125 closes. Green indication. 11/4/86

4.6.2.9 Close Suction Valve, 2WSS-HV121. Green indication. 11/4/86

QA WITNESS 11/4/86 INITIALS/DATE

TS#40

4.6.3 Transfer Pump Operation.

NOTE: Waste Sludge Transfer Pump, 2WSS-P11, normally recirculates waste sludge to the Waste Sludge Tank, 2WSS-TK8. The recirculating loop supplies the Waste Sludge Metering Pumps and the Sampling Station. The Pumps discharge can also be diverted to the Spent Resin Tank, 2WSS-TK7.

4.6.3.1 Remove the thermal overload heaters for 2WSS-P11 in 2NHS-MCC001 #10F. ______/______

E20

4.6.3.2 Remove the thermal overload heaters for 2WSS-MIX9 in 2NHS-MCC001 #11C. ______/______

E20

4.6.3.3 Lift lead 10045 of Ch 1, TB-1 in 2WSS PNL210. ______/______

E20

The test procedure for the various interlocks is as follows:

4.6.3.4 Verify that valves are lined up for recirculation. Waste Sludge Tank Bottom Valve 2WSS-HV128, is open to Waste Sludge Transfer Pump, 2WSS-P11. Diversion valve, 2WSS-HV129 is open to the Waste Sludge Tank, 2WSS-TK8. 11/4/86

4.6.3.5 Simulate start of mixier 2WSS-MIX9. Red indication. 11/4/86

INITIALS/DATE

4.6.3.6 Simulate start of Waste Sludge Transfer Pump, 2WSS-P11. Red indication.

Verify computer point 2WSSBC006, W. Sludge XFER P11 Status, "RUN".

11/4/86

4.6.3.7 Simulate low suction flow by placing a jumper across terminals L13 and 10043 of Ch 1, TB - 1 in 2WSS-PNL210.

11/4/86

4.6.3.8 Verify that Waste Sludge Transfer Pump, 2WSS-P11, trips. Green indication.

Verify computer point 2WSSBC006, W.Sludge XFER P11 Status, "STOP".

11/4/86

4.6.3.9 Verify the following:

TS#40 Alarm "Transfer Pump P11 Low Suction" on Panel 2WSS-PNL210.

TS#120 Computer point WSSFC001, "Waste Sludge Pump P11 Suction Low".

/

4.6.3.10 Remove jumper from L13 to 10043. 11/4/86

4.6.3.11 Acknowledge Alarm/Alarm Clears. 11/4/86

4.6.3.12 Simulate Re-start P11. Red indication. 11/4/86

4.6.3.13 Via Flow Control Valve, 2SWR-FIC119, on 2SWR-RAK209, throttle seal water flow to Waste Sludge Transfer Pump until the low flow switch, 2SWR-FS119, is activated. Verify that:

Waste Sludge Transfer Pump, 2WSS-P11, stops after 5 sec. time delay. Green indication.

11/4/86

Alarm "Waste Sludge Transfer Pump Seal Water Flow Low" on panel 2WSS-IPNL210.

11/4/86

Alarm and indication that 2SWR-FS119 is activated on panel 2SWR-IPNL100.

11/4/86

Restore seal water flow.

Acknowledge alarm/alarm clears. 11/4/86

4.6.3.14 Restart Waste Sludge Transfer Pump, 2WSS-P11. Red indication.

11/4/86

RECORD COPY

INITIALS/DATE

4.6.3.15 E21 Activate Suction Flow Switch, 2WSS-FS107 by lifting wire from terminal 10043 of Ch. 1 TB-1 in panel 2WSS-IPNL210.

_____/_____

4.6.3.15.1 E21 Verify that:

Waste Sludge Transfer Pump, 2WSS-P11, stops. Green indication.

_____/_____

Alarm "Transfer Pump P11 Low Suction" on panel 2WSS-IPNL210.

_____/_____

Message "WSSFC001 Waste Sludge Pump P11 Suction Low" on LWS Alarm CRT.

_____/_____

Replace wire at terminal 10043 of CH. 1, TB-1.

Acknowledge alarm/alarm clears. _____/_____

4.6.3.16 E21 Restart Waste Sludge Transfer pump, 2WSS-P11. Red indication.

_____/_____

4.6.3.17 Activate Low Discharge Pressure Switch, 2WSS-PSX108, by placing jumper across terminals L13 and 10045 of Ch. 1 TB-1 at panel 2WSS-IPNL210. Verify that:

Waste Sludge Transfer Pump, 2WSS-P11, stops. Green indication.

11/4/86

Alarm "Sludge Transfer Pump Discharge Pressure Low" on panel 2WSS-IPNL210.

11/4/86

Message "WSSPC002 Waste Sludge Pump 11 Disch. Press. Low" on LWS Alarm CRT.

11/4/86

Remove jumper.

Acknowledge alarm/alarm clears. 11/4/86

4.6.3.18 Restart Waste Sludge Transfer Pump 2WSS-P11. Red indication.

11/4/86

4.6.3.18 Activate High Discharge Pressure Switch, 2WSS-PSY108, by placing jumper across terminals L13 and 10044 of Ch. 1 TB-1 at panel 2WSS-IPNL210. Verify that:

INITIALS/DATE

Waste Sludge Transfer Pump, 2WSS-P11, stops. Green indication.

JM / 11/4/86

Alarm "Sludge Transfer Pump Discharge Pressure Hi" on panel 2WSS-IPNL210.

JM / 11/4/86

"Message "WSSPC003 Waste Sludge Pump 11 Disch. Press. High" on LWS Alarm CRT.

Acknowledge alarm/alarm clears. JM / 11/4/86

4.6.3.20 Replace thermal overload heater in 2NHS-MCC001 Breaker 10 F.

E20

/

4.6.3.21 Replace thermal overload heaters in 2NHS-MCC001 Breaker 11C.

E20

/

4.6.3.22 Land lead 10045 at CH-1, TB-1, 2WSS-PNL210. /

E20

4.6.4 Waste Sludge Sampling

TS#39 All valves at the sampling station are controlled from local panel, 2WSS-LCS402, at the station:

4.6.4.1 Position Sampling Valve, 2WSS-AOV352, to sample flask, to verify that valve cavity is empty.

JM / 10/31/86

4.6.4.2 Place a graduated cylinder (250 ml) under the Sampling Valve, 2WSS-AOV352.

JM / 10/31/86

4.6.4.3 Re-position Sampling Valve to sample loop and open Flush Water Valve, 2WSS-AOV353, to fill standpipe. Red indication.

JM / 10/31/86

4.6.4.4 Verify that water overflows from the standpipe to the sink. Close Flush Water Valve, 2WSS-AOV353. Green indication.

JM / 10/31/86

4.6.4.5 Position Sampling Valve, 2WSS-AOV352, to Sample Flask to drain the standpipe to the cylinder. Record volume of water collected on Data Sheet 5.9.

JM / 10/31/86

4.6.4.6 Reposition Sampling Valve to Sample Loop and verify that the Waste Sludge Tank Agitator, 2WSS-MIX9, is in operation, and Waste Sludge recirculation loop is in operation for at least 30 minutes.

JM / 10/31/86

RECORD COPY

INITIALS/DATE

4.6.4.7 Position Diversion Valve, 2WSS-AOV351, to Sample Loop. JM 10/31/86

4.6.4.8 Open Flush Water Valve, 2WSS-AOV353, to fill standpipe. Red indication.

Verify water overflow from standpipe.

Close Flush Water Valve, 2WSS-AOV353. Green indication. JM 10/31/86

4.6.4.9 Reposition Diversion Valve, 2WSS-AOV351, to process loop. JM 10/31/86

4.6.4.10 Place graduated cylinder under Sampling Valve, 2WSS-AOV352. Open valve to cylinder.

Verify water from standpipe flush sample from valve cavity to the cylinder.

Record sample volume on Data Sheet 5.9. JM 10/31/86

4.6.4.10.1 Repeat steps 4.6.4.~~8~~3 to 4.6.4.10 six times. JM 10/31/86 JM 10/31/86

TS#39

4.6.4.11 Calculate the sample volume and dilution factor and complete Data Sheet 5.9 JM 10/31/86

4.7 TEST PROCEDURE FOR THE WASTE CONCENTRATE SUBSYSTEM

4.7.1 Transfer Pump Operation

QA
WITNESS
11/4/86
INITIALS/DATE

4.7.1.1 Remove thermal overload heaters from 2NHS-MCC001 10D for Transfer Pump, 2WSS-P6. JM 11/4/86

4.7.1.2 Lift lead 10039 of Chl, TB1, in 2WSS-PNL210. JM 11/4/86

4.7.1.3 Verify valve lineup of the recirculation loop and that Diversion Valve, 2WSS-V341, is open to the Evaporator Bottoms Tank, 2LWS-TK10. JM 11/4/86

TS#41 4.7.1.4 Open Suction Valve, 2WSS-HV~~130~~131. JM 11/4/86 Red indication. JM 11/4/86

TS#41 4.7.1.5 Open Discharge Valve, 2WSS-HV~~131~~130. JM 11/4/86 Red indication. JM 11/4/86

INITIALS/DATE

4.7.1.6 Simulate start of Waste Concentrate Transfer Pump, 2WSS-P6. Red indication.

E23

Verify computer point 2WSSBC003, W Conc XFER P6 Stat "RUN".

JM 11/4/86

4.7.1.7 Verify that Seal Water Solenoid Valve, 2SWR-SOV126, opens and seal water circulates through pump seal, by noting flow through the seal as indicated by 2SWR-FI118. Flow should be approximately 1.5 gpm.

JM 11/4/86

4.7.1.8 Throttle seal water flow via 2SWR-FICV118 until the low flow trip is activated. Verify that:

Waste Concentrate Transfer Pump, 2WSS-P6, stops. Green indication.

JM 11/4/86

Computer point 2WSSBC003, W. Conc. P6 Stat, "STOP".

JM 11/4/86

Seal Water Solenoid Valve, 2SWR-SOV126, closes. JM 11/4/86

Alarm "Waste Concentrate P6 Seal Water Flow Low" JM 11/4/86

Acknowledge alarm/alarm clears. JM 11/4/86

Restore seal water flow. JM 11/4/86

4.7.1.9 Restart Waste Concentrate Transfer Pump, 2WSS-P6. Red indication.

JM 11/4/86

4.7.1.10 Activate pressure switch, 2SWR-PS106, on Seal Water Supply Skid by placing jumper across terminals 15 and 16 of TB-1 in 2SWR-IPNL100. Verify that:

Waste Concentrate Transfer Pump, 2WSS-P6, stops after 5 sec. time delay. Green indication.

JM 11/4/86

Alarm "Seal Water Pressure Low" on panel 2WSS-IPNL210.

JM 11/4/86

INITIALS/DATE

Remove jumper.

Acknowledge alarm/alarm clears. 11/4/86

4.7.1.11 Restart Waste Concentrate Transfer Pump, 2WSS-P6. Red indication.

11/4/86

4.7.1.12 Activate Low. Discharge flow switch, 2WSS-FS111, by placing a jumper across L13 and terminal 10039 of Ch. 1 TB-1 in panel 2WSS-IPNL210.

Verify that:

Waste Concentrate Transfer Pump, 2WSS-P6, stops after 5 sec. delay. Green indication.

11/4/86

Alarm "Waste Concentrate Transfer Pump Suction Flow, Low" on panel 2WSS-IPNL210.

11/4/86

Lift jumper.

Acknowledge alarm/alarm clears. 11/4/86

4.7.1.13 Restart Waste Concentrate Transfer Pump, 2WSS-P6. Red indication.

11/4/86

4.7.1.14 Simulate "Evaporator Bottoms Tank Low Low Level" by means of "single point change insert function" at the LWS Computer for setting 2LWS-LS161 (Refer to N2-POT-40, Liquid Radwaste).

E23

11/4/86

4.7.1.15 Verify that the Waste Concentrate Transfer Pump, 2WSS-P6 stops and Seal Water Stop Valve, 2SWR-SOV126, closes.

11/4/86

4.7.1.16 Clear the Low Low Level from the LWS Computer.

E23

11/4/86

INITIALS/DATE

4.7.1.17 Verify that LWS Floor Drain Collector Surge Tank, 2LWS-TK17 is operational.

11/4/86

4.7.1.18 Reposition Diversion Valve, 2WSS-V341 to open to Floor Drain Collector Surge Tank, 2LWS-TK17.

11/4/86

E24 4.7.1.19 Replace thermal overload heater in 2NHS-MCC001, breaker 10D.

11/4/86

E24 4.7.1.20 Re-land lead 10039 11/4/86

4.7.1.21 Start Waste Concentrate Transfer Pump, 2WSS-P6. Red indication. Verify flow to 2LWS-TK17.

11/4/86

4.7.1.22 Activate temperature alarm, 2WSS-TIS322, by placing jumper across terminals L15 and 10332 at Ch. 3, TB-1 in panel 2WSS-IPNL210. Verify that:

Alarm "Evaporator Bottoms TK10 Drain High Temperature" on panel 2WSS-IPNL210.

11/4/86

Waste Concentrate Transfer Pump, 2WSS-P6, stops. Green indication.

11/4/86

Remove jumper.

Acknowledge alarm/alarm clears. 11/4/86

4.7.2 WASTE CONCENTRATE SAMPLING

TS# 116

NOTE: All valves at the sampling station are controlled from local panel, 2WSS-LCS403, at the station:

4.7.2.1 Position Sampling Valve, 2WSS-AOV356 to Sample Flask and verify that valve cavity is empty.

12/22/86

4.7.2.2 Place a graduated cylinder (250 ml) under the Sampling Valve, 2WSS-AOV356

12/22/86

4.7.2.3 Reposition Sampling Valve to Sample Loop and open Flush Water Valve, 2WSS-AOV358, to fill standpipe. Red indication.

12/22/86

INITIALS/DATE

4.7.2.4 Verify that water overflows from the standpipe to sink. Close Flush Water Valve, 2WSS-AOV358. Green indication.

JM 12/22/86

4.7.2.5 Position Sampling Valve, 2WSS-AOV356, to drain standpipe to the cylinder. Record volume of water collected on Data Sheet 5.9.

JM 12/22/86

4.7.2.6 Reposition Sampling Valve to Sample Loop and verify that Waste Concentrate recirculation loop is in operation for at least 30 minutes.

JM 12/22/86

4.7.2.7 Position Diversion Valve, 2WSS-AOV354, to Sample Loop.

JM 12/22/86

4.7.2.8 Open Flush Water Valve, 2WSS-AOV358 to fill standpipe. Red indication.

Verify water overflow from standpipe.

Close Flush Water Valve, 2WSS-AOV358. Green indication.

JM 12/22/86

4.7.2.9 Reposition Diversion Valve, 2WSS-AOV354, to Process Loop.

JM 12/22/86

4.7.2.10 Place graduated cylinder under Sampling Valve, 2WSS-AOV356. Position valve to Sample Flask.

Verify water from standpipe flush sample valve cavity to the cylinder.

Record sample volume on Data Sheet 5.9. JM 12/22/86

TS#116 4.7.2.10.1 Repeat steps 4.7.2.~~6~~ 3 JM 12/22/86 to 4.7.2.10 six times. JM 12/22/86

TS#116 4.7.2.11 Calculate the sample volume and dilution factor and complete Data Sheet 5.9.

JM 12/22/86

4.8 TEST PROCEDURE FOR THE EXTRUDER/EVAPORATOR SUBSYSTEM

4.8.1 Lube Oil Skid

12 4.8.1.1 Remove heaters from 2NHSMCC001 Breakers 4C and 16C. (2WSS-P13A, B)

______/______

INITIALS/DATE

4.8.1.2 Simulate start of Lube Oil Pump, 2WSS-P13A. Red indication.

JM / 10/9/86

4.8.1.3 Then activate Lube Oil Pump, 2WSS-P13A, thermal overload contact by turning Breaker 4C to Off position. Verify that:

Lube Oil Pump 2WSS-P13A, indicates OFF. Green indication.

JM / 10/9/86

Lube Oil Pump, 2WSS-P13B, indicates RUN. Red indication.

JM / 10/9/86

Common alarm "Lube Oil, Distillate Pumps Thermal Overload" on panel 2WSS-IPNL210.

JM / 10/9/86

Message "WSSTC007 Lube Oil Pump P13A Thermal Overload" on LWS Alarm CRT.

JM / 10/9/86

Return Breaker 4C to On position.

Acknowledge alarm/alarm clears. JM / 10/9/86

4.8.1.4 Activate Lube Oil Pump, 2WSS-P13B, thermal overload contact by turning Breaker 16C to Off position. Verify that:

Lube Oil Pump, 2WSS-P13B, indicates OFF. Green indication.

JM / 10/9/86

Lube Oil Pump, 2WSS-P13A, indicates RUN. Red indication.

JM / 10/9/86

Common alarm "Lube Oil, Distillate Pumps Thermal Overload" on panel 2WSS-IPNL210.

JM / 10/9/86

Message "WSSTC008 Lube Oil Pump P13B Thermal Overload" on LWS Alarm CRT.

JM / 10/9/86

Return Breaker to On position.

Acknowledge alarm/alarm clears. JM / 10/9/86

E12 4.8.1.5 Replace heaters to Breaker 4C and 16C. ____/____

E12 4.8.1.5.1 Start Lube Oil Pump P13A. ____/____

RECORD COPY

INITIALS/DATE

4.8.1.6 Activate Low Level Switch, 2WSS-LS163, by placing jumper across terminals L14 and 10230 of Ch. 2 TB-1 in panel 2WSS-IPNL210, to simulate low level in Lube Oil Tank, 2WSS-TK14. Verify that:

Lube Oil Pump, 2WSS-P13A, indicates OFF. Green indication.

/ 10/9/86

Lube Oil Pump, 2WSS-P13B, does not start. Green indication.

/ 10/9/86

Alarm "Lube Oil Tank 14 Low Level" on panel 2WSS-IPNL210.

/ 10/9/86

Message "WSSLC009 Extruder/Evap. Lube Oil Tank 14 Level Low" on LWS Alarm CRT.

/ 10/9/86

Lube Oil Pumps, 2WSS-P13A/B, cannot be restarted.

/ 10/9/86

Remove jumper.

Acknowledge alarm/alarm clears. / 10/9/86

4.8.2 Distillate Skid

E13

4.8.2.1 Remove heater from 2NHS-MCC001 Breakers 4D and 16D for the Distillate Pumps.

/

4.8.2.2 Start Distillate Pump, 2WSS-P18A. Red indication.

/ 10/9/86

4.8.2.3 Activate 2WSS-P18A, thermal overload contact by turning Breaker 4D to Off position. Verify that:

Distillate Pump, 2WSS-P18A, indicates OFF. Green indication.

/ 10/9/86

Distillate Pump, 2WSS-P18B, indicates RUN. Red indication.

/ 10/9/86

Common alarm "Distillate Pumps Lube Oil Pumps Thermal Overload" on panel 2WSS-IPNL210.

/ 10/9/86

INITIALS/DATE

Message "WSSTC009 Distillate Pump P18A Overload" on LWS Alarm CRT.

JM / 10/9/86

Return Breaker to On position.

Acknowledge alarm/alarm clears.

JM / 10/9/86

4.8.2.4 Activate 2WSS-P18B thermal overload contact by turning Breaker 16D to Off position. Verify that:

Distillate Pump, 2WSS-P18B, indicates STOP. Green indication.

JM / 10/9/86

Distillate Pump, 2WSS-P18A, indicates RUN. Red indication.

JM / 10/9/86

Common alarm "Distillate Pumps Lube Oil Pumps Thermal Overload" on panel 2WSS-IPNL210.

JM / 10/9/86

Message "WSSTC010 Distillate Pump P18B Overload" on LWS Alarm CRT.

JM / 10/9/86

Return Breaker to On position.

Acknowledge alarm/alarm clears. JM / 10/9/86

E/3 4.8.2.5 Replace heaters in Breakers 4D and 16D. ______/______

E/3 4.8.2.6 Start Distillate Pump P18A. ______/______

4.8.2.7 Activate Distillate Tank Low Level Switch, 2WSS-LSL179, by placing jumper across L14 and 10246 of Ch. 2 TB-1 in panel 2WSS-IPNL210. Verify that:

Distillate Pump 2WSS-P18A, stops. Green indication.

JM / 10/9/86

Distillate Pump, 2WSS-P18B, does not autostart. Green indication.

JM / 10/9/86

Alarm "Distillate Tank Hi/Lo Level" on panel 2WSS-IPNL210.

JM / 10/9/86

INITIALS/DATE

Message "WSSLC010 Extruder/Evap. Distillate Tank 17 Level Low" on LWS Alarm CRT. JM 10/9/86

Remove jumper.

Acknowledge alarm/alarm clears. JM 10/9/86

4.8.2.8 Start Distillate Pump, 2WSS-P18B. Red indication. JM 10/9/86

4.8.2.9 Activate Low Pressure Switch, 2WSS-PSL188, by shutting P18B discharge valve, V115. Verify that:

Distillate Pump, 2WSS-P18B, stops after a 5 sec. time delay. Green indication. JM 10/9/86

Distillate Pump, 2WSS-P18A, does not start. Green indication. JM 10/9/86

Alarm "Distillate Pump Discharge Pressure Low" on panel 2WSS-IPNL210. JM 10/9/86

Message "WSSPC004 Distillate Pump P18A/B Disch. Press. Low" on LWS Alarm CRT. JM 10/9/86

4.8.2.9.1Open valve V115.

Acknowledge alarm/alarm clears. JM 10/9/86

4.8.2.10 Restart Distillate Pump, 2WSS-P18B. Red indication. JM 10/9/86

4.8.2.11 Activate Low Flow Switch 2WSS-FSL180, by shutting V116. Verify that:

Distillate Pump, 2WSS-P18B, stops after a 5 sec. time delay. Green indication. JM 10/9/86

Alarm "Distillate Cooler Return Flow Low" on panel 2WSS-IPNL210. JM 10/9/86

Message "WSSFC010 Extruder/Evap. Distillate Flow" on LWS Alarm CRT. JM 10/9/86

INITIALS/DATE

4.8.2.11.1 Open valve V116.

Acknowledge alarm/alarm clears. 10/9/86

4.8.3 Manifold Skid

4.8.3.1 Extruder Barrel Heatup and Temperature Control

NOTE: The Extruder barrel is heated by steam. The first and the last barrel sections are also provided with cooling water for precise control of the temperature. The temperature controllers are located on panel 2WSS-IPNL210. The steam and cooling water valves are located on the Manifold Skid, 2WSS-SKD38.

4.8.3.1.1 Place all Barrel Temperature Controllers in manual. 10/15/86

4.8.3.1.2 Verify that an empty radwaste liner is placed below the discharge nozzle of the Extruder. 10/15/86

4.8.3.1.3 Check or open the Steam Header Isolation Valve, 2WSS-V706, and the Steam Supply Valve, 2WSS-V30, to the steam manifold on the Manifold Skid. 10/15/86

4.8.3.1.4 Check or open Cooling Water Supply and return valves, 2WSS-V54/55/60. 10/15/86

4.8.3.1.5 Verify that the steam pressure indicated on 2WSS-PI157 is about 230 psig. 10/15/86

4.8.3.1.6 TS#125 Verify that the downstream pressure of the self-acting Pressure Control Valve, 2WSS-PCV246, is about 35 psig (use temporary pressure gauge). 10/15/86

4.8.3.1.7 E17 For the steam valves under split-range control, open steam valves in increments of 5% on the controllers. For these others, increase setting at 10% increment. Monitor barrel temperature on recorder 2WSS-TJR-155. Increase the controller setting only when the temperature has stabilized. Record the controller settings, steady-state temperatures and times on Data Sheet 5.10. 10/15/86

INITIALS/DATE

4.8.3.1.8 The operating temperatures of the barrel sections are as follows:

Barrel Section	Operating Temperature °F	
	Waste Concentrate	Waste Sludge
1	165	165
2	265	265
3	300	285
4	330	300
5	375	285
6	375	285
7	350	230

When the indicated barrel temperatures reach ± 10°F of the desired operating conditions, place the respective controllers in automatic by pressing the white "A" pushbutton. Verify that it backlights as the controller is placed in automatic. Record the time on Data Sheet 5.10.

JM 10/15/86

4.8.3.1.9 Verify that barrel temperatures stabilize at the set points in about 30 minutes.

E17

JM 10/15/86

4.8.3.2 Steam Dome Cleaning

Once the temperature profile has been established, allow 30 minutes to elapse to permit temperature stabilization throughout the extruder. Then, the cleaning of the devolatization ports can proceed as follows:

4.8.3.2.1 To clean devolatization port #3:

Push Control Switch 2WSS-HS147

Verify Steam Valve 2WSS-SOV147 opens. Red indication.

JM 10/15/86

Verify Steam enters the devolatization port #3 via the sight glass on the Steam Dome.

JM 10/15/86

Hold switch for 5 sec., then release switch. JM 10/15/86

Verify Steam Valve 2WSS-SOV147 closes. Green indication.

JM 10/15/86

INITIALS/DATE

4.8.3.2.2 To clean devolatization port #4:

Push Control Switch 2WSS-HS148.
Verify Steam Valve 2WSS-SOV148 opens. Red indication.

JM / 10/15/86

Verify steam enters the devolatization port #4 via the sight glass on the Steam Dome.

JM / 10/15/86

Hold switch for 5 sec., then release switch. JM / 10/15/86

Verify 2WSS-SOV148 closes. Green indication. JM / 10/15/86

4.8.3.2.3 To clean devolatization port #6:

Push Control Switch 2WSS-HS149.

Verify Steam Valve WSS-SOV149 opens. Red indication.

JM / 10/15/86

Verify steam enters the devolatization port #6 via the sight glass on the Steam Dome.

JM / 10/15/86

Hold switch for 5 sec., then release switch. JM / 10/15/86

Verify Steam Valve 2WSS-SOV149 closes. Green indication.

JM / 10/15/86

QA
WITNESS
10/9/86
4.8.4
INITIALS/DATE

4.8.4 Metering Pumps Controls Interlocks

TS#20

4.8.4.1 Place variable speed control rheostats for Waste Sludge Metering Pumps, 2WSS-P12A and 2WSS-P12B, and Waste Concentrate Metering Pumps, 2WSS-P7A and 2WSS-P7B to "0" on 2WSS-PNL210.

4.8.4.2 Place Selector Switch, (2WSS-HS156), to W. Concentrate on 2WSS-PNL210.

LCB / 10-7-86

4.8.4.3 Open the following valves to allow operation of the metering pump logic:

4.8.4.3.1 2WSS-HV8A, HV8B, VH9A, HV9B, HV203 (2WSS-P12A/P12B Suction and Discharge Valves).

LCB / 10-9-86

4.8.4.3.2 2WSS-HV10A, HV10B, HV11A, HV11B, HV204 (2WSS-P7A/P7B Suction and Discharge Valves).

LCB / 10-9-86

INITIALS/DATE

4.8.4.3.3 2WSS-HV12A, HV12B (2WSS-P5A/P5B Discharge Valves).

LAS / 10-10-86

4.8.4.4 Simulate E/E interlocks, 00503, permissive in Modicon Logic (Network #36, line 2456).

LAS / 10-10-86

4.8.4.5 Place the following jumpers in 2WSS-PNL210:

L13 to 10032 at Ch 1, TB-1 to simulate 2WSS-P6 "ON"
L13 to 10047 at Ch 1, TB-1 to simulate 2WSS-P11 "ON"
L14 to 10163 at Ch 2, TB-1 to simulate 2WSS-P3A "ON"
L14 to 10205 at Ch 2, TB-1 to simulate E/E greater than or equal to 120 RPM.
L14 to 10199 at Ch 2, TB-1 to simulate E/E Motor "ON"

LAS / 10-10-86

4.8.4.6 Lift the following leads in 2WSS-PNL210:

TS #21

10083 at Ch 1, TB-1 Waste Sludge Feed Low
10103 at Ch 1, TB-1 Waste Concentrate feed low
10183 at Ch 2, TB-1 Asphalt Metering feed low
456 at TB-4-
457 at TB-4 -Isolate Asphalt Metering Pump input from
458 at TB-4- 2WSS-FIC202

LAS / 10-10-86

4.8.4.7 Simulate start of Asphalt Metering Pump, 2WSS-P5A via control switch at 2WSS-PNL210. Red indication.

LAS / 10-10-86

4.8.4.7.1 Verify computer point 2WSSBC015, Asphalt Mtr Pmp P5A Stat, "RUN".

TS# 22

LAS / 10-10-86

4.8.4.8 No less than 5 minutes after P5A start, simulate start of Waste Concentrate Metering Pump, 2WSS-P7A, via control switch on 2WSS-PNL210. Red indication.

4.8.4.8.1 Verify the following:

Computer point 2WSSBC017, W. Conc Mtr Pmp P7A Stat, "RUN".

TS #23 Seal Water Valve 2SWR-SOV15A, open. Red indication at 2SWR-PNL100.

HM / 10/10/86

4.8.4.9 Close seal water outlet isolation valve, 2SWR-V116.

LAS / 10-10-86

INITIALS/DATE

4.8.4.9.1 Verify the following:

2WSS-P7A stops. Green indication. LCB / 10-9-86

Computer point 2WSSBC017, W. Conc Mtr Pmp P7A Stat, "STOP".

LCB / 10-9-86

2SWR-SOV15A, closes. Green indication at 2SWR-PNL100.

LCB / 10-9-86

Alarm 210424, W. Conc P7A Seal Water Flow Low.

LCB / 10-9-86 TS# 24

4.8.4.9.2 Open 2SWR-V116. LCB / 10-9-86

4.8.4.9.3 Reset alarm, alarm clears. LCB / 10-9-86

4.8.4.10 Simulate start of Waste Concentrate Mtr Pump, 2WSS-P7B, via control switch on 2WSS-PNL210. Red indication.

4.8.4.10.1 Verify computer point 2WSSBC018, W Conc Mtr Pmp P7B stat, "RUN".

LCB / 10-9-86

4.8.4.10.2 Verify seal water valve 2SWR-SOV15B opens. Red indication on 2SWR-PNL100.

LCB / 10-9-86

4.8.4.11 Close seal water outlet isolation valve, 2SWR-V114.

LCB / 10-9-86

4.8.4.11.1 Verify the following:

2WSS-P7B stops. Green indication. LCB / 10-9-86

Computer point 2WSSBC018, W Conc Mtr Pmp P7B Stat, "STOP".

LCB / 10-9-86

Seal Water Valve 2SWR-SOV15B closes. Green indication on 2SWR-PNL100.

LCB / 10-9-86

Alarm 210404, W. Conc P7B Seal Water Flow Low.

LCB / 10-9-86

4.8.4.11.2 Open 2SWR-V114. LCB / 10-9-86

4.8.4.11.3 Reset alarm. Alarm clears. LCB / 10-9-86

4.8.4.12 Simulate start of 2WSS-P7A. LCB / 10-9-86

RECORD COPY

INITIALS/DATE

4.8.4.12.1 Lift jumper at 10163 to simulate a trip of 2WSS-P3A.

LCB / 10-9-86

4.8.4.12.2 Verify the following:

2WSS-P5A stops. Green indication. LCB / 10-9-86

Computer point 2WSSBC015, Asphalt Mtr Pmp P5A Stat, "STOP"

LCB / 10-9-86

2WSS-P7A stops.

LCB / 10-9-86

4.8.4.12.3 Reinstall jumper at 10163. LCB / 10-9-86

4.8.4.13 Simulate start of Asphalt Mtr Pmp 2WSS-P5B. Red indication.

LCB / 10-9-86

4.8.4.13.1 Verify computer point 2WSSBC016, Asphalt Mtr Pmp P5B Stat, "RUN".

LCB / 10-9-86

4.8.4.13.2 No less than 5 min. after start of 2WSS-P5B, simulate start of 2WSS-P7B.

LCB / 10-9-86

4.8.4.13.3 Lift the jumper from 10163 to simulate a trip of 2WSS-P3A.

LCB / 10-9-86

4.8.4.13.4 Verify the following:

2WSS-P5B stops. Green indication. LCB / 10-9-86

Computer point 2WSSBC016, Asphalt mtr Pmp P5B Stat, "STOP".

LCB / 10-9-86

2WSS-P7B stops. LCB / 10-9-86

4.8.4.14 Place a jumper across L14 and 10170 at Ch 2, TB-1 in 2WSS-PNL210 to simulate 2WSS-P3B running.

LCB / 10-9-86

4.8.4.15 Place a jumper across L14 and 10179 at Ch 2, TB-1 in 2WSS-PNL210 to simulate 2WSS-P5A running.

LCB / 10-9-86

4.8.4.15.1 After no less than 5 minutes, simulate start of 2WSS-P7A.

LCB / 10-9-86

INITIALS/DATE

4.8.4.15.2 Lift the jumper from 10199 to simulate E/E trip.

LCB / 10-9-86

4.8.4.15.3 Verify 2WSS-P7A stops. LCB / 10-9-86

4.8.4.15.4 Reinstall jumper at 10199. LCB / 10-9-86

4.8.4.15.5 Simulate start of 2WSS-P7B. LCB / 10-9-86

4.8.4.15.6 Lift the jumper at 10199 to simulate E/E trip. LCB / 10-9-86

4.8.4.15.6.1 Verify 2WSS-P7B stops. LCB / 10-9-86

4.8.4.15.7 Reinstall jumper at 10199. LCB / 10-9-86

4.8.4.15.8 Lift the jumper from 10179 LCB / 10-9-86

4.8.4.15.9 Place selector switch to waste sludge metering.

LCB / 10-9-86

4.8.4.15.10 Simulate start of 2WSS-P5B. LCB / 10-9-86

4.8.4.15.10.1 After no less than 5 min., simulate start of Waste Sludge Metering Pump, 2WSS-P12A. Red indication.

LCB / 10-9-86

4.8.4.15.10.1.1 Verify computer point 2WSSBC019, W. Sludge Mtr Pmp P12A Stat, "RUN".

LCB / 10-9-86

4.8.4.15.10.2 Close seal water outlet isolation valve, 2WSS-V122.

LCB / 10-9-86

4.8.4.15.10.2.1 Verify the following:

2WSS-P12A stops. Green indication. LCB / 10-9-86

Computer point 2WSSBC019, W. Sludge Mtr Pmp P12A Stat, "STOP".

LCB / 10-9-86

Alarm 210401, W. Sludge Mtr P12A Seal Water Flow Low.

LCB / 10-9-86

4.8.4.15.10.3 Open 2SWR-V122. LCB / 10-9-86

4.8.4.15.10.3.1 Reset alarm. Alarm clears. LCB / 10-9-86

INITIALS/DATE

4.8.4.16 Simulate start of 2WSS-P12A

LCS / 10-9-86

4.8.4.16.1 Lift lead at 10170 to simulate trip of 2WSS-P3B.

LCS / 10-9-86

4.8.4.16.1.1 Verify 2WSS-P5B stops.

LCS / 10-9-86

4.8.4.16.1.2 Verify 2WSS-P12A stops.

LCS / 10-9-86

4.8.4.16.2 Reinstall jumper at 10170

LCS / 10-9-86

4.8.4.17 Simulate start of 2WSS-P5A.

LCS / 10-9-86

4.8.4.18 After no less than 5 minutes, simulate start of 2WSS-P12B.

LCS / 10-9-86

4.8.4.19 Lift jumper from 10170 to simulate trip of 2WSS-P3B.

LCS / 10-9-86

4.8.4.19.1 Verify 2WSS-P5A stops.

LCS / 10-9-86

4.8.4.19.2 Verify 2WSS-P12B stops.

LCS / 10-9-86

4.8.4.19.3 Reinstall jumper at 10170.

LCS / 10-9-86

4.8.4.20 Place jumper across L14 and 10179 to simulate 2WSS-P5A running.

LCS / 10-9-86

4.8.4.21 After no less than 5 minutes, simulate the start of 2WSS-P12A.

LCS / 10-9-86

4.8.4.22 Lift the jumper from 10199 to simulate Extruder trip.

LCS / 10-9-86

4.8.4.22.1 Verify 2WSS-P12A stops.

LCS / 10-9-86

4.8.4.22.2 Reinstall jumper at 10199.

LCS / 10-9-8

4.8.4.23 Simulate start of 2WSS-P12B.

LCS / 10-9-86

INITIALS/DATE

4.8.4.24 Lift the jumper from 10199 to simulate E/E trip.

LCB / 10-9-86

4.8.4.24.1 Verify 2WSS-P12B stops. LCB / 10-9-86

4.8.4.24.2 Reinstall the jumper at 10199. LCB / 10-9-86

4.8.4.25 Lift the jumper from 10179. LCB / 10-9-86

4.8.4.26 Simulate the start of 2WSS-P5A. LCB / 10-9-86

4.8.4.27 Lift the jumper from 10199 to simulate E/E trip.

LCB / 10-9-86

4.8.4.27.1 Verify 2WSS-P5A stops. LCB / 10-9-86

4.8.4.27.2 Reinstall the jumper at 10199. LCB / 10-9-86

4.8.4.28 Simulate the start of 2WSS-P5B. LCB / 10-9-86

4.8.4.28.1 Lift the jumper from 10199 to simulate E/E trip.

LCB / 10-9-86

4.8.4.28.2 Verify 2WSS-P5B stops. LCB / 10-9-86

4.8.4.29 Reinstall the jumper at 10199. LCB / 10-9-86

4.8.4.30 TS#25 Place a jumper across L14 and 1018~~2~~ 3 LCB 10-9-86 to simulate low asphalt feed flow.

LCB / 10-9-86

4.8.4.30.1 Verify the following:

2WSS-P5A stops. LCB / 10-9-86

Alarm 210108, "Asphalt Metering Pumps P5A/P5B Flow Low".

LCB / 10-9-86

Computer Point 2WSSFC008, Asphalt Mtr P5A/P5B DF, "LOW".

LCB / 10-9-86

		INITIALS/DATE
4.8.4.30.2	Lift jumper at 10182.	LGB / 10-9-86
4.8.4.30.3	Reset Alarm. Alarm clears.	LGB / 10-9-86
4.8.4.31	Simulate start of 2WSS-P5B.	LGB / 10-9-86
4.8.4.31.1	Place jumper across L14 and 10183 to simulate high asphalt metering flow.	LGB / 10-9-86
4.8.4.31.2	Verify 2WSS-P5B stops.	LGB / 10-9-86
4.8.4.31.3	Lift the jumper from 10183.	LGB / 10-9-86
4.8.4.32	Simulate start of 2WSS-P5A.	LGB / 10-9-86
4.8.4.33	Place jumper across L13 and 10112 at Ch 1, TTB-1 to simulate a fire protection malfunction.	LGB / 10-9-86
4.8.4.33.1	Verify 2WSS-P5A stops.	LGB / 10-9-86
4.8.4.33.2	Lift the jumper at 10112.	LGB / 10-9-86
4.8.4.34	Simulate start of 2WSS-P5B.	LGB / 10-9-86
4.8.4.34.1	Place the jumper across L13 and 10112.	LGB / 10-9-86
4.8.4.34.2	Verify 2WSS-P5B stops.	LGB / 10-9-86

		INITIALS/DATE
4.8.4.35	Lift the following jumpers from the following points in 2WSS-PNL210:	
	10032 from Ch 1, TB-1	LCB / 10-9-86
	10047 from Ch 1, TB-1	LCB / 10-9-86
	10199 from Ch 2, TB-1	LCB / 10-9-86
	10205 from Ch 2, TB-1	LCB / 10-9-86
	10179 from Ch 2, TB-1	LCB / 10-9-86
	10112 from Ch 1, TB-1	LCB / 10-9-86
4.8.4.36	Land the following leads in 2WSS-PNL210:	
	10103 at Ch 1, TB-1	LCB / 10-9-86
	10083 at Ch 1, TB-1	LCB / 10-9-86
	10182 at Ch 2, TB-1	LCB / 10-9-86
	456 at TB-4	LCB / 10-9-86
	457 at TB-4	LCB / 10-9-86
	458 at TB-4	LCB / 10-9-86
4.8.4.37	Return E/E Interlocks permissive, 00503, to its original state.	LCB / 10-9-86

INITIALS/DATE

4.9 TEST PROCEDURE FOR THE MONITORING AND CAPPING STATION

4.9.1 Cap and Swipe Operation

4.9.1.1 Prior to placing Liner in capping station, verify the following:

Capper Panel, 2WSS-IPNL221, is energized.
Cap stack is filled (at least 5 caps).
Capping Jib Lift switch is in "left (A) position".
Shield Window is filled with oil.
Liner to be capped is filled with asphalt, cooled and crust is formed.

JM 112/11/86

4.9.1.2 Place Liner on the Capper Turntable. JM 112/11/86

4.9.1.3 Activate hand switch to lower Jib Arm Lift until it is in contact with the cap on the cap stack.

JM 112/11/86

4.9.1.4 Raise Jib Arm and visually through the Shield Window verify that cap is attached.

JM 112/11/86

4.9.1.5 Swing Jib Arm right and adjust if required so that cap is centered over Liner opening.

JM 112/11/86

4.9.1.6 Lower the Jib Arm Lift until cap rests on the neck of the liner.

4.9.1.7 Turn hand switch to "PRESS ON" position. JM 112/11/86

4.9.1.8 Verify that the Press On Plate and Lift automatically rises when the cap is pressed on.

JM 112/11/86

4.9.1.9 Return Jib Arm Lift to left position "A". JM 112/11/86

4.9.1.10 Insert swipe in Swipe Drawer. JM 112/11/86

4.9.1.11 Use Remote Manipulator Arm to remove swipe from the drawer and hold it against Liner.

JM 112/11/86

4.9.1.12 Start Turntable Motor and rotate Liner one revolution.

JM 112/11/86

4.9.1.13 Place swipe back in the Swipe Drawer. JM 112/11/86

4.9.1.14 Remove swipe from Drawer and examine for contamination.

JM 112/11/86

RECORD COPY

INITIALS/DATE

4.9.1.15 De-energize panel 2WSS-IPNL221. 12/11/86

QA
WITNESS
WAL 11-29-86
INITIALS/DATE

4.10 Extruder/Evaporator Trips and Interlocks

4.10.1 Extruder Start Permissives

4.10.1.1 Verify that the Lube Oil System is operating. Supplying the extruder gearbox and support bearings.

TS#46

Operating lube oil pump P13A 11/26/86

4.10.1.2 Verify that the Distillate Collection System is in operation.

Operating distillate pump P18A 11/26/86

4.10.1.3 Set the extruder barrel temperature profile for processing waste concentrates. Verify that the barrel temperatures are within limits as follows:

SEE FRF N2-POT-41-1-2 11/4/86

Barrel 1 Temp.	200	180 to 220°F (~~155 to 175°F~~)	11/26/86
Barrel 2 Temp.	290	252 to 308°F (~~255 to 275°F~~)	11/26/86
Barrel 3 Temp.	325	288 to 352°F (~~290 to 310°F~~)	11/26/86
Barrel 4 Temp.	345	315 to 385°F (~~320 to 340°F~~)	11/26/86
Barrel 5 Temp.	364	315 to 385°F (~~365 to 385°F~~)	11/26/86
Barrel 6 Temp.	355	315 to 385°F (~~365 to 385°F~~)	11/26/86
Barrel 7 Temp.	298	252 to 308°F (~~340 to 360°F~~)	11/26/86

4.10.1.4 Verify that 3 empty liners have been placed on the fill station turntable. One of these liners is in position under the extruder outlet port.

11/26/86

4.10.1.5 Verify that the drip pan stack has been loaded.

11/26/86

4.10.1.6 From panel 2CES-IPNL501, verify that the fill station vent hood exhaust fan 2HVW-FN2B is operating. The vent hood suction damper, 2HVW-MOD14B, is open.

11/26/86

INITIALS/DATE

4.10.1.7 Verify that the Asphalt Recirculation System is in operation.

11/26/86

4.10.1.8 Start the waste sludge tank agitator (2WSS-MIX9) /

E25

4.10.1.8.1 Start the waste sludge transfer pump (2WSS-P11) to place the sludge tank in recirculation.

/

4.10.1.9 Start the waste concentrates transfer pump (2WSS-P6) to place the evaporator bottoms tank (2LWS-TK10) in recirculation.

11/26/86

4.10.2 Set the extruder speed controller (2WSS-SC135) to 0 and start the extruder motor (2WSS-M25). Red indication.

11/26/86

4.10.2.1 Increase extruder speed to approx. 50 RPM using the speed controller (2WSS-SC135). Record the current draw on Data Sheet 5.11.

11/26/86

NOTE: Immediately stop the extruder motor if the current exceeds 100% as indicated on 2WSS-ZR135.

4.10.2.1.1 Verify computer point WSSBC021 status "start." 11/26/86

4.10.2.2 Place the asphalt feed flow controller (2WSS-FIC202) in manual and adjust the flow to 0.1 GPM.

11/26/86

4.10.2.2.1 Open metering pump 2WSS-P5A discharge valve 2WSS-HV12A. Red indication.

11/26/86

4.10.2.2.2 Start asphalt metering pump 2WSS-P5A.
Red indication.

11/26/86

4.10.2.3 Increase the extruder screw speed to approx. 250 RPm in increments of about 50 RPM. Record the current draw on Data Sheet 5.11.

11/26/86

4.10.2.3.1 Increase the asphalt metering pump flow rate to approx. 0.2 GPM.

11/26/86

4.10.2.4 Open concentrates metering pump 2WSS-P7A suction valve 2WSS-HV11A and discharge valve 2WSS-HV10A red indications.

11/26/86

INITIALS/DATE

4.10.2.4.1 Place the waste feed selector switch, 2WSS-HS166, in the "Waste Concentrate" position. 11/26/86

4.10.2.4.2 Open the concentrates feed to the extruder valve 2WSS-HV204. Red indication. 11/26/86

T5#47 E26

4.10.2.4.3 Verify the speed controller for 2WSS-P7~~A~~ B is set at 0 and start 2WSS-P7~~A~~ B. Red indication. 11/26/86 11/26/86

E26

4.10.2.4.4 Increase metering pump P7~~A~~ B speed to a flow rate of about 0.5 gpm. 11/26/86 11/26/86

T5#49 T5#63
E34

4.10.2.5 Simulate a "DC Drive Malfunction" by ~~lifting~~ JUMPERING lead 206 to LEAD 207 in the extruder drive panel 2WSS-PNL219. Verify the following: 12/1/86

4.10.2.5.1 Extruder trip - WSSBC021 status "stop." 12/1/86

4.10.2.5.2 WSSBC022 "Extruder/Evaporator DC Drive System." 12/1/86

4.10.2.5.3 Annunciator 210409 "DC Drive Malfunction." 12/1/86

4.10.2.5.4 Asphalt metering pump P5A stops. 12/1/86

4.10.2.5.5 Concentrates metering pump P7A stops. 12/1/86

E34

4.10.2.5.7 REMOVE THE JUMPER ~~Land lead 206~~ in PNL219. 12/1/86 12/1/86

4.10.2.6 Set the extruder speed controller to 0 and start the extruder motor. 11/26/86

4.10.2.6.1 Increase the extruder speed to 250 RPM. 11/26/86

4.10.2.6.2 Restore asphalt flow to about 0.2 gpm using metering pump P5B. 11/26/86

4.10.2.6.3 Restore waste concentrates flow to about 0.5 gpm using metering pump P7B. 11/26/86

E27

4.10.2.6.4 Simulate an excessive torque condition by ~~placing a jumper~~ LIFTING Lead from terminal 3 ~~to terminal 5~~ of 2WSS-ISHH135 in IPNL210. Verify the following: DW 11/26/86 Dam 11/26/86

4.10.2.6.4.1 Extruder trip - WSSBC021 status "stop." Dam 11/26/86

4.10.2.6.4.2 WSSIC002 "Extruder/Evaporator Torque." Dal 11/26/86

INITIALS/DATE

4.10.2.6.4.3 Annunciator 210216 "E/E Torque greater than 105%. Dam / 11/26/86

4.10.2.6.4.4 Asphalt metering pump P5B stops. Dam / 11/26/86

4.10.2.6.4.5 Concentrates metering pump P7B stops. Dam / 11/26/86

4.10.2.6.4.6 Annunciator 210203 "E/E System Malfunction." Dam / 11/26/86

E27 4.10.2.6.5 Re land lead on terminal 3 on ~~Remove the jumper~~ ~~from~~ 2WSS-ISHH135. Dam / 11/26/86

4.10.2.7 Set the extruder speed controller to 0 and start the extruder motor. Dam / 11/26/86

4.10.2.7.1 Increase extruder speed to approx. 250 RPM. Dam / 11/26/86

4.10.2.7.2 Restore asphalt flow to about 0.2 gpm using metering pump P5A. Dam / 11/26/86

E 26 4.10.2.7.3 Restore concentrates flow to about 0.5 gpm using metering pump P7~~A~~B. Dam 11/26/86 Dam / 11/26/86

E28 4.10.2.7.4 Simulate an extruder overspeed condition by lifting lead ~~placing a jumper~~ Dam 11/26/86 on ~~from~~ terminal 10291 ~~to terminal L15~~ on CH.3, TB1 in IPNL210. Dam 11/26/86 Verify the following:

4.10.2.7.4.1 Extruder trip - WSSBC021 status "stop." Dam / 11/26/86

4.10.2.7.4.2 WSSSC007 "Extruder/Evaporator M25 RPM." Dam / 11/26/86

4.10.2.7.4.3 Annunciator 210222 "Extruder High RPM." Dam / 11/26/86

4.10.2.7.4.4 Asphalt metering pump P5A stops. Dam / 11/26/86

E 26 4.10.2.7.4.5 Concentrates metering pump P7~~A~~B stops. JM 11/26/86 Dam / 11/26/86

~~(after 2 minutes)~~ JM 11/26/86

JM E 11/26/86 4.10.2.7.4.6 Annunciator 210203 "E/E System Malfunction." Dam / 11/26/86

E28 4.10.2.7.5 Re~~move~~ land Dam the ~~jumper~~ lead Dam ~~from~~ on Dam terminal~~s~~ 10291 ~~and L15~~ Dam. Dam / 11/26/86

4.10.2.8 Set the extruder speed controller to 0 and start the extruder motor. Dam / 11/26/86

4.10.2.8.1 Increase extruder speed to approx. 250 RPM. Dam / 11/26/86

4.10.2.8.2 Restore asphalt flow to about 0.2 gpm using metering pump P5B. Dam / 11/26/86

INITIALS/DATE

4.10.2.8.3 Restore concentrates flow to about 0.5 gpm using metering pump P7B. Dam / 11/26/86

4.10.2.8.4 Stop asphalt metering pump P5B by turning its control switch to "stop." Verify the following:

4.10.2.8.4.1 Immediate trip of concentrates metering pump P7B. Dam / 11/26/86

4.10.2.8.4.2 Annunciator 210203 "E/E System Malfunction." Dam / 11/26/86

E JM 11/26/86 TS#50 TS#111
4.10.2.8.4.3 Annunciator 210208 "Asphalt Metering Pump 5A/B High/Low Flow. ______ / ______

E JM 11/26/86 TS#50 TS#111
4.10.2.8.4.4 Computer point WSSFC008 "Metering Pump 5A/B flow low." ______ / ______

E JM 11/26/86 TS#50 TS#118
4.10.2.8.4.5 Computer point WSSFC006 "Waste Concentrate Metering Pump P7A/B flow."' ______ / ______

4.10.2.8.4.6 Extruder/Evaporator trips after 2 minute time delay. Dam / 11/26/86

4.10.2.8.4.6.1 WSSBC021 status "stop." Dam / 11/26/86

4.10.2.9 Set extruder speed control to 0 and start the extruder motor. Dam / 11/26/86

4.10.2.9.1 Increase extruder speed to approx. 250 RPM. Dam / 11/26/86

4.10.2.9.2 Restore asphalt flow to about 0.2 gpm using metering pump P5A. Dam / 11/26/86

E26
4.10.2.9.3 Restore concentrates flow to about 0.5 gpm using metering pump P7~~A~~B. JM 11/26/86 Dam / 11/26/86

E29
4.10.2.9.4 To simulate ~~a~~ loss of lube oil to the extruder, force off contact ~~10244~~ 10227 11/26/86 (P13A) or ~~10253~~ P233 11/26/86 (P13B) of the Modicon logic, Network No. 37, line no. 2459. Verify the following:

4.10.2.9.4.1 Extruder trips after 2 minute time delay. Dam / 11/26/86

4.10.2.9.4.2 WSSBC021 status "stop." Dam / 11/26/86

RECORD COPY

INITIALS/DATE

4.10.2.9.4.3 Asphalt metering pump P5A stops after extruder trip.

/ 11/26/86

E26

4.10.2.9.4.4 Concentrate metering pump P7~~A~~ B 11/26/86 stops after extruder trip.

/ 11/26/86

E29

4.10.2.9.4.5 Restore Modicon logic Network 37 line 2459 contact ~~10244~~ 10227 11/26/86 or ~~10253~~ 11/26/86 10233 to its normal state.

/ 11/26/86

4.10.2.9.5 Flush the concentrates metering system per N2-OP-41.

/ 11/26/86

E30
TS#52

4.10.3 Set the extruder temperature profile for processing waste sludge. Verify that the barrel temperatures are within limits as follows:

SEE FIRF N2-POT-41-1-2 11/4/86

E30

4.10.3.1	Barrel 1 Temp.	______	180 to 220°F (~~155 to 175°F~~)	______/______
	Barrel 2 Temp.	______	252 to 308°F (~~255 to 275°F~~)	______/______
	Barrel 3 Temp.	______	288 to 352°F (~~275 to 295°F~~)	______/______
	Barrel 4 Temp.	______	315 to 385°F (~~290 to 310°F~~)	______/______
	Barrel 5 Temp.	______	270 to 330°F (~~275 to 295°F~~)	______/______
	Barrel 6 Temp.	______	270 to 330°F (~~275 to 295°F~~)	______/______
	Barrel 7 Temp.	______	171 to 209°F (~~220 to 240°F~~)	______/______

4.10.3.2 Place the Waste Selector Switch, 2WSS-HS166, in the "Waste Sludge" position.

E30

______/______

4.10.3.3 Shut or verify shut the following concentrates feed valves:

E30

2WSS-HV10A ______/______

2WSS-HV10B ______/______

2WSS-HV11A ______/______

2WSS-HV11B ______/______

2WSS-HV204 ______/______

RECORD COPY

INITIALS/DATE

4.10.3.4 Open the following sludge feed valves:

E 30

2WSS-HV8A ______/______

2WSS-HV9A ______/______

2WSS-HV9B ______/______

2WSS-HV203 ______/______

4.10.3.5 Set the extruder speed control to 0 and start the extruder motor. JM 11/29/86

4.10.3.5.1 Increase extruder speed to approx. 250 RPM. JM 11/29/86

4.10.3.5.2 Restore asphalt flow to about 0.2 gpm using metering pump P5B. JM 11/29/86

4.10.3.5.3 Initiate waste ~~sludge~~ CONCENTRATES JM 11/28/86 flow as follows:

E30

4.10.3.5.3.1 Verify that the speed controller for ~~sludge~~ CONCENTRATES JM 11/28/86 metering pump 2WSS-P~~12A~~ 7B JM 11/28/86 is set at 0 and start 2WSS-P12A. Red indication. JM 11/29/86

E30

4.10.3.5.3.2 Increase metering pump P~~12A~~ 7B JM 11/28/86 speed to a flow rate of approx. 0.~~8~~ 5 JM 11/28/86 gpm. JM 11/29/86

E30

4.10.3.6 Simulate a failure of extruder barrel #1 temperature control valves (2WSS-TVX/TVY136) by ~~lifting the wires from terminals 460 and 461 of TB-4 in 2WSS-IPNL210~~ PLACING TIC136 IN MANUAL AND DECREASING THE OUTPUT TO 0%. Verify the following: JM 11/28/86

E31

4.10.3.6.1 Barrel #1 temperature decreases as indicated on 2WSS-TIC136. JM 11/29/86

4.10.3.6.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~150~~ 180 °F JM 11/29/86 JM 11/29/86

TS#53

4.10.3.6.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~150~~ 180 °F JM 11/29/86 JM 11/29/86

TS#53

4.10.3.6.1.3 Extruder trips after 2 minute time delay. JM 11/29/86

4.10.3.6.1.4 Asphalt metering pump P5B trips after extruder trip. JM 11/29/86

INITIALS/DATE

4.10.3.6.1.5 ~~Sludge~~ CONCENTRATED JM 11/28/86 metering pump P~~12A~~ 7B JM 11/28/86 trips ~~after extruder trip.~~ IMMEDIATELY. JM 11/29/86 JM 11/29/86

E30
TS#54

4.10.3.6.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 460 and 461. ______ / ______

E31

4.10.3.6.3 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase the barrel #1 temp. back to its normal range of ~~155 to 175°F~~ 180 to 220°F. JM 11/29/86 JM 11/29/86

E31
TS#53

4.10.3.6.4 Set the extruder speed control to 0 and start the extruder motor. JM 11/29/86

4.10.3.6.5 Increase extruder speed to approx. 250 RPM. JM 11/29/86

4.10.3.6.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A. JM 11/29/86

4.10.3.6.7 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to about 0.~~6~~ 5 JM 11/28/86 gpm using metering pump P~~12B~~ 7B JM 11/28/86 JM 11/29/86

E30

4.10.3.6.8 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase barrel #1 temperature. Verify the following:

E31

4.10.3.6.8.1 Barrel #1 temperature increases as indicated on 2WSS-TIC136. JM 11/29/86

4.10.3.6.8.2 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~180~~ 220 °F. JM 11/29/86 JM 11/29/86

TS#53

4.10.3.6.8.3 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~180~~ 220 °F. JM 11/29/86 JM 11/29/86

TS#53

4.10.3.6.8.4 Extruder trips after 2 minute time delay. JM 11/29/86

4.10.3.6.8.5 Asphalt metering pump P5A trips after extruder trip. JM 11/29/86

4.10.3.6.8.6 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12B~~ 7B JM 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY. JM 11/29/86 JM 11/29/86

E30
TS#54

INITIALS/DATE

4.10.3.6.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 460 and 461 of TB-4.
E31

/

4.10.3.6.10 Restore Barrel #1 temperature back to its normal range of ~~155~~ 180 11/29/86 to ~~175~~ 220 11/29/86 °F
TS#53

/ 11/29/86

4.10.3.7 Set the extruder speed control to 0 and start the extruder motor.

/ 11/29/86

4.10.3.7.1 Increase extruder speed to approx. 250 RPM. / 11/29/86

4.10.3.7.2 Restore asphalt flow to 0.2 gpm using metering pump P5B.

/ 11/29/86

4.10.3.7.3 Restore ~~sludge~~ CONCENTRATES 11/28/86 flow to 0.~~6~~ 5 11/28/86 gpm using metering pump P~~12A~~ 73. 11/28/86
E30

/ 11/29/86

4.10.3.8 Simulate a failure of extruder barrel #2 temperature control valves (2WSS-TV137) by ~~lifting the wires from terminals 463 and 464 of TB-4 in 2WSS-IPNL210.~~ PLACING TIC137 IN MANUAL AND DECREASING THE OUTPUT TO 0%. 11/28/86 Verify the following:
E31

4.10.3.8.1 Barrel #2 temperature decreases as indicated on 2WSS-TIC137.

/ 11/29/86

4.10.3.8.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~240~~ 252 °F. 11/29/86
TS#53

/ 11/29/86

4.10.3.8.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~240~~ 252 °F. 11/29/86
TS#53

/ 11/29/86

4.10.3.8.1.3 Extruder trips after 2 minute time delay. / 11/29/86

4.10.3.8.1.4 Asphalt metering pump P5B trips after extruder trip.

/ 11/29/86

4.10.3.8.1.5 ~~Sludge~~ CONCENTRATES 11/28/86 metering pump P~~12A~~ 73 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY. 11/29/86
E30
TS#54

/ 11/29/86

4.10.3.8.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 463 and 464.
E31

/

INITIALS/DATE

4.10.3.8.3 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase the barrel #2 temp. back to its normal range of ~~255 to 275°F.~~ 252 to 308°F. JM 11/29/86
E31
TS#53
JM / 11/29/86

4.10.3.8.4 Set the extruder speed control to 0 and start the extruder motor.
JM / 11/29/86

4.10.3.8.5 Increase extruder speed to approx. 250 RPM. JM / 11/29/86

4.10.3.8.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A.
JM / 11/29/86

4.10.3.8.7 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to about 0.~~6~~5 JM 11/28/86 gpm using metering pump P~~12B~~ 7B JM 11/28/86
E30
JM / 11/29/86

4.10.3.8.8 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase barrel #2 temperature. Verify the following:
E31

4.10.3.8.8.1 Barrel #2 temperature increases as indicated on 2WSS-TIC137.
E32
_____/_____

4.10.3.8.8.2 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~290~~°F. 308 JM 11/29/86
TS#53
E32
_____/_____

4.10.3.8.8.3 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~290~~ 308°F. JM 11/29/86
TS#53
E32
_____/_____

4.10.3.8.8.4 Extruder trips after 2 minute time delay. _____/_____
E32

4.10.3.8.8.5 Asphalt metering pump P5A trips after extruder trip.
E32
_____/_____

4.10.3.8.8.6 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12B~~ 7B JM 11/28/86 trips ~~after extruder trip.~~ IMMEDIATELY JM 11/29/86
E30
E32 TS#54
_____/_____

4.10.3.8.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 463 and 464 of TB-4.
E31
E32
_____/_____

4.10.3.8.10 Restore Barrel #2 temperature back to its normal range of ~~255~~ 252 JM 11/29/86 to ~~275~~°F. 308 JM 11/29/86
TS#53
E32
_____/_____

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INITIALS/DATE

4.10.3.9 Set the extruder speed control to 0 and start the extruder motor.
E32
_______/_______

4.10.3.9.1 Increase extruder speed to approx. 250 RPM. _______/_______
E32

4.10.3.9.2 Restore asphalt flow to 0.2 gpm using metering pump P5B.
E32
_______/_______

4.10.3.9.3 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to 0.~~8~~ 5 JM 11/28/86 gpm using metering pump P~~12A~~ 73. JM 11/28/86
E30
E32
_______/_______

4.10.3.10 Simulate a failure of extruder barrel #3 temperature control valve (2WSS-TV138) by ~~lifting the wires from terminals 466 and 467 of TB-4 in 2WSS-IPNL210.~~ Verify the following: JM 11/28/86
PLACING TIC138 IN MANUAL AND DECREASE THE OUTPUT TO 0%.
E31

4.10.3.10.1 Barrel #3 temperature decreases as indicated on 2WSS-TIC138.
JM 11/29/86

4.10.3.10.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~260~~ 288 JM 11/29/86 °F.
TS#53
JM 11/29/86

4.10.3.10.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~260~~ 288 °F. JM 11/29/86
TS#53
JM 11/29/86

4.10.3.10.1.3 Extruder trips after 2 minute time delay. JM 11/29/86

4.10.3.10.1.4 Asphalt metering pump P5B trips after extruder trip.
JM 11/29/86

4.10.3.10.1.5 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12A~~ 73 JM 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY JM 11/29/86
E30
TS#54 TS#57
JM 11/29/86

4.10.3.10.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 466 and 467.
E31
_______/_______

4.10.3.10.3 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase the barrel #3 temp. back to its normal range of ~~275 to 295°F~~ 288 to 352°F. JM 11/29/86
E31
TS#53
JM 11/29/86

4.10.3.10.4 Set the extruder speed control to 0 and start the extruder motor.
JM 11/29/86

INITIALS/DATE

4.10.3.10.5 Increase extruder speed to approx. 250 RPM. JM 11/29/86

4.10.3.10.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A. JM 11/29/86

4.10.3.10.7 Restore ~~sludge~~ CONCENTRATED JM 11/28/86 flow to about 0.~~8~~ 5 JM 11/28/86 gpm using metering pump P1~~28~~ 7B JM 11/28/86
E30
JM 11/29/86

4.10.3.10.8 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase barrel #3 temperature. Verify the following:
E31

4.10.3.10.8.1 Barrel #3 temperature increases as indicated on 2WSS-TIC138. JM 11/29/86

4.10.3.10.8.2 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~310~~°F. 352 JM 11/29/86
TS#53
JM 11/29/86

4.10.3.10.8.3 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~310~~ 352 JM 11/29/86 °F.
TS#53
JM 11/29/86

4.10.3.10.8.4 Extruder trips after 2 minute time delay. JM 11/29/86

4.10.3.10.8.5 Asphalt metering pump P5A trips after extruder trip. JM 11/29/86

4.10.3.10.8.6 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P1~~28~~ 7B JM 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY. JM 11/29/86
E30
TS#54
JM 11/29/86

4.10.3.10.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 466 and 467 of TB-4.
E31
/

4.10.3.10.10 Restore Barrel #3 temperature back to its normal range of ~~275 to~~ 288 to JM 11/29/86 ~~295°F~~. 352°F JM 11/29/86
TS#53
JM 11/29/86

4.10.3.11 Set the extruder speed control to 0 and start the extruder motor. JM 11/29/86

4.10.3.11.1 Increase extruder speed to approx. 250 RPM. JM 11/29/86

4.10.3.11.2 Restore asphalt flow to 0.2 gpm using metering pump P5B. JM 11/29/86

INITIALS/DATE

4.10.3.11.3 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to 0.~~8~~ 5 JM 11/28/86 gpm using metering pump P~~12A~~ 7B. JM 11/28/86
E30
JM 11/29/86

4.10.3.12 Simulate a failure of extruder barrel #4 temperature control valves (2WSS-TV139) by ~~lifting the wires from terminals 469 and 470 of TB-4 in 2WSS-IPNL210.~~ JM 11/28/86 Verify the following:
BY PLACING TIC139 IN MANUAL AND DECREASE THE OUTPUT TO 0%.
E31

4.10.3.12.1 Barrel #4 temperature decreases as indicated on 2WSS-TIC136.
JM 11/29/86

4.10.3.12.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~270°F.~~ 315°F JM 11/29/86
TS#53
JM 11/29/86

4.10.3.12.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~270°F.~~ 315°F JM 11/29/86
TS#53
JM 11/29/86

4.10.3.12.1.3 Extruder trips after 2 minute time delay. JM 11/29/86

4.10.3.12.1.4 Asphalt metering pump P5B trips after extruder trip.
JM 11/29/86

4.10.3.12.1.5 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12A~~ 7B JM 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY JM 11/29/86
E30
TS#54
JM 11/29/86

4.10.3.12.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 469 and 470.
E31
/

4.10.3.12.3 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase the barrel #4 temp. back to its normal range of ~~290 to 310°F.~~ 315 to 385°F JM 11/29/86
E31
TS#53
JM 11/29/86

4.10.3.12.4 Set the extruder speed control to 0 and start the extruder motor.
TS# 59
JM 11/30/86

4.10.3.12.5 Increase extruder speed to approx. 250 RPM. JM 11/30/86

4.10.3.12.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A.
JM 11/30/86

4.10.3.12.7 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to about 0.~~6~~ 5 JM 11/28/86 gpm using metering pump P~~12B~~ 7B. JM 11/28/86
E30
JM 11/30/86

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INITIALS/DATE

4.10.3.12.8 ~~Using the M.A.D.C. power supply~~, JM 11/28/86 increase barrel #4 temperature. Verify the following:
E31

4.10.3.12.8.1 Barrel #4 temperature increases as indicated on 2WSS-TIC139. JM / 11/30/86

4.10.3.12.8.2 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~330°F.~~ 385°F JM 11/30/86 JM / 11/30/86
TS#53

4.10.3.12.8.3 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~330°F.~~ 385°F JM 11/30/86 JM / 11/30/86
TS#53

4.10.3.12.8.4 Extruder trips after 2 minute time delay. JM 11/30/86

4.10.3.12.8.5 Asphalt metering pump P5A trips after extruder trip. JM 11/30/86

4.10.3.12.8.6 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12B~~ 7B JM 11/28/86 trips ~~after extruder trip.~~ IMMEDIATELY JM / 11/30/86
E30
TS#54

4.10.3.12.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 469 and 470 of TB-4. /
E31

4.10.3.12.10 Restore Barrel #4 temperature back to its normal range of ~~290 to 310°F.~~ 315 to 385°F JM 11/30/86 JM 11/30/86
TS#53

4.10.3.13 Set the extruder speed control to 0 and start the extruder motor. JM / 11/30/86

4.10.3.13.1 Increase extruder speed to approx. 250 RPM. JM 11/30/86

4.10.3.13.2 Restore asphalt flow to 0.2 gpm using metering pump P5B. JM / 11/30/86

4.10.3.13.3 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to 0.~~6~~ 5 JM 11/28/86 gpm using metering pump P~~12A~~ 7B. JM 11/28/86 JM 11/30/86
E30

4.10.3.14 Simulate a failure of extruder barrel #6 temperature control valves (2WSS-TV141) by ~~lifting the wires from terminals 472 and 473 of TB-4 in 2WSS-IPNL210.~~ Verify the following: JM 11/28/86
PLACING TIC141 IN MANUAL AND DECREASING THE OUTPUT TO 0%.
E31
E33

RECORD COPY

INITIALS/DATE

4.10.3.14.1 Barrel #6 temperature decreases as indicated on 2WSS-TIC141. ______/______
E33

4.10.3.14.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~260°F~~ 315°F JM 11/30/86 ______/______
TS#53
E33

4.10.3.14.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~260°F~~ 315°F. JM 11/30/86 ______/______
TS#53
E33

4.10.3.14.1.3 Extruder trips after 2 minute time delay. ______/______
E33

4.10.3.14.1.4 Asphalt metering pump P5B trips after extruder trip. ______/______
E33

4.10.3.14.1.5 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12A~~ 7B JM 11/28/86 trips ~~after extruder trip~~ IMMEDIATELY JM 11/30/86 ______/______
E30
E33 TS#54

4.10.3.14.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 472 and 473. ______/______
E31
E33

4.10.3.14.3 ~~Using the M.A.D.C. power supply~~ JM 11/28/86, increase the barrel #6 temp. back to its normal range of ~~275 to 295°F~~ 315 to 385°F. JM 11/30/86 ______/______
E31
TS#53
E33

4.10.3.14.4 Set the extruder speed control to 0 and start the extruder motor. ______/______
E33

4.10.3.14.5 Increase extruder speed to approx. 250 RPM. ______/______
E33

4.10.3.14.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A. ______/______
E33

4.10.3.14.7 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to about 0.~~6~~ 5 JM 11/28/86 gpm using metering pump P~~12B~~ 7B. JM 11/28/86 ______/______
E30
E33

4.10.3.14.8 ~~Using the M.A.D.C. power supply~~ JM 11/28/86, increase barrel #6 temperature. Verify the following:
E31

4.10.3.14.8.1 Barrel #6 temperature increases as indicated on 2WSS-TIC141.

JM / 11/30/86

RECORD COPY

INITIALS/DATE

4.10.3.14.8.2 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~310°F.~~ 385°F 11/30/86
T5#53
11/30/86

4.10.3.14.8.3 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~310°F.~~ 385°F 11/30/86
T5#53
11/30/86

4.10.3.14.8.4 Extruder trips after 2 minute time delay. 11/30/86

4.10.3.14.8.5 Asphalt metering pump P5A trips after extruder trip.
11/30/86

4.10.3.14.8.6 ~~Sludge~~ CONCENTRATES 11/28/86 metering pump P~~12B~~ 7B 11/28/86 trips ~~after extruder trip.~~ IMMEDIATELY
E30
T5#54
11/30/86

4.10.3.14.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 472 and 473 of TB-4.
E31
/

4.10.3.14.10 Restore Barrel #6 temperature back to its normal range of ~~275 to 295°F.~~ 315 to 385°F 11/30/86
T5#53
11/30/86

4.10.3.15 Set the extruder speed control to 0 and start the extruder motor.
11/30/86

4.10.3.15.1 Increase extruder speed to approx. 250 RPM. 11/30/86

4.10.3.15.2 Restore asphalt flow to 0.2 gpm using metering pump P5B.
11/30/86

4.10.3.15.3 Restore ~~sludge~~ CONCENTRATES 11/28/86 flow to 0.~~6~~5 11/28/86 gpm using metering pump P~~12A~~7B. 11/28/86
E30
11/30/86

4.10.3.16 Simulate a failure of extruder barrel #7 temperature control valve (2WSS-TVY/TVX142) by ~~lifting the wires from terminals 475 and 476 of TB-4 in 2WSS-IPNL210.~~ Verify the following:
PLACING TIC142 IN MANUAL AND DECREASING THE OUTPUT TO 0%.
E31

4.10.3.16.1 Barrel #7 temperature decreases as indicated on 2WSS-TIC142.
11/30/86

4.10.3.16.1.1 Annunciator 2102211 "E/E barrel temp. low" energizes at approx. ~~210°F.~~ 252°F 11/30/86
T5#53
11/30/86

INITIALS/DATE

4.10.3.16.1.2 Computer point WSSTC023 "E/E barrel temp. low" at approx. ~~210°F~~ 252°F. JM 11/30/86
T3#53
JM 11/30/86

4.10.3.16.1.3 Extruder trips after 2 minute time delay. JM 11/30/86

4.10.3.16.1.4 Asphalt metering pump P5B trips after extruder trip.
JM 11/30/86

4.10.3.16.1.5 ~~Sludge~~ CONCENTRATES JM 11/28/86 metering pump P~~12A~~ 7B JM 11/28/86 trips ~~after extruder trip.~~ IMMEDIATELY JM 11/30/86
E30
T3#54
JM 11/30/86

4.10.3.16.2 Connect a 4 to 20 M.A.D.C. power supply to the leads lifted from terminals 475 and 476.
E31
/

4.10.3.16.3 ~~Using the M.A.D.C. power supply,~~ JM 11/28/86 increase the barrel #7 temp. back to its normal range of ~~220 to 240°F~~ 252 to 308°F JM 11/30/86
E31
T3#53
JM 11/30/86

4.10.3.16.4 Set the extruder speed control to 0 and start the extruder motor.
JM 11/30/86

4.10.3.16.5 Increase extruder speed to approx. 250 RPM. JM 11/30/86

4.10.3.16.6 Restore asphalt flow to about 0.2 gpm using metering pump P5A.
JM 11/30/86

4.10.3.16.7 Restore ~~sludge~~ CONCENTRATES JM 11/28/86 flow to about 0.~~6~~5 JM 11/28/86 gpm using metering pump P~~12B~~ 7B. JM 11/28/86
E30
JM 11/30/86

4.10.3.16.8 ~~Using the M.A.D.C. power supply~~, JM 11/28/86 increase barrel #7 temperature. Verify the following:
E31

4.10.3.10.8.1 Barrel #7 temperature increases as indicated on 2WSS-TIC142.
JM 11/30/86

4.10.3.10.8.1.1 Annunciator 210205 "E/E Barrel temp. high" energizes at approx. ~~250°F~~ 308°F. JM 11/30/86
T3#53
JM 11/30/86

4.10.3.10.8.1.2 Computer point WSSTC022 "E/E Barrel temp. high" at approx. ~~250°F~~ 308°F. JM 11/30/86
T3#53
JM 11/30/86

INITIALS/DATE

4.10.3.16.8.1.3 Extruder trips after 2 minute time delay. JM / 11/30/86

4.10.3.16.8.1.4 Asphalt metering pump P5A trips after extruder trip. JM / 11/30/86

4.10.3.16.8.1.5 CONCENTRATES ~~Sludge~~ metering pump P~~12B~~ 7B trips IMMEDIATELY JM 11/30/86 ~~after extruder trip~~. JM 11/28/86 JM 11/28/86 JM / 11/30/86

E30
TS#54

4.10.3.16.9 Remove the M.A.D.C. power supply and reland the lifted leads on terminals 475 and 476 of TB-4. /

E31

4.10.3.16.10 Restore Barrel #7 temperature back to its normal range of ~~220 to 240°F.~~ 252 to 308 °F JM 11/30/86 JM / 11/30/86

TS#53
TS#61

4.10.4 Set the extruder speed control to 0 and start the extruder motor. /

E42

4.10.4.1 Increase extruder speed to approx. 250 RPM. /

E42

4.10.4.2 Restore asphalt flow to 0.2 gpm using metering pump P5B. /

E42

4.10.4.3 Restore sludge flow to 0.6 gpm using metering pump P12A. /

E42

4.10.5 Verify that the liner in the "TT2" position is empty. JM / 12/3/86

TS#94

4.10.5.1 Index the turntable to place the empty liner under the extruder outlet port. JM / 12/3/86

4.10.5.2 Record the following data:

TS#97

4.10.5.2.1 Time 2030 JM / 12/3/86

4.10.5.2.2 Liner level (2WSS-LI23A) 0 JM / 12/8/86

4.10.5.2.3 Liner level (2WSS-LI23B) 0.01 FT JM / 12/3/86

4.10.5.3 Allow the liner to fill. When the liner high level alarm (Annunciator 210306 "Drum Level High") energizes, record the following data:

4.10.5.3.1 Time 0445 JM / 12/11/86

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		INITIALS/DATE
4.10.5.3.2	Liner level (LI23A) 0	JM / 12/11/86
4.10.5.3.3	Liner level (LI23B) 3.0 FT.	JM / 12/11/86
4.10.5.4	Allow the liner to fill. When the liner high-high level alarm (Annunciator 210312 "Drum Level High-High") energizes, record the following data:	
4.10.5.4.1	Time 0640	JM / 12/11/86
4.10.5.4.2	Liner level (LI23A) 0	JM / 12/11/86
4.10.5.4.3	Liner level (LI23B) 3.25 FT	JM / 12/11/86
4.10.5.5	Verify the following:	
4.10.5.5.1	Computer point WSSLC011 "Drum/Liner Level High."	JM / 12/11/86
4.10.5.5.2	Annunciator 210408 "Fill Station Malfunction."	JM / 12/11/86
4.10.5.5.3	Immediate trip of extruder motor.	JM / 12/11/86
4.10.5.5.4	Asphalt metering pump P5B trips.	JM / 12/11/86
4.10.5.5.5	~~Sludge~~ CONCENTRATES metering pump ~~P12A~~ P7A trips. JM 12/8/86	JM / 12/11/86
4.10.6 E42	Shut or verify shut the following waste sludge valves:	
	2WSS-HV8A	/
	2WSS-HV8B	/
	2WSS-HV9A	/
	2WSS-HV9B	/
	2WSS-HV203	/
4.10.7 E42	Flush the waste sludge metering system per N2-OP-41.	/
4.10.8 E42	Shutdown the extruder/evaporator to hot-standby.	/

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

13 pages attached

TEST FOLDER NUMBER 41.001 0

FRF NO. N2-POT-41-1-K ~~3~~ 4 LNR 12/5/86

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM

No. N2-POT-41-1

REV. 0

PROCEDURE REVISION REQUIRED ☒/yes ☐/no/ 12/4/86

DESCRIPTION OF CHANGE

DELETE ALL OF SECTION 4.11, PAGES 87 THROUGH 106, WITH THE EXCEPTION OF THE FILLED LINER INSPECTIONS REQUIRED BY STEPS 4.11.4.3.1, 4.11.4.3.2, AND 4.11.4.3.3 AND INSERT THE ATTACHED SECTIONS 4.11.1, 4.11.2, AND 4.11.3. ~~ALSO DELETE DATA SHEETS 5.13 AND 5.20.~~ DW 12/4/86

REASON FOR CHANGE

TO UPDATE PROCEDURE TO MORE CLOSELY REFLECT ACTUAL SYSTEM OPERATIONS AND TO DELETE UNNECESSARY REQUIREMENTS, AND ALLOW USE OF APPROVED PLANT OPERATING AND CHEMISTRY PROCEDURES.

AUTHORIZED BY
1. Dale A. McCullough date 12/4/86

SSS (if applicable)
2. N/A date

APPROVED ☒/yes ☐/no date 12-5-86 JTG mtg no. 86-209

RETEST REQUIRED specify DR No.

REVISION INCORPORATED (if applicable) date

RECORD COPY

4.11 Performance Section

NOTE!:
When processing waste the following parameters* must be maintained

Barrel Temperature Profile

Barrel Section	SLUDGE	RESIN	WASTE CONCENTRATE
1	200 *	200 *	200 *
2	280 *	280 *	290 *
3	320 *	320 *	320 *
4	350 *	350 *	350 *
5	300 *	300 *	350 *
6	300 *	300 *	350 *
7	190 *	190 *	280 *

* ± 25% or 75° F

MAXIMUM FEED IS THAT SPECIFIED ON N2-CSP-14 but TO EXCEED .65 GPM SLUDGE or RESIN
.56 GPM WASTE CONCENTRATES

TS#74 4.11 MIXED RESIN AND FILTER CAKE SOLIDIFICATION (INCLUDING DILUTE [illegible])

4.11.1.1 PREPARE THE WASTE STREAM TO BE PROCESSED IN ACCORDANCE WITH 02-OP-40 AND [illegible] 31. 12/4/86

4.11.1.2 PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER 02-CSP-14. 12/4/86

4.11 .3 SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING Mixed Resin [illegible] 12/4/86

4.11. .4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. 12/4/86

4.11. 1 .5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. 12/4/86

4.11. .6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. 12/4/86

4.11. .6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). 12/4/86

4.11. 1 .7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. 12/4/86

4.11. 1 .8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. 12/4/86

4.11.1.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER.

12/4/86

4.11.1.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.1.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE SLUDGE" POSITION.

12/4/86

4.11.1.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV203.

12/4/86

4.11.1.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV9A AND HV8A OR 2WSS-HV9B AND HV8B).

12/4/86

4.11.1.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP.

12/4/86

4.11.1.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14).

12/4/86

4.11.1.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET.

12/5/86

4.11.1.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

4.11.1 13 1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH NL-OP-41. 12/6/86

4.11.1.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES. 12/6/86

4.11.1.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP THE ASPHALT METERING PUMP. 12/6/86

4.11.1.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY. 12/6/86

4.11.1.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING. 12/6/86

[illegible]

ASPHALT METERING PUMP ZUSS- P5A

WASTE METERING PUMP ZUSS P12B

EXTRUDER SPEED 260 RPM

	TIME	BARREL #1	BARREL #2	BARREL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL
	2200	200	250	270.	350	345	200	0.12	0.31	82%
	2300	214	252	277	357	341	203	0.12	0.31	80%
	2400	195	250	275	345	352	209	0.12	0.32	78%
12/5/86	0100	200	250	275	345	358	206	0.12	0.32	78%
T5#77	0200	200	250	275	350	359	207	0.12	0.33	75%
T5#78	0300	197	250	259	345	360	198	0.12	0.32	74%
T5#79	0600	195	250	278	347	322	191	0.12	0.33	72%
	0700	195	250	280	360	323	190	0.12	0.33	70%
	0800	193	251	277	356	320	190	0.12	0.33	68%
	0900	200	252	282	357	322	189	0.12	0.32	67%
	1000	205	251	276	355	322	190	0.12	0.31	65%
	1100	198	250	275	347	321	190	0.12	0.31	63%
T5#80	1200	200	250	280	347	316	196	0.12	0.32	62%
	1300	194	253	284	355	326	203	0.15	0.33	60%
	1400	205	250	280	340	321	201	0.15	0.32	58%
	1500	193	252	284	350	324	201	0.15	0.33	57%
T5#81	1600	202	252	282	355	327	200	0.15	0.32	56%
T5#82	1900	204	254	282	350	319	203	0.15	0.31	53%
	2000	195	250	270	350	325	200	0.15	0.35	52%
	2100	200	250	280	350	329	200	0.15	0.33	50%
	2200	198	250	277	345	329	200	0.15	0.35	47%
	2300	205	255	295	360	328	197	0.15	0.33	46%
	2400	210	255	310	355	327	198	0.15	0.33	44%

REMARKS: 1) SYSTEM STARTED AT 2130 12/4/86
2) BARREL 6 HI TEMP @ 0220, RESTARTED P12B
3) SHUTDOWN SYSTEM @ 0315. DUE TO BARREL 6 HI TEMP
4) SYSTEM RESTART @ 0510
5) ASPHALT FEED INCREASED TO 0.15 GPM @ 1230
6) SYSTEM SHUTDOWN @ 1645 DUE TO LOSS OF AC POWER.
7) SYSTEM RESTARTED @ 1830
8) CONTINUED NEXT PAGE.

RECORD COPY

MIXED RESIN - FILTER CAKE SOLIDIFICATION

[illegible]

[illegible] METERING PUMP [illegible] - P5A

[illegible] METERING PUMP [illegible] P12B

EXTRUDER SPEED 260 RPM

TS#83

TIME	BARREL #1	BARREL #2	BARREL #3	BARREL #4	BARREL #5/6	BARREL #7	RESIN FLOW	WASTE FLOW	TANK LEVEL
0100	205	305	320	350	337	210	0.12		44
0200	200	255	285	355	325	196	0.12	0.3	42
0300	200	250	300	350	328	202	0.12	0.32	40
0400	200	250	295	350	330	199	0.12	0.327	40
0500	200	250	295	350	336	200	0.12	0.30	38
0600	200	250	290	345	327	192	0.12	0.36	37
0700	200	250	300	360	325	191	0.12	0.33	37
0800	200	250	301	355	320	190	0.12	0.32	35
0900	198	253	303	361	319	191	0.12	0.34	34
1000	198	253	296	350	319	191	0.12	0.32	33
1100	198	253	296	353	319	191	0.12	0.33	32
1200	199	252	299	352	317	190	0.12	0.28	31
1300	199	253	295	353	319	189	0.12	0.28	28
1400	199	255	295	356	321	186	0.12	0.31	26
1500	193	255	290	355	320	189	0.12	0.32	24

REMARKS: 1) P11 TRIP @ 0025, NO FEED FLOW, FEED RESTORED 0115
2) SYSTEM SHUTDOWN @ 1530

RECORD COPY

4.11.2 Bead [illegible] [illegible]ATION

TS# 86

4.11.2.1 PREPARE THE WASTE STREAM TO BE PROCESSED IN ACCORDANCE WITH N2-[illegible] AND N2-OP-41. 12/7/86

4.11.2.2 PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER N2-CSP-14. 12/7/86

12/7/86

4.11.2.3 SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING Bead RESINS. 12/7/86

12/7/86

4.11.2.4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. 12/7/86

4.11.2.5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. 12/7/86

4.11.2.6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. 12/7/86

4.11.2.6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). 12/7/86

4.11.2.7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. 12/7/86

4.11.2.8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. 12/7/86

4.11.2.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER.

12/7/86

4.11.2.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.2.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE SLUDGE" POSITION.

12/7/86

4.11.2.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV203.

12/7/86

4.11.2.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV9A AND HV8A OR 2WSS-HV9B AND HV8B).

12/7/86

4.11.2.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP.

12/7/86

4.11.2.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14).

12/7/86

4.11.2.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET.

12/8/86

4.11.2.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

4.11.2.13.1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH N2-OP-41.

12/8/86

4.11.2.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES.

12/8/86

4.11.2.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP THE ASPHALT METERING PUMP.

12/8/86

4.11.2.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY.

12/8/86

4.11.2.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING.

12/8/86

[illegible] RESIN SOLIDIFICATION

ASPHALT METERING PUMP 2WSS-P5A

WASTE METERING PUMP 2WSS-P12B

EXTRUDER SPEED 250 RPM

	TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL	LINER LEVEL LI23B
TS#87	0700	200	255	305	355	323	207	0.15	0.35	46%	
TS#88	1300	210	250	280	350	339	204	0.16	0.34	42%	
	1400	205	252	285	355	342	210	0.17	0.35	40%	
	1500	195	252	280	345	347	204	0.17	0.32	38%	
	1600	200	255	280	345	345	231	0.18	0.35	36%	
	1700	200	253	280	351	355	224	0.18	0.39	34%	
	1800	200	253	278	348	361	229	0.18	0.32	33%	
	1900	200	253	280	343	362	229	0.18	0.33	31%	
	2000	200	255	280	350	361	228	0.18	0.33	29%	
	2100	200	250	280	350	364	229	0.18	0.32	28%	
	2200	198	253	282	345	363	229	0.18	0.36	26%	
	2300	198	253	282	351	364	229	0.18	0.33	24%	
	0000	200	253	282	345	361	228	0.18	0.38	22%	
TS#89	0100	200	253	280	350	364	236	0.18	0.36	20%	1.64 FT.
	0200	197	253	285	347	364	229	0.18	0.38	19%	1.83'
	0300	197	254	285	350	365	230	0.18	0.38	17%	1.86'
	0400	198	254	285	348	369	229	0.18	0.38	15%	2.05'
	0500	200	255	285	342	367	228	0.18	0.33	13%	2.11'
	0600	200	255	285	350	367	229	0.18	0.33	11%	2.22'
	0700	198	254	285	347	368	229	0.18	0.38	9%	2.34'

REMARKS: 0600 STARTED EXTRUDER, P5A, P12B STARTED AT 0625
0730 SYSTEM SHUTDOWN DUE TO RESIN FEED LINE PLUG
1245 STARTED EXTRUDER, P5B, P12B STARTED AT 1255
0100 12/8/86 LINER LEVEL ELEMENT LE23B INSTALLATION COMPLETE, UNIT FUNCTIONAL, RECORDING LEVEL
0130 SYSTEM SHUTDOWN

4.11.3 WASTE CONCENTRATES SOLIDIFICATION

4.11.3.1 PREPARE THE WASTE STREAM TO BE PROCESSED IN ACCORDANCE WITH N2-OP-40 AND N2-OP-41. 12/8/86

TS#93

4.11.3.2 PLACE THE WASTE RECIRCULATION SYSTEM FOR THE APPLICABLE TANK IN OPERATION FOR AT LEAST 1/2 HOUR AND SAMPLE THE WASTE STREAM PER N2-CSP-14. 12/8/86

4.11.3.3 SET THE EXTRUDER/EVAPORATOR (2WSS-EV25) TEMPERATURE PROFILE FOR PROCESSING WASTE CONCENTRATES. 12/8/86

4.11.3.4 SET THE EXTRUDER/EVAPORATOR SPEED CONTROLLER TO 0 AND START THE EXTRUDER MOTOR. 12/8/86

4.11.3.5 SLOWLY INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 50 RPM. 12/8/86

4.11.3.6 VERIFY THAT THE ASPHALT FLOW CONTROLLER (2WSS-FIC202) IS IN MANUAL. 12/8/86

4.11.3.6.1 OPEN THE ASPHALT METERING PUMP DISCHARGE VALVE (2WSS-HV12A OR HV12B) AND START THE APPLICABLE ASPHALT METERING PUMP (2WSS-P5A OR P5B). 12/8/86

4.11.3.7 ADJUST ASPHALT FLOW TO APPROXIMATELY 0.1 GPM. 12/8/86

4.11.3.8 INCREASE THE EXTRUDER SPEED TO APPROXIMATELY 250 RPM AND ALLOW THE SYSTEM TO STABALIZE FOR AT LEAST 5 MINUTES. 12/8/86

4.11.3.9 ADJUST THE ASPHALT FLOW RATE TO THE FLOW RATE DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14) OR SLIGHTLY GREATER. 12/8/86

4.11.3.10 INITIATE WASTE FLOW AS FOLLOWS:

4.11.3.10.1 PLACE THE WASTE FEED SELECTOR SWITCH IN THE "WASTE CONCENTRATES" POSITION. 12/8/86

4.11.3.10.2 OPEN THE WASTE DISCHARGE TO THE EXTRUDER ISOLATION VALVE 2WSS-HV204. 12/8/86

4.11.3.10.3 OPEN THE SUCTION AND DISCHARGE VALVES FOR THE WASTE FEED METERING PUMP TO BE STARTED (2WSS-HV11A AND HV10A OR 2WSS-HV11B AND HV10B). 12/8/86

4.11.3.10.4 SET THE APPLICABLE WASTE METERING PUMP SPEED CONTROLLER TO 0 AND START THE PUMP. 12/8/86

4.11.3.10.5 SLOWLY INCREASE THE WASTE FEED RATE TO AS CLOSE AS POSSIBLE WITHOUT EXCEEDING THE MAXIMUM FEED RATE AS DETERMINED BY THE EXTRUDER FEED SAMPLE DATA SHEET (N2-CSP-14). 12/8/86

TS#97
TS#98 TS#100
TS#99

4.11.3.11 RECORD THE EXTRUDER TEMPERATURE PROFILE, ASPHALT AND WASTE FEED RATES, AND WASTE TANK LEVEL EVERY HOUR ON ATTACHED DATA SHEET. 12/11/86

TS#103
TS#104

4.11.3.12 WHEN THE WASTE LINER IS FILLED OR WASTE TANK IS APPROACHING EMPTY (WHICHEVER OCCURS FIRST), PERFORM THE FOLLOWING:

REC

4.11.3.13.1 FLUSH THE WASTE FEED SYSTEM TO THE EXTRUDER IN ACCORDANCE WITH NL-OP-41.
TS#104

12/11/86

4.11.3.13.2 STOP WASTE FEED TO THE EXTRUDER AND CLOSE THE APPLICABLE WASTE FEED VALVES.

12/11/86

4.11.3.13.3 CONTINUE TO FEED ASPHALT TO THE EXTRUDER FOR AT LEAST 2 MINUTES TO PURGE THE WASTE RESIDUE FROM THE EXTRUDER, THEN STOP THE ASPHALT METERING PUMP.

12/11/86

4.11.3.13.4 DECREASE THE EXTRUDER SPEED TO APPROXIMATELY 100 RPM, AND VERIFY THAT THE EXTRUDER TRIPS AFTER A 2 MINUTE TIME DELAY.

12/11/86

4.11.3.14 REMOVE THE FILLED LINER FROM THE TURNTABLE FOR COOLING.
TS#104

12/11/86

WASTE CONCENTRATES SOLIDIFICATION

ASPHALT METERING PUMP 2WSS- P5A
WASTE METERING PUMP 2WSS- P7A
EXTRUDER SPEED 250 RPM

	TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL	LINER LEVEL LI23B
	2100	200	270	265	350	372	279	0.14	0.35	36%	
	2200	200	270	265	350	374	280	0.14	0.39	36%	
TS#96	2300	200	270	265	345	377	281	0.14	0.39	34%	0.57'
	0000	200	270	270	350	378	280	0.14	0.39	33%	0.67'
	0100	200	270	270	350	377	280	0.14	0.35	32%	0.7'
	0200	200	269	265	345	376	281	0.14	0.35	31%	0.74'
	0300	200	268	265	345	378	280	0.14	0.35	30%	0.83'
	0400	200	268	265	345	382	280	0.14	0.37	29%	0.89'
	0500	200	268	265	348	383	279	0.14	0.43	28%	0.9'
	0600	195	268	270	345	384	280	0.14	0.43	22%	1.02'
	0700	200	267	270	345	383	279	0.14	0.45	20%	1.05'
	0800	200	265	269	343 ~~374~~ 12/9/86	379	281	0.14	0.44	19%	1.14'
	0900	200	265	269	349	377	280	0.14	0.45	22%	1.17'
	1000	195	265	269	345	373	280	0.14	0.47	22%	1.23'
TS#97	1200	200	268	260	350	366	282	0.14	0.36	21%	0.2'
	1300	200	268	263	345	375	280	0.14	0.38	21%	0.3'
	1400	200	268	250	355	380	282	0.14	0.37	21%	0.37'
	1500	200	265	265	280	349	281	0.15	0.55	20%	0.49'
	1600	195	265	265	276	361	278	0.15	0.57	20%	0.6'
	1700	200	270	265	350	362	280	0.15	0.48	20%	0.6'
	1800	200	265	265	340	355	279	0.15	0.48	19%	0.72'
	1900	200	265	270	340	358	282	0.15	0.48	19%	0.84'
	2000	197	265	270	315	355	282	0.15	0.55	19%	0.93'
TS#98											

REMARKS: 2000 STARTED EXTRUDER, P5A, ~~PA~~ 12/8/86 P7A STARTED AT 2005
2030 EMPTY LINER INDEXED, ASPHALT FLOW TOTALIZER RESET.
1030 12/9/86 SYSTEM SHUTDOWN (REFER TO TS#97)
1145 INDEXED NEW LINER, SYSTEM RESTARTED.
2000 SYSTEM SHUTDOWN TO BATCH INTO BOTTOMS TANK

WASTE CONCENTRATES SOLIDIFICATION

ASPHALT METERING PUMP 2WS5- P5A

WASTE METERING PUMP 2WS5- P7A

EXTRUDER SPEED 250 RPM

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL	LINER LEVEL LI23B
0900	220	265	248	350	373	279	6.18	0.42	46%	1.1'
1000	235	260	295	360	377	282	0.18	0.36	46%	1.2'
1100	225	260	250	365	375	277	0.20	0.38	45%	1.25'
1200	230	269	245	350	372	281	0.20	0.38	45%	1.33'
TS*100										
1500	225	270	247	370	371	284	0.20	0.41	44%	1.41'
1600	210	260	246	365	370	280	0.20	0.46	44%	1.52'
1700	200	260	248	350	374	280	0.20	0.45	44%	1.69'
1800	200	260	246	355	360	280	0.20	0.49	43%	1.8'
1900	200	260	245	355	361	279	0.20	0.50	42%	1.88'
2000	200	260	245	355	357	280	0.20	0.49	42%	2.02'
2100	200	260	250	345	353	279	0.20	0.51	42%	2.12'
2200	200	265	250	350	362	284	0.20	0.60	41%	2.23
2300	200	265	250	350	355	281	0.20	0.53	41%	2.34
12/11/86 0000	200	265	255	345	358	281	0.20	0.53	40%	2.47
0100	200	265	260	350	364	284	0.20	0.53	40%	2.55
0200	200	265	260	350	358	283	0.20	0.52	39%	2.63
0300	200	268	262	350	350	278	0.20	0.53	38%	2.79
0400	200	267	262	350	355	278	0.20	0.52	38%	2.92
0500	200	268	262	350	355	279	0.20	0.54	37%	3.07
0600	203	268	262	345	367	281	0.20	0.52	37%	3.19

REMARKS: 12/10/86 0840 STARTED EXTRUDER, P5A, P7A STARTED AT 0850
1230 STOPPED P7A TO BOIL OUT STEAM DOMES
1450 RESTARTED P7A
0445 12/11/86 LINER LEVEL HIGH @ 3.0 FEET.
0640 LINER LEVEL HIGH/HIGH, EXTRUDER, P5A, P7A TRIP.

4.11 PERFORMANCE TEST

These wastes are to be processed separately. The processing steps and conditions are summarized in the following:

Processing Step	Filter Sludge	Spent Resins	Waste Concentrate
Waste Preparation			
Add Water	105 gal/filter discharge	-	-
Decant Water to	-	30-70% water	-
Adjust pH to	6-9	6-9	6-9
Waste Feed			
Waste/Asphalt Ratios in end product to be tested	40/60 45/55 50/50	45/55 50/50	40/60 45/55 50/50
Max. Waste Feed Rate, gpm	0.65	0.65	0.56
Barrel Temp. Profile			
Barrel Section 1	~~165~~ 200	~~165~~ 200	~~165~~ 200
2	~~265~~ 280	~~265~~ 280	~~265~~ 280
3	~~285~~ 320	~~285~~ 320	~~300~~ 320
4	~~300~~ 350	~~300~~ 350	~~330~~ 350
5	~~285~~ 300	~~285~~ 300	~~375~~ 350
6	~~285~~ 300	~~285~~ 300	~~375~~ 350
7	~~230~~ 190	~~230~~ 190	~~350~~ 280
Filling Method	Single pass	Single and Three pass	Single pass

SEE FRF N2-POT-41-1-2
11/4/86

The number and designation of Liners to be filled and tested are as follows:

Filter Sludge	Spent Resins	Waste Concentrate
FS-40-1	SR-45-1	WC-40-1
FS-45-1	SR-45-3	WC-45-1
FS-50-1	SR-50-1	WC-50-1
	SR-50-3	

The above designations identify the waste type (FS, SR or WC), the % of waste in the end product (40 to 50) and the number of passes in filling (1 or 3).

Filled liners are to be stored in the Liner Storage Area and locations are recorded in Data Sheet 5-12.

DELETED BY: FRF N2-POT-41-1-4
11/4/86

QA
WITNESS
INITIALS/DATE

INITIALS/DATE

4.11.1 **Filter Sludge Solidification**

TS#66

4.11.1.1 Add Slurrying Water

NOTE: The slurrying water shall be from the Radwaste Filter Backwash Tank, 2LWS-TK16, or the Spent Resin Tank, 2LWS-TK7, to maximize water reuse. The balance of the water can be obtained from flush water.

4.11.1.1.1 Calculate the amount of water, Q, required.
E35

Q = 105 x No. of Filter Discharges = ____________ gal.

4.11.1.1.2 Set the quantity, Q gal, or less, on 2WSS-FQIS100.
E35
____________ gal. ________/________

4.11.1.1.3 Open Backwash Pump Discharge Valve, 2WSS-HV118.
E35

4.11.1.1.4 Select Radwaste Filter Graphic on the Radwaste Computer. Open Backwash Tank Bottom Valve, 2LWS-AOV291, and start Backwash Pump, 2LWS-P16B.
E35
________/________

4.11.1.1.5 Verify that when the set point of 2WSS-FQIS100 is reached, Backwash Pump P16B trips.
E35
________/________

4.11.1.1.6 Close 2WSS-HV118. ________/________
E35

4.11.1.1.7 Determine the balance of water required and set the quantity on the Flush Water Batch Meter, 2WSS-FQIS104.
E35

Quantity required ____________ gal.
________/________

4.11.1.1.8 Open Flush Water Valve, 2WSS-HV119. ________/________
E35

4.11.1.1.9 Verify when the set point of the Batch Meter, 2WSS-FQIS104 is reached, Flush Water Valve, 2WSS-HV119, closes.
E35
________/________

4.11.1.1.10 Start Waste Sludge Tank Agitator, 2WSS-MIX9 and the Waste Sludge Tank is ready to receive discharge from the Floor Drain Filter to build up proper slurry concentration.
E35
________/________

4.11.1.1.12 Record the amount of water added in Data Sheet 5.13 for the given batch.
E35
________/________

DELETED BY FRF N2-POT-41-1-4
HM 12/4/86

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0

FRF NO. N2-POT-41-1-3

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM

No. N2-POT-41-1

REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no 11/24/86

DESCRIPTION OF CHANGE

DELETE STEPS 4.11 1 2 THROUGH 4.11 1.2.20.

INSERT THE FOLLOWING:

~~4.11.1.2 SAMPLE THE WASTE SLUDGE TANK FOR SPECIFIC GRAVITY, SOLID CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-OP-41, AND N2-CSP-14. JM 12/2/86~~

DELETED BY FRF N2-POT-41-1-4

JM 12/4/86

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY

1. Dale A. McCullough date 11/24/86

SSS (if applicable)

2. ____ date ____

APPROVED ☒ yes ☐ no date 11-25-86 JTG mtg no.

RETEST REQUIRED specify ____ OR No. ____

REVISION INCORPORATED (if applicable) date

PAGE 1 OF 3

RECORD COPY

INITIALS/DATE

4.11.1.2 Adjust pH.

4.11.1.2.1 Line up valves for recirculation, start and run Sludge Transfer Pump, 2WSS-P11 for one hour. ______/______

4.11.1.2.2 Note pH indicated by 2WSS-AE105. ______/______

4.11.1.2.3 Sample Waste Sludge and forward sample to Chemistry Department to determine the amount of caustic/acid required for neutralization (the S.G. solid and moisture contents are also determined for use in Step 4.11.1.3.4):

Initial pH ____________
For initial pH greater than 9
  Amount of Acid Required (A) ____________ml/liter
For initial pH less than 6
  Amount of Caustic Required (B) ____________ml/liter

4.11.1.2.4 Determine the required run time for the Acid or Caustic Addition Pump as follows:

Tank Level ____________%
Tank inventory (C) ____________gal.
Required amount of acid or caustic
$$(D) = \frac{C}{1000} \times (A) \text{ or } (B) = \_\_\_\_\_\_\_\_\_\_\_\_ \text{gal.}$$
Required Pump Run Time $T = \frac{\text{D Gal.}}{\text{1 gal/min.}} = \_\_\_\_\_\_\_\_\_\_\_\_$ min.

4.11.1.2.5 If pH less than 6, set run time (T) on the Caustic Addition Timer on Panel 2LWS-PNL349. ______/______

4.11.1.2.6 Open Destination Valve, 2LWS-AOV360, to Waste Sludge Recirculation Loop. ______/______

4.11.1.2.7 Start Caustic Addition Pump, 2LWS-P20. ______/______

4.11.1.2.8 Verify that Caustic Addition Pump stopped when timed out. ______/______

4.11.1.2.9 Verify Destination Valve, 2LWS-AOV360, closes. ______/______

4.11.1.2.10 Sample tank and verify that pH is within 6-9. ______/______

4.11.1.2.11 Repeat above step if pH is out of range. ______/______

STEPS DELETED BY FRF N2-POT-41-1-3
SEE INSERTED PAGE JM 12/2/86

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INITIALS/DATE

~~4.11.1.2.12 Record amount of chemical used and pH in Data Sheet 5.13.~~

________ / ________

~~4.11.1.2.13 If pH is greater than 9, set run time (T) on the Acid Addition Timer on Panel 2LWS-PNL349.~~

________ / ________

~~4.11.1.2.14 Open Destination Valve, 2LWS-AOV362, to Waste Sludge Recirculation Loop.~~

________ / ________

~~4.11.1.2.15 Start Acid Addition Pump, 2LWS-P21. Red indication.~~

________ / ________

~~4.11.1.2.16 Verify that the Acid Addition Pump stopped when timed out.~~

________ / ________

~~4.11.1.2.17 Verify that the Destination Valve 12LWS-AOV362, closes.~~

________ / ________

~~4.11.1.2.18 Sample tank and verify that pH is within 6-9.~~ ________ / ________

~~4.11.1.2.19 Repeat above steps if pH is out of range.~~ ________ / ________

~~4.11.1.2.20 Record the test data in Data Sheet 5.13.~~ ________ / ________

STEPS DELETED BY FRF N2-POT-41-1-3
SEE INSERTED PAGE JM 12/2/86

~~4.11.1.3 Filter Sludge Processing~~

~~4.11.1.3.1 Record the Batch No. and all processing data in Section 5.19.~~

JM 12/2/86

~~4.11.1.3.2 Place three empty Liners on the Fill Station Turntable after these have been checked for integrity and numbered (FS-40-1, FS-45-1 and FS-50-1).~~

JM 12/2/86

~~4.11.1.3.3 Place the following in operation:~~

~~Asphalt Recirculation Pump, 2WSS-P3A~~
~~Waste Sludge Tank Agitator, 2WSS-M1X9~~
~~Waste Sludge Transfer Pump, 2WSS-P11~~
~~Lube Oil Skid, 2WSS-SKD39~~
~~Manifold Skid, 2WSS-SKD38~~
~~Distillate Skid, 2WSS-SKD40~~

JM 12/2/86

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

RECORD COPY

INITIALS/DATE

4.11.1.3.4 From sample taken and analyzed in Step 4.11.1.2, calculate the waste and asphalt feed rates from the Nomographs in Attachment 9.6 or by calculation per N2-OP-41:

E36

S.G. 0.9712
Solid Content 2.4 %
Moisture Content 97.6 %
Waste Feed 0.37 gpm (MAXIMUM)
Asphalt Feed @ 40/60 ratio ________ gpm
Asphalt Feed @ 45/55 ratio ________ gpm
Asphalt Feed @ 50/50 ratio 0.065 gpm (MINIMUM)

4.11.1.3.5 Heat up Extruder per N2-OP-41. Verify that the Extruder temperature profile for Filter Sludge is established. JM 12/2/86

4.11.1.3.6 Set the Extruder Speed Controller, 2WSS-SC135, to 0 RPM and start the Extruder. JM 12/2/86

C N2-POT-41-1-1 JM 9/11/86

4.11.1.3.6.1 Increase extruder speed to 50 RPM. JM 12/2/86

4.11.1.3.7 Set Asphalt Feed Rate to 0.1 gpm on 2WSS-FC202. WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT. JM 12/2/86

4.11.1.3.8 Open Asphalt Discharge Valve, 2WSS-HV12A. JM 12/2/86

4.11.1.3.9 Start Asphalt Metering Pump P5A. JM 12/2/86

4.11.1.3.10 Verify that asphalt is discharged from the Extruder into the Liner FS-40-1. ~~after 10 minutes of operation.~~ JM 12/2/86
SEE FRF N2-POT-41-1-1 JM 9/11/86

4.11.1.3.11 Increase the Extruder speed to 250 RPM. JM 12/2/86

4.11.1.3.12 Adjust asphalt flow to the FLOWRATE DETERMINED BY N2-CSP-14 ~~40% of the calculated flow for the Waste/Asphalt ratio of 40/60 via~~ 2WSS-FC202 in the manual or "M" mode. JM 12/2/86 JM 12/2/86

E37

4.11.1.3.13 Place Waste Feed Selector Switch, 2WSS-HS156, to "Waste Sludge Feed" position. JM 12/2/86

4.11.1.3.14 Open Waste Sludge Metering Pump Suction and Discharge Valves, 2WSS-HV9~~A~~/8~~A~~/203. JM 12/2/86
B B JM 12/2/86

E41

4.11.1.3.15 Set the Waste Sludge flow rate to 40% of the calculated flow for the Waste/Asphalt ratio of 40/60 via 2WSS-FC12A. ________

E38

STEPS DELETED BY FRF N2-POT-41-1-4 JM 12/4/86

INITIALS/DATE

E41
4.11.1.3.16 Start Waste Sludge Metering Pump, 2WSS-P12~~A~~B. JM 12/2/86 — JM 12/2/86

E39
4.11.1.3.17 ~~Repetitively activate the "Press to Balance" slide switch or the Asphalt Feed Flow Controller, 2WSS-FC202 while adjusting the Waste/Asphalt ratio via the "R" thumbwheel.~~ — /

STEPS DELETED BY FRF N2-POT-41-1
SEE NEXT PAGE FOR NEW STEPS JM 9/11/86

4.11.1.3.18 ~~When all flow rates stabilized, place the slide switch on 2WSS-FC202 in the "A" or Auto position.~~ — JM 12/2/86

4.11.1.3.19 Gradually increase the Waste Sludge feed rate to the full calculated flow via 2WSS-FC12~~A~~.B JM 12/2/86 — JM 12/2/86

E41

4.11.1.3.20 Verify the asphalt feed rate increases to maintain a constant Waste/Asphalt ratio.

E40

Asphalt flow __________ gpm
Waste Sludge flow __________ gpm

— /

4.11.1.3.21 Record the Extruder barrel temperature profile at least once every hour in Section 5.19. — JM 12/2/86

4.11.1.3.22 Collect distillate samples: Influent, Roughing and Polishing Filters discharges, at the Distillate Skid. Forward samples to Chemistry Department for analysis. Record results in Data Sheet 5.14. — /

NOTE: During waste processing, sample the distillate skid from the pump discharge, roughing filter effluent, and polishing filter effluent every 8 hours for at least the first 48 hours of extruder operation. Document sample times and required information on Data Sheet 5.14. After the first 48 hours, samples should be taken at the discretion of the test director.

TS# 72

4.11.1.3.23 When the Level Switch, 2WSS-LS23A and/or B, is activated, index the Turntable by pressing Drip Pan Arm Switch, 2WSS-HS196. Verify:

Drip Pan Arm extends
Turntable index
Drip Pan is released and dropped into the empty Liner FS-45-1.
Drip Pan Arm retracts.

— /

4.11.1.3.24 Verify that the waste feed and asphalt continue to fill the new Liner. — /

4.11.1.3.25 Adjust the Waste/Asphalt ratio slowly to 45/55 ~~via the "R" thumbwheel~~. — /

SEE FRF N2-POT-41-1-1
JM 9/11/86

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

FRF NO. N2-POT-41-1-

PAGE 5 OF 10

CHANGE TO PAGE 92 OF 171, N2-POT-41-1

DESCRIPTION OF CHANGE

~~1) STEP 4.11.1.3.17 DELETE STEP, INSERT THE FOLLOWING:~~

E39 ~~"WHEN ASPHALT AND WASTE FLOW RATES HAVE STABILIZED AT APPROXIMATELY 40% OF CALCULATED FLOW, PLACE THE ASPHALT FLOW CONTROLLER IN "RATIO" CONTROL."~~

~~2) STEP 4.11.1.3.18 DELETE STEP, INSERT THE FOLLOWING:~~

~~"PLACE THE ASPHALT FLOW CONTROLLER IN AUTO."~~

~~3) STEP 4.11.1.3.25 DELETE "VIA THE "R" THUMBWHEEL".~~

STEPS DELETED BY FRF N2-POT-41-1-4

JM 12/4/86

REASON FOR CHANGE

ITEMS 1, 2, AND 3 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

RECORD COPY

INITIALS/DATE

4.11.1.3.26 Verify that the asphalt flow decreases and stabilizes to maintain a constant Waste/Asphalt ratio.

Asphalt flow ____________ gpm
Waste Sludge flow ____________ gpm
______/______

4.11.1.3.27 Record the Extruder barrel temperature profile at least once every hour in Data Sheet 5.13.

______/______

4.11.1.3.28 When the Level Switch, 2WSS-LS23A and/or B, is activated, index the Turntable by pressing Drip Pan Arm Switch, 2WSS-HS196. Verify:

Drip Pan Arm extends.
Turntable index.
Drip Pan is released and dropped into the empty Liner FS-50-1.
Drip Pan Arm retracts.

______/______

4.11.1.3.29 Verify that the waste feed and asphalt continue to fill the new Liner.

______/______

4.11.1.3.30 Adjust the Waste/Asphalt ratio slowly to 50/50. ~~via the "R" thumbwheel~~.

SEE FRF N2-POT-41-1-1 9/11/86

______/______

4.11.1.3.31 Verify that the asphalt flow decreases and stabilizes to maintain a constant Waste/Asphalt ratio.

Asphalt flow ____________ gpm
Waste Sludge flow ____________ gpm
______/______

4.11.1.3.32 Remove the first filled Liner (FS-40-1) from the Turntable and place it in the Liner Cooling Area for further cooling. Replace with empty Liner on the Turntable.

______/______

4.11.1.3.33 Record the Extruder Barrel temperature profile at least once every hour in Data Sheet 13.

______/______

4.11.1.3.34 When the Drum Level High alarm energizes, perform the following:

4.11.1.3.34.1 Stop sludge metering pump P12A. ______/______

4.11.1.3.34.2 Stop asphalt metering pump P5A after 5 minutes.

______/______

4.11.1.3.34.3 Stop the Extruder/Evaporator. ______/______

4.11.1.3.35 Remove all filled liners from the Turntable, and place in the liner cooling area.

______/______

STEPS DELETED BY FRF N2-POT-41-1-4
12/4/86

RECORD COPY

QA
WITNESS
INITIALS/DATE

INITIALS/DATE

~~4.11.2 **Spent Resin Solidification**~~

~~4.11.2.1 Transfer from Spent Resin Tank to Waste Sludge Tank.~~

~~4.11.2.1.1 Verify that the Waste Sludge Tank, 2WSS-TK8, is empty. If not, pump the contents to a suitable waste container.~~

______/______

~~4.11.2.1.2 Set Waste Sludge Tank influent Batch meter, 2WSS-FQIS100, to 1000 gal.~~

______/______

~~4.11.2.1.3 From LWS Computer, place Spent Resin Tank, 2LWS-TK7, in recirculation.~~

______/______

~~4.11.2.1.4 Open Spent Resin Pump Discharge Valve, 2WSS-HV117.~~

______/______

~~4.11.2.1.5 Close Spent Resin Pump Recirc. Valve, 2LWS-AOV220.~~

______/______

~~4.11.2.1.6 Verify when the set point of 2WSS-FQIS100 is reached, the Spent Resin Pump P7 trips.~~

______/______

~~4.11.2.1.7 Close 2WSS-HV117.~~ ______/______

~~4.11.2.2 Sample the waste sludge tank. Decant if necessary.~~

______/______

~~4.11.2.2.1 Repeat fill and decant of the sludge tank until desired amount of spent resins is obtained.~~

______/______

STEPS DELETED BY FRF N2-POT-41-1-4
12/4/86

~~4.11.2.3 PH Adjustment~~

~~4.11.2.3.1 Line up valves for recirculation, start Sludge Transfer Pump, 2WSS-P11, for one hour.~~

______/______

STEPS DELETED BY FRF N2-POT-41-1-3
SEE INSERTED PAGE FOR NEW STEP
12/2/86

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0
FRF NO. N2-POT-41-1.3

PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM
NO. N2-POT-41-1
REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no

DESCRIPTION OF CHANGE

DELETE STEPS 4.11 2.3 THROUGH 4.11 2.3.20.
INSERT THE FOLLOWING:

~~4.11.2.3 SAMPLE THE WASTE SLUDGE TANK FOR SPECIFIC GRAVITY, SOLID CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-OP-41, AND N2-CSP-14.~~

DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY
1. Dale G. McCully date 11/24/86
SSS (if applicable)
2. date

APPROVED ☒ yes ☐ no date 11-25-86
JIG mtg no.

RETEST REQUIRED specify OR No.

REVISION INCORPORATED (if applicable) date

PAGE 2 OF 3

RECORD COPY

INITIALS/DATE

4.11.2.3.2 Note pH indicated by 2WSS-AE105. pH ________ ________/________

4.11.2.3.3 Sample Waste Sludge and determine the amount of caustic/acid required for neutralization (the S.G. solid and moisture contents are also determined for use in Section 4.11.2.4.4):

Initial pH ______________
pH after Neutralization ______________
For initial pH greater than 9 Amount of Acid Required (A) ________ml/liter
For initial pH less than 6 Amount of Caustic Required (B) ______ml/liter

4.11.2.3.4 Determine the required run time for the Acid or Caustic Addition Pump as follows:

Tank Level ______________%
Tank Inventory (C) ______________ gal.
Required amount of acid or caustic
$(D) = \frac{C}{1000} \times (A) \text{ or } (B) =$ ______________ gal.

Required Pump Run Time . $T = \frac{D \text{ gal.}}{1 \text{ gal./min.}} =$ __________ min.

4.11.2.3.5 If pH is less than 6, set run time (T) on the Caustic Addition Timer on Panel 2LWS-PNL349.

________/________

4.11.2.3.6 Open Destination Valve, 2LWS-AOV360, to Waste Sludge Recirculation Loop.

________/________

4.11.2.3.7 Start Caustic Addition Pump, 2LWS-P20. ________/________

4.11.2.3.8 Verify that Caustic Addition Pump stopped when timed out.

________/________

4.11.2.3.9 Verify Destination Valve, 2LWS-AOV360, closes. ________/________

4.11.2.3.10 Sample tank and verify that pH is within 6-9. ________/________

4.11.2.3.11 Repeat above step if pH is out of range. ________/________

4.11.2.3.12 Record amount of chemical used and pH in Data Sheet. 5.13.

________/________

4.11.2.3.13 If pH is greater than 9, set run time (T) on the Acid Addition Timer on Panel 2LWS-PNL349.

________/________

STEPS DELETED BY FRF N2-POT-41-1-3.
SEE INSERTED PAGE FOR NEW STEP
12/2/86

INITIALS/DATE

~~4.11.2.3.14 Open Destination Valve, 2LWS-AOV362, to Waste Sludge Recirculation Loop.~~

____/____

~~4.11.2.3.15 Start Acid Addition Pump, 2LWS-P21. Red indication.~~

____/____

~~4.11.2.3.16 Verify that the Acid Addition Pump stopped when timed out.~~

____/____

~~4.11.2.3.17 Verify that the Destination Valve, 2LWS-AOV362, closes.~~

____/____

~~4.11.2.3.18 Sample tank and verify that pH is within 6-9.~~ ____/____

~~4.11.2.3.19 Repeat above steps if pH is out of range.~~ ____/____

~~4.11.2.3.20 Record the test data in Data Sheet 5.13.~~ ____/____

STEPS DELETED BY FRF N2-POT-41-1-3
SEE INSERTED PAGE FOR NEW STEP.
JM 12/2/86

~~4.11.2.4 Spent Resin Processing~~

~~4.11.2.4.1 Record the Batch No. and all processing data on Data Sheet 5.13.~~

____/____

~~4.11.2.4.2 Place three empty Liners on the Fill Station Turntable after these have been checked for integrity. The first two are marked SR-45-1, SR-45-3.~~

____/____

~~4.11.2.4.3 Place the following in operation if not already in operation:~~

~~Asphalt Recirculation Pump, 2WSS-P3A~~
~~Waste Sludge Tank Agitator, 2WSS-MIX9~~
~~Waste Sludge Transfer Pump, 2WSS-P11~~
~~Lube Oil Skid, 2WSS-SKD39~~
~~Manifold Skid, 2WSS-SKD38~~
~~Distillate Skid, 2WSS-SKD40~~ ____/____

~~4.11.2.4.4 From sample taken and analyzed in Step 4.11.2.3.3, calculate the waste and asphalt feed rates from the Nomographs in Attachment 9.6 or per procedure given in N2-OP-41:~~

~~S.G.~~ ____
~~Solid Content~~ ____%
~~Moisture Content~~ ____%
~~Waste Feed~~ ____gpm
~~Asphalt Feed @ 45/55 ratio~~ ____gpm
~~@ 50/50 ratio~~ ____gpm

____/____

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

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INITIALS/DATE

4.11.2.4.5 Set the Extruder temperature profile for Spent Resin processing. ______/______

4.11.2.4.6 Set the Extruder Speed Controller, 2WSS-SC135, to 0 RPM and start the Extruder. ______/______

4.11.2.4.6.1 Increase Extruder speed to 50 RPM. ______/______

4.11.2.4.7 Set asphalt feed rate to 0.1 gpm on 2WSS-FC202. ______/______
WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT.

FRF N2-POT-41-1-1
JM 9/11/86

4.11.2.4.8 Open asphalt Discharge Valve, 2WSS-HV12A. ______/______

4.11.2.4.9 Start Asphalt Metering Pump P5A. ______/______

4.11.2.4.10 Verify that asphalt is discharged from the Extruder into the Liner. ~~after about 10 minutes of operation~~.
SEE FRF N2-POT-41-1-1
JM 9/11/86 ______/______

4.11.2.4.11 Increase the Extruder speed to 250 RPM. ______/______

4.11.2.4.12 Adjust asphalt flow to 40% of the calculated flow for the Waste/Asphalt ratio of 45/55 via 2WSS-FC202 in the manual or "M" mode. ______/______

4.11.2.4.13 Place Waste Feed Selector Switch, 2WSS-HS156, to "Waste Sludge Feed" position. ______/______

4.11.2.4.14 Open Waste Sludge Metering Pump Suction and Discharge Valves, 2WSS-HV9A/8A/203. ______/______

4.11.2.4.15 Set the Waste Sludge flow rate to 40% of the calculated flow for the Waste/Asphalt ratio of 45/55 via 2WSS-FC12A. ______/______

4.11.2.4.16 Start Waste Sludge Metering Pump, 2WSS-P12A. ______/______

4.11.2.4.17 ~~Repetitively activate the "Press to Balance" slide switch on the Asphalt Feed Flow Controller, 2WSS-FC202, while adjusting the Waste/Asphalt ratio via the "R" thumbwheel~~.
STEP DELETED BY FRF N2-POT-41-1-1
SEE NEXT PAGE FOR NEW STEP. JM 9/11/86 ______/______

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

RECORD COPY

1

FRF NO. N2-POT-41-1-2

PAGE 7 OF 10

CHANGE TO PAGE 97 OF 271, N2-POT-41-1

DESCRIPTION OF CHANGE

1) STEP 4.11.2.4.7 AFTER "2WSS-FC202", ADD THE FOLLOWING:
"... WITH THE CONTROLLER IN THE MANUAL MODE, ...
LOCAL SETPOINT."

2) STEP 4.11.2.4.10 DELETE "AFTER ABOUT 10 MINUTES OF OPERATION".

~~3) STEP 4.11.2.4.17 DELETE STEP, INSERT THE FOLLOWING:~~
~~"WHEN ASPHALT AND WASTE FLOW RATES HAVE STABALIZED AT~~
~~APPROXIMATELY 40% OF CALCULATED FLOW, PLACE THE~~
~~ASPHALT FLOW CONTROLLER IN "RATIO" CONTROL.~~

DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

REASON FOR CHANGE

ITEMS 1 AND 3 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

ITEM 2: TO DELETE UNNECESSARY REQUIREMENT FROM STEP. OPERATING EXPERIENCE HAS SHOWN THAT ASPHALT WILL DISCHARGE FROM THE EXTRUDER ALMOST IMMEDIATELY AFTER STARTING THE MACHINE.

RECORD COPY

INITIALS/DATE

4.11.2.4.18 ~~When all flow rates stabilized, place the slide switch on 2WSS-FC202 in the "A" or Auto position.~~
PLACE THE ASPHALT FLOW CONTROLLER IN "AUTO".
SEE FRF N2-POT-41-1-1 HM 9/11/86 ______/______

4.11.2.4.19 Gradually increase the Waste Sludge Feed rate to the full calculated flow via 2WSS-FC12A.

______/______

4.11.2.4.20 Verify the asphalt feed rate increases to maintain a constant Waste/Asphalt ratio.

Asphalt flow __________________ gpm
Waste Sludge flow ______________ gpm

______/______

4.11.2.4.21 Record the Extruder barrel temperature profile at least once every hour on Data Sheet 5.13.

______/______

4.11.2.4.22 When the Level Switch, 2WSS-LS23A and/or B is activated, index the Turntable by pressing Drip Pan Arm Switch, 2WSS-HS196. Verify:

Drip Pan Arm extends
Turntable index
Drip Pan is released and dropped into the empty Liner
Drip Pan Arm Retracts.

______/______

4.11.2.4.23 Verify that waste feed and asphalt continues to fill the new Liner.

______/______

4.11.2.4.24 Index Turntable again so that the filled Liner (SR-45-1) is at the pickup position. Remove filled Liner and replace with unmarked empty Liner.

______/______

4.11.2.4.25 Index Turntable every 3 hours through two revolutions so that the Liners are cooled between filling. Finally the partially filled Liner (SR-45-3) is topped off until the Level Switch, 2WSS-LS23A and/or B is activated.

______/______

4.11.2.4.26 The second filled Liner (SR-45-3) that has been filled by the Three-Pass Method is moved to the Cooling Area.

______/______

STEPS DELETED BY FRF N2-POT-41-1-4
HM 12/4/86

INITIALS/DATE

4.11.2.4.27 Replace with a empty Liner (SR-50-1) on Turntable.

________/________

4.11.2.4.28 Index Turntable to position the empty Liner under the Extruder discharge spout.

________/________

4.11.2.4.29 Verify that the waste and asphalt continue to fill the new Liner.

________/________

4.11.2.4.30 Adjust the Waste/Asphalt ratio slowly to 50/50. ~~via the "R" thumbwheel.~~

SEE FRF N2-POT-41-1-1

JM 9/11/86

________/________

4.11.2.4.31 Verify that the asphalt flow decreases and stabilizes to maintain a constant Waste/Asphalt ratio.

Asphalt flow ____________ gpm

Waste Sludge flow ____________ gpm

________/________

4.11.2.4.32 When the Level Switch, 2WSS-LS23A and/or B is activated, index the Turntable so that the filled Liner is at the pickup position.

________/________

4.11.2.4.33 Remove the Liner to the cooling area and replace with empty Liner (SR-50-3) on Turntable.

________/________

4.11.2.4.34 Index Turntable to position empty Liner under the Extruder discharge spout.

________/________

NOTE: Replace the other partially filled liners with empty liners as it becomes necessary during step 4.11.2.4.35.

4.11.2.4.35 Index Turntable every 3 hours through two revolutions so that the Liners are cooled between filling. Finally the partially filled Liner (SR-50-3) is topped off until the Level Switch, 2WSS-LS23A/B, is activated.

________/________

STEPS DELETED BY FRF N2-POT-41-1-4

JM 12/4/86

RECORD COPY

INITIALS/DATE

~~4.11.2.4.36 The Liner (SR 50 3) which has been filled in three passes is removed to the Cooling area.~~
STEP DELETED, REFER TO
FRF N2-POT-41-1-1 9/11/86 ______/______

4.11.2.4.37 Stop Waste Sludge Metering Pump, 2WSS-P12A. ______/______

4.11.2.4.38 Stop Asphalt Metering Pump, 2WSS-P5A, after 10 minutes. ______/______

4.11.2.4.39 Stop Extruder-Evaporator, but keep it in hot standby. ______/______

4.11.2.4.40 Remove all liners from the turntable. ______/______

QA
WITNESS
INITIALS/DATE

4.11.3 Waste Concentrate Solidification

4.11.3.1 Waste Concentrate pH Adjustment

4.11.3.1.1 Verify sufficient waste concentrate is present in the Evaporator Bottom Tank, 2LWS-TK10. ______/______

STEPS DELETED BY FRF N2-POT-41-1-4
12/4/86

4.11.3.1.2 Line up valves for recirculation of Evaporator Bottoms Tank, 2LWS-TK10. Start Waste Concentrate Transfer Pump, 2WSS-P6, for one hour. Red indication. ______/______

4.11.3.1.3 Note pH indicated by 2WSS-AE110. ______/______

4.11.3.1.4 Sample Waste Concentrate and forward sample to Chemistry Department to determine the amount of caustic/acid required for neutralization (the S.G. and the solid content are also determined for use in Step 4.11.3.2.4):

Initial pH ____________
pH after Neutralization ____________
For initial pH greater than 9 Amount of Acid Required (A) __________ml/liter
For initial pH less than 6 Amount of Caustic Required)B) __________ml/liter

4.11.3.1.5 Determine the required run time for the Acid or Caustic Addition Pump as follows:

Tank Level ________________%
Tank inventory (C) ________________gal.
Required amount of acid or caustic
$(D) = \frac{C}{1000} \times (A) \text{ or } (B) =$ ____________ gal.
Required Pump Run Time $T = \frac{D \text{ gal.}}{1 \text{ gal/min}} =$ __________ min.

STEPS DELETED BY FRF N2-POT-41-1-3
SEE INSERTED PAGE FOR NEW STEP.
12/2/86

RECORD COPY

NIAGARA MOHAWK POWER CORPORATION
NMP2

FIELD REVISION FORM

TEST FOLDER NUMBER 41.001 0	FRF NO. N2-POT-41-1-3	
PROCEDURE TITLE WASTE SOLIDIFICATION SYSTEM	No. N2-POT-41-1	REV. 0

PROCEDURE REVISION REQUIRED ☒ yes ☐ no

DESCRIPTION OF CHANGE

DELETE STEPS 4.11.3 1.2 THROUGH 4.11.3 1.21.

INSERT THE FOLLOWING:

~~4.11.3 1.2 SAMPLE THE EVAPORATOR BOTTOMS TANK FOR SPECIFIC GRAVITY, SOLID CONTENT, MOISTURE CONTENT, AND pH. ADJUST pH IF NECESSARY IN ACCORDANCE WITH N2-CP-41, AND N2-CSP-11.~~

DELETED BY FRF N2-POT-41-1-4

JM 12/4/86

REASON FOR CHANGE

TO DELETE UNNECESSARY STEPS FROM PROCEDURE AND ALLOW USE OF APPROVED SYSTEM OPERATING PROCEDURE TO PERFORM SAME REQUIREMENTS.

AUTHORIZED BY
1. Dal. C. McCally date 11/24/86 2. ________ date ____ SSS (if applicable)

APPROVED ☒ yes ☐ no date 11-25-86 JTG mtg no.

RETEST REQUIRED specify ________ OR No. ________

REVISION INCORPORATED (if applicable) date

PAGE. 3 OF 3

RECORD COPY

INITIALS/DATE

~~4.11.3.1.6 If pH is less than 6, set run time (T) on the Caustic Addition Timer on Panel 2LWS-PNL349.~~ ____/____

~~4.11.3.1.7 Open Destination Valve, 2LWS-AOV361, to Waste Concentrate Recirculation Loop.~~ ____/____

~~4.11.3.1.8 Start Caustic Addition Pump, 2LWS-P20.~~ ____/____

~~4.11.3.1.9 Verify that Caustic Addition Pump stopped when timed out.~~ ____/____

~~4.11.3.1.10 Verify Destination Valve, 2LWS-AOV361, closes.~~ ____/____

~~4.11.3.1.11 Sample tank and verify that pH is within 6-9.~~ ____/____

~~4.11.3.1.12 Repeat above steps if pH is out of range.~~ ____/____

~~4.11.3.1.13 Record amount of chemical used and pH in Data Sheet 13.~~ ____/____

~~4.11.3.1.14 If pH is greater than 9, set run time (T) on the Acid Addition Timer on Panel 2LWS-PNL349.~~ ____/____

~~4.11.3.1.15 Open Destination Valve, 2LWS-AOV363, to Waste Concentrate Recirculation Loop.~~ ____/____

~~4.11.3.1.16 Start Acid Addition Pump, 2LWS-P21.~~ ____/____

~~4.11.3.1.17 Verify that the Acid Addition Pump stopped when timed out.~~ ____/____

~~4.11.3.1.18 Verify Destination Valve, 2LWS-AOV363, closes.~~ ____/____

~~4.11.3.1.19 Sample tank and verify that pH is within 6-9.~~ ____/____

~~4.11.3.1.20 Repeat above steps if pH is out of range.~~ ____/____

~~4.11.3.1.21 Record the test data in Data Sheet 13.~~ ____/____

STEPS DELETED BY FRF N2-POT-41-1-3. SEE INSERTED PAGE FOR NEW STEP.
JM 12/2/86

~~4.11.3.2~~ Waste Concentrate Processing

4.11.3.2.1 Record the Batch No. ~~and all processing~~ data in Data Sheet 5.13. ____/____

STEP DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

RECORD COPY

INITIALS/DATE

4.11.3.2.2 Place three empty Liners (WC-40-1, WC-45-1 and WC-50-1) on the Fill Station Turntable after these have been checked for integrity and numbered.

______/______

4.11.3.2.3 Place the following in operation if not already in operation:

Asphalt Recirculation Pump, 2WSS-P3A
Waste Concentrate Transfer Pump, 2WSS-P6
Lube Oil Skid, 2WSS-SKD39
Manifold Skid, 2WSS-SKD38
Distillate Skid, 2WSS-SKD40

______/______

4.11.3.2.4 From sample taken and analyzed in Step 4.11.3.1.4, calculate the waste and asphalt feed rates from the Nomograph in Attachment 9.6 or per procedure given in N2-OP-41:

S.G. ______________
Solid Content ______________%
Moisture Content ______________%
Waste Feed ______________gpm
Asphalt Feed @ 40/60 Ratio ______________gpm
@ 45/55 Ratio ______________gpm
@ 50/50 Ratio ______________gpm

4.11.3.2.5 Set the Extruder temperature profile for Waste Concentrate processing.

______/______

4.11.3.2.6 Set the Extruder Speed Controller, 2WSS-SC135, to 0 RPM and start the Extruder.

______/______

4.11.3.2.6.1 Increase Extruder speed to 50 RPM. ______/______

4.11.3.2.7 Set asphalt feed rate to 0.1 gpm on 2WSS-FC202. ______/______
WITH THE CONTROLLER IN THE MANUAL MODE, LOCAL SETPOINT

FRF N2-POT-41-1-1 9/11/86

4.11.3.2.8 Open Asphalt Discharge Valve, 2WSS-HV12A. ______/______

4.11.3.2.9 Start Asphalt Metering Pump P5A. ______/______

4.11.3.2.10 Verify that asphalt is discharged from the Extruder into the Liner. ~~after about 10 minutes of operation~~.
SEE FRF N2-POT-41-1-1
9/11/86

______/______

4.11.3.2.11 Increase the Extruder speed to 250 RPM. ______/______

STEPS DELETED BY FRF N2-POT-41-1-4
12/4/86

RECORD COPY

INITIALS/DATE

4.11.3.2.12 Adjust asphalt flow to 40% of the calculated flow for the Waste/Asphalt ratio of 40/60 via 2WSS-FC202 in the manual or "M" mode. ______/______

4.11.3.2.13 Place Waste Feed Selector Switch, 2WSS-HS156, to "Waste Concentrate Feed" position. ______/______

4.11.3.2.14 Open Waste Concentrate Metering Pump Suction and Discharge Valves, 2WSS-HV11A/10A/204. ______/______

4.11.3.2.15 Set the waste concentrate flow rate to 40% of the calculated flow for the Waste/Asphalt ratio of 40/60 via 2WSS-FC7A. ______/______

4.11.3.2.16 Start Waste Concentrate Metering Pump, 2WSS-P7A. ______/______

4.11.3.2.17 ~~Repetitively activate the "Press to Balance" slide switch on the Asphalt Feed Flow Controller, 2WSS-FC202, while adjusting the Waste/Asphalt ratio via the "R" thumbwheel~~. ______/______

→ STEPS DELETED BY FRF N2-POT-41-1-1
SEE NEXT PAGE FOR NEW STEPS. JM 9/11/86

4.11.3.2.18 ~~When all flow rates stabilized, place the slide switch on 2WSS-FC202 in the "A" or Auto position~~. ______/______

4.11.3.2.19 Gradually increase the Waste Concentrate feed rate to the full calculated flow via 2WSS-FC7A. ______/______

4.11.3.2.20 Verify the asphalt feed rate increases to maintain a constant Waste/Asphalt ratio.

Asphalt flow ______________ gpm
Waste Concentrate flow ______________ gpm

______/______

4.11.3.2.21 Record the Extruder barrel temperature profile at least every hour in Data Sheet 5.13. ______/______

4.11.3.2.22 When the Level Switch, 2WSS-LS23A and/or B, is activated, index the Turntable. ______/______

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

RECORD COPY

FRF NO. N2-POT-41-1-2

PAGE 10 OF 10.

CHANGE TO PAGE 103 OF 271, OF N2-POT-41-1

DESCRIPTION OF CHANGE

~~1) STEP 4.11.3.2.17 DELETE STEP, INSERT THE FOLLOWING:~~

~~"WHEN ASPHALT AND WASTE FLOW RATES HAVE STABILIZED AT APPROXIMATELY 10% OF CALCULATED FLOW, PLACE THE ASPHALT FLOW CONTROLLER IN "RATIO" CONTROL."~~

~~2) STEP 4.11.3.2.18 DELETE STEP, INSERT THE FOLLOWING:~~

~~"PLACE THE ASPHALT FLOW CONTROLLER IN "AUTO"."~~

STEPS DELETED BY FRF N2-POT-41-1-4 12/4/86

3) STEP 4.11.3.2.24 (PAGE 104 OF 271) DELETE "VIA THE "R" THUMBWHEEL".

4) STEP 4.11.3.2.29 (PAGE 104 OF 271) DELETE "VIA THE "R" THUMBWHEEL."

REASON FOR CHANGE

ITEMS 1 THROUGH 4 ABOVE: TO UPDATE PROCEDURE TO ALLOW USE OF REPLACEMENT ASPHALT FEED FLOW RATIO CONTROLLER (2WSS-FC202).

RECORD COPY

INITIALS/DATE

4.11.3.2.23 Verify that the waste feed and asphalt continues to fill the new Liner.

_____/_____

4.11.3.2.24 Adjust the Waste/Asphalt ratio slowly to 45/55~~, via the "R" thumbwheel.~~

SEE FRF N2-POT-41-1-1
JM 9/11/86

_____/_____

4.11.3.2.25 Verify that the asphalt flow decreases and stabilizes to maintain a constant Waste/Asphalt ratio.

_____/_____

4.11.3.2.26 Record the Extruder barrel temperature profile at least once every two hours.

_____/_____

4.11.3.2.27 When the Level Switch, 2WSS-LS23A and/or B is activated, index the Turntable.

_____/_____

4.11.3.2.28 Verify that the waste feed and asphalt continue to fill the new Liner.

_____/_____

4.11.3.2.29 Adjust the Waste/Asphalt ratio slowly to 50/50~~, via the "R" thumbwheel.~~

SEE FRF N2-POT-41-1-1
JM 9/11/86

_____/_____

4.11.3.2.30 Verify that asphalt flow decreases and stabilizes to maintain a constant Waste/Asphalt ratio.

Asphalt flow ______________________ gpm
Waste Concentrate flow ______________ gpm

_____/_____

4.11.3.2.31 Remove the first filled Liner from the Turntable and place it in the Liner Cooling Area for further cooling, replace with empty Liner on the Turntable.

_____/_____

4.11.3.2.32 Record the Extruder barrel temperature profile at least every hour in Data Sheet 5.13.

_____/_____

4.11.3.2.33 When the Drum Level High alarm energizes, perform the following:

STEPS DELETED BY FRF N2-POT-41-1-4
JM 12/4/86

RECORD COPY

INITIALS/DATE

~~4.11.3.2.33.1 Stop concentrates metering pump P7A.~~ ____/____

~~4.11.3.2.33.2 Stop the asphalt metering pump after 5 minutes.~~ ____/____

~~4.11.3.2.33.3 Stop the Extruder/Evaporator.~~ ____/____

~~4.11.3.2.34 Remove all filled liners from the turntable and place in the liner cooling area.~~ ____/____

~~4.11.4 Performance Evaluation~~

~~Based on the test results given in Data Sheet 5.13 the performance of the system is evaluated against the expected performance given in Section 7.3.~~

~~The findings are as follows:~~

~~4.11.4.1 The Waste Feed Subsystems delivers the rated flow to the Extruder-Evaporator.~~ ____/____

~~4.11.4.2 The Asphalt Feed Subsystem delivers the required asphalt to maintain the selected Waste/Asphalt ratio.~~ ____/____

STEPS DELETED BY FRF N2-POT-41-1-4 JM 12/4/86

QA
WITNESS
INITIALS/DATE

4.11.4.3 Verify the following criteria have been met for the solidified end product:

4.11.4.3.1 No free standing water in the containers. JM 12/17/86

4.11.4.3.2 Using a surface penetrometer, measure the compressive strength of the solidified products. JM 12/17/86

4.11.4.3.3 Inspect all liners after 52 hours of cooling. JM 12/17/86

TS* 106, 108

~~4.11.4.3.4 The results of the above inspections have been recorded in the Test Summary.~~

~~Test Summary Note No.~~ ________ ____/____

~~4.11.4.4 Water removed from the waste feed as distillate is processed via the Distillate Skid. The small quantity of oil and organics carried over in the distillate is removed by the Roughing and Polishing Filters to produce a cooled, and oil-free effluent.~~ ____/____

STEPS DELETED BY FRF N2-POT-41-1-4 JM 12/4/86

RECORD COPY

INITIALS/DATE

~~4.11.4.5 The effect of single and three-pass filling on amount of voids, in the end product is also examined. With three-pass filling, the amount of voids increases/unchanged/decreases.~~

~~_______/_______~~

~~The results of the test demonstrates that the system meets the performance requirement specified.~~

DELETED BY FCF
N2-POT-41-1-4
JM 12/4/86

4.12 SHUTDOWN

4.12.1 Flush the waste sludge tank and feed system in accordnace with N2-OP-41.

JM / 12/11/86

4.12.2 Flush the concentrates feed system in accordance with N20OP-41.

JM / 12/11/86

4.12.3 Boil-out the extruder/evaporator steam domes in accordance with N2-OP-41.

JM / 12/11/86

DATA SHEET 5.1
Verification of Electric Heat Tracing Operation

Procedure Step 4.3.1
Page 1 of 2

Line/Equipment	Primary Tracing Circuit	Primary Tracing Temp., °F	Redundant Tracing Circuit	Redundant Tracing Temp, °F	Verify By Initial/Date
2WSS-500210-4	103-21	129	107-21	131	10/7/86
2WSS-750206-4/2WSS-001207-4	103-22	103	107-22	110	10/7/86
2WSS-750203-4/2WSS-001204-4	103-23	132	107-23	131	10/7/86
2WSS-150202-4/2WSS-150286-4	103-24	134	107-24	133	10/7/86
2WSS-150200-4	103-25	127	107-25	128	10/7/86
2WSS-150200-4/2WSS150201-4 2WSS-P6	103-26	130	107-26	132	10/7/86
2WSS-150201-4	103-27	130	107-27	129	10/7/86
2WSS-150201-4	103-28	134	107-28	137	10/7/86
2WSS-750212-4	103-29	135	107-29	135	10/7/86
2WSS-750222-4/2WSS-001223-4	103-30	150	107-30	154	10/7/86
2WSS-750235-4/2WSS-001233-4	103-31	132	107-31	135	10/7/86
2WSS-500216-4/2WSS-500217-4 2WSS-P7B	103-32	124	107-32	131	10/7/86
2WSS-500281-4/2WSS-500280-4	103-33	132	107-33	135	10/7/86
2WSS-500274-4/2WSS-500275-4 2WSS-500272-4	103-34	126	107-34	131	10/7/86
2WSS-500217-4	103-35	139	107-35	135	10/7/86

DATA SHEET 5.1
Verification of Electric Heat Tracing Operation

Procedure Step 4.3.1
Page 2 of 2

	Primary Tracing		Redundant Tracing		Verify By
Line/Equipment	Circuit	Temp., °F	Circuit	Temp, °F	Initial/Date
2WSS-150201-4	103-36	133	107-36	133	10/7/86
2WSS-500226-4	103-37	132	107-37	138	10/7/86
2WSS-150201-4	103-38	130	107-38	132	10/7/86
2WSS-150230-4	103-39	132	107-39	131	10/7/86
2WSS-750232-4/2WSS-001236-4	103-40	135	107-40	135	10/7/86
2WSS-500273-4/2WSS-500276-4 2WSS-500272-4	103-41	134	107-41	134	10/7/86
2WSS-500215-4/2WSS-500213-4 2WSS-P7A	103-42	129	107-42	131	10/7/86
2WSS-500215-4	103-43	134	107-43	136	10/7/86
2WSS-750220-4/2WSS-001221-4	103-44	127	107-44	127	10/7/86
2WSS-500277-4/2WSS-500272-4	103-45	139	107-45	139	10/7/86
2WSS-500279-4/2WSS-500278-4 2WSS-500272-4	103-46	145	107-46	140	10/7/86
2WSS-150201-4	103-47	128	107-47	130	10/7/86
2WSS-500215-4	103-48	138	107-48	138	10/7/86
2WSS-750224-4/2WSS-750225-4	103-49	145	107-49	140	10/7/86

DATA SHEET 5.2
Verification of Pump Seal Water Operation

Page 1 of 1
Step No. 4.3.2

SEAL WATER CONTROL STATIONS
VERIFICATION OF OPERATING CONDITIONS

RACK NUMBER	PUMP SERVED	FLOW RATE FICV/FS	FLOW RATE GPM	PRESSURE PI	PRESSURE PSIG	VERIFIED BY INITIALS/DATE	
RAK 208	2WSS-P6	118	0	134	114	JM 10/7/86	T5#1C
RAK 48A	2WSS-P7A	10A	0	23A	94	JM 10/7/86	T5#1C
RAK 48B	2WSS-P7B	10B	0	23B	96	JM 10/7/86	T5#1C
RAK 209	2WSS-P11	119	1.2	135	74	JM 10/7/86	
RAK 49A	2WSS-P12A	11A	1.2	24A	74	JM 10/7/86	
RAK 49B	2WSS-P12B	11B	1.4	24B	72	JM 10/7/86	

RECORD COPY

DATA SHEET 5.3

Verification of Asphalt Subsystem Steam Tracing Operation

Page 1 of 2
Step No. 4.4.2.1.7

E 14

STEAM TRACER NO.	SUPPLY MANIFOLD STATION NO.	CONDENSATE MANIFOLD STATION NO.	TRACED LINE OR EQUIPMENT	LINE OR EQUIP. TEMP F	VERIFIED BY INITIAL/DATE
ST-1-1	1	3	2WSS-003106-4 2WSS-003107-4		
ST-1-2	1	3	2WSS-003106-4 2WSS-003107-4		
ST-1-3	1	3	2WSS-004100-4 2WSS-750120-4 2WSS-750126-4		
ST-1-4	1	3	2WSS-004100-4 2WSS-750119-4 2WSS-750125-4		
ST-1-5	1	3	2WSS-003111-4 2WSS-003110-4 2WSS-003109-4		
ST-1-6	1	3	2WSS-003111-4 2WSS-003110-4		
ST-1-7	1	3	2WSS-004104-4 2WSS-004101-4		
ST-1-8	1	3	2WSS-004104-4 2WSS-004101-4		
ST-1-9	1	-	Spare		
ST-1-10	1	-	Spare		
ST-0-11	Local	3	2WSS-750123-4 2WSS-002121-4 2WSS-750124-4		
ST-2-12	2	-	Spare		
ST-2-13	2	4	2WSS-750133-4 2WSS-003114-4 2WSS-003108-4 2WSS-006105-4		

DATA SHEET DELETED BY FRF N2-POT-41-1-5

1/19/87

RECORD COPY

DATA SHEET 5.3

Verification of Asphalt Subsystem Steam Tracing Operation

Page 2 of 2
Step No. 4.4.2.1.7

E 14

STEAM TRACER NO.	SUPPLY MANIFOLD STATION NO.	CONDENSATE MANIFOLD STATION NO.	TRACED LINE OR EQUIPMENT	LINE OR EQUIP. TEMP F	VERIFIED BY INITIAL/DATE
ST-2-14	2	4	2WSS-750135-4 2WSS-003108-4 2WSS-006105-4		
ST-2-15	2	3	2WSS-001117-4 2WSS-001118-4 2WSS-003108-4		
ST-2-16	2	3	2WSS-003108-4		
ST-2-17	2	5	2WSS-P5B		
ST-2-18	2	5	2WSS-P5A		
ST-2-19	2	2WSS-SKD38	2WSS-001115-4 2WSS-001116-4		

DATA SHEET DELETED BY FRF N2-POT-41-1-5 1/19/87

DATA SHEET 5.4

Verification of WSS Aux. Boiler Steam Rate

Page 1 of 6
Step No. 4.4.1.1

TS #16

Finish Time ______________

Start Time ______________

Run Time ______________ Hr (T)

Boiler Feed Water Temperature ______________ °F

Volume per Boiler Makeup cycle (Note 1) ______________ Gal

No. of Cycle ______________

Boiler Feed Water Quantity ______________ gal.

gal. x 8.34 = ______________ lb. (Q)

Boiler Steam Pressure ______________ psig

Enthalpy of Steam ______________ BTU/LB

Enthalpy of Water ______________ BTU/LB

Enthalpy Change ______________ BTU/LB

Steam Rate $\frac{Q}{T}$ = ______________ LB/HR

or

$\frac{Q\ H}{T}$ = ______________ BTU/HR

From Ammeter, 2WSS-CI300, Current Drawn ______________ A (I)

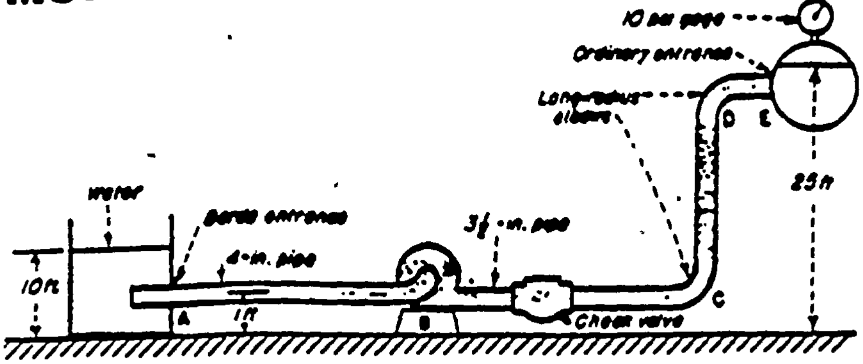
Power I x 575V = ______________ KW

Boiler Rating 1400 LB/HR @ 230 psig

450 KW @ 575V

NOTES:
1. Calculate from Condensate Return Tank Level, use table on p. 2
2. From Steam Tables on P.3 to P.6

MORE PROBLEMS



EXAMPLE: *How much head does above pump have to overcome (neglecting its own losses) to deliver 200 gal per min? Distance A to B is 25 ft, B to C is 25 ft, C to D is 22 ft, D to E is 10 ft. Pipe is schedule 40. If pump is 70% efficient, what hp is needed?*

SOLUTION: Find total head at pump discharge, subtract total head at suction to get net head supplied by pump.

Suction Head. Static or elevation head is 9 ft. Pressure head is zero. Equivalent length of "borda entrance" is 10 ft for 4 in. pipe from chart page 103. Total equivalent length of suction piping is 25+10=35 ft. Head loss for 200 gpm flow through 4-in. pipe from chart page 102 is 29 ft per 1000 ft of pipe. So friction head is 35×29÷1000=1.02 ft.

Total head at suction equals static head *minus* friction head or 9−1.02=7.98 ft total suction head.

Discharge Head. Static or elevation head is 24 ft. Pressure of 10 psi is equivalent to 23 ft pressure head (from chart page 99). To find velocity head, first convert gallons per minute to cu ft per sec and divide by the inside cross-section area in square feet to get velocity in feet per sec, then use chart page 99 to read velocity head directly in feet. Flow of 200 gpm equals 0.00223×200=0.446 cu ft per sec (see page 98 for conversion table). Inside section area of 3½-in. pipe is 9.89 sq in., or 0.0686 sq ft, so velocity is 0.446÷0.0686=6.5 ft per sec. Velocity head from chart at the top of page 99 is then 0.67 ft.

Total straight run of pipe is 25+22+10=57 ft. Each long-radius elbow is equivalent to 4.4 ft of 3½-in. pipe; check valve is equivalent to 22 ft and entrance to tank is equivalent to 5 ft. Total equivalent length is 57+4.4+4.4+22+5=92.8 ft. Chart page 102 gives head loss for 200 gpm flow through 3½-in. pipe as 60 ft per 1000 ft. So friction head equals 92.8×60÷1000=5.57 ft. Total discharge head equals static plus pressure plus velocity plus friction = 24+23+0.67+5.57=53.2 ft.

Net Head. Head supplied by pump is discharge head minus suction head or 53.2−7.9=45.3 ft head. (Note: Velocity head was very small compared to other heads. For most pump calculations, velocity head may be ignored *except* where velocity is important such as when feeding hoselines, etc.)

Pump Power. From chart on page 100, a 70% efficient pump delivering 200 gpm against 45-ft head takes 3¼ hp.

TANKS

Table below gives capacity per inch for flat-ended tanks only. For bumped (convex) heads add ⅔ depth of each head; for dished heads, subtract ⅓.

EXAMPLE: *How many gallons will a horizontal 64-in. ID tank hold if straight part is 120 in. long and two bumped heads are each 6 in. deep?* Two-thirds of 6 is 4, so equivalent length is 120+4+4=128 in. Capacity per inch from table below is 13.93 gal. Tank holds 128×13.93=1783 gal. *How many gallons will fill tank 25 in. deep?* Fraction full by depth is 25÷64=0.39. Volume fraction is 0.361, so tank holds 0.361×1783=643 gallons.

PARTLY FULL HORIZONTAL CYLINDRICAL TANKS

(Fraction full by depth and by volume)

by depth	by volume	by depth	by volume	by depth	by volume	by depth	by volume	by depth	by volume	by depth	by volume
.01	.0017	.18	.1224	.35	.3119	.51	.5128	.68	.7241	.85	.9059
.02	.0048	.19	.1323	.36	.3241	.52	.5255	.69	.7360	.86	.9149
.03	.0087	.20	.1424	.37	.3364	.53	.5383	.70	.7477	.87	.9236
.04	.0134	.21	.1527	.38	.3487	.54	.5510	.71	.7593	.88	.9320
.05	.0187	.22	.1631	.39	.3611	.55	.5636	.72	.7708	.89	.9401
.06	.0245	.23	.1737	.40	.3736	.56	.5763	.73	.7821	.90	.9480
.07	.0308	.24	.1845	.41	.3860	.57	.5889	.74	.7934	.91	.9554
.08	.0375	.25	.1955	.42	.3986	.58	.6014	.75	.8045	.92	.9625
.09	.0446	.26	.2066	.43	.4111	.59	.6140	.76	.8155	.93	.9692
.10	.0520	.27	.2179	.44	.4237	.60	.6264	.77	.8263	.94	.9755
.11	.0598	.28	.2292	.45	.4364	.61	.6389	.78	.8369	.95	.9813
.12	.0680	.29	.2407	.46	.4490	.62	.6513	.79	.8474	.96	.9866
.13	.0764	.30	.2523	.47	.4617	.63	.6636	.80	.8576	.97	.9913
.14	.0851	.31	.2640	.48	.4745	.64	.6759	.81	.8677	.98	.9952
.15	.0941	.32	.2759	.49	.4872	.65	.6881	.82	.8776	.99	.9983
.16	.1033	.33	.2878	.50	.5000	.66	.7002	.83	.8873	1.00	1.000
.17	.1127	.34	.2998			.67	.7122	.84	.8967		

CAPACITY OF FLAT-ENDED CYLINDRICAL TANKS PER INCH OF LENGTH

Dia in.	Volume Cu Ft	Gal	Lb Water 60 F	Dia in.	Volume Cu Ft	Gal	Lb Water 60 F	Dia in.	Volume Cu Ft	Gal	Lb Water 60 F	Dia in.	Volume Cu Ft	Gal	Lb Water 60 F	Dia in.	Volume Cu Ft	Gal	Lb Water 60 F
10	.04545	.3400	2.835	26	.3072	2.298	19.16	42	.8017	5.997	50.00	58	1.529	11.44	95.36	78	2.765	20.69	172.5
11	.05499	.4114	3.430	27	.3313	2.478	20.66	43	.8404	6.286	52.42	59	1.582	11.83	98.67	81	2.982	22.31	186.0
12	.06545	.4896	4.082	28	.3563	2.666	22.22	44	.8799	6.582	54.88	60	1.636	12.24	102.0	84	3.207	23.99	200.0
13	.07681	.5741	4.792	29	.3822	2.860	23.84	45	.9204	6.885	57.41	61	1.691	12.65	105.5	87	3.440	25.73	214.6
14	.08908	.6664	5.556	30	.4091	3.060	25.52	46	.9617	7.194	59.98	62	1.747	13.07	109.0	90	3.682	27.54	229.6
15	.1022	.7650	6.374	31	.4367	3.267	27.24	47	1.004	7.511	62.62	63	1.804	13.49	112.5	93	3.931	29.41	245.2
16	.1163	.8703	7.254	32	.4654	3.482	29.03	48	1.047	7.833	65.31	64	1.862	13.93	116.2	96	4.189	31.33	261.3
17	.1313	.9826	8.192	33	.4950	3.703	30.87	49	1.091	8.163	68.06	65	1.920	14.36	119.8	99	4.455	33.32	277.9
18	.1472	1.102	9.181	34	.5254	3.930	32.77	50	1.136	8.500	70.85	66	1.980	14.81	123.5	102	4.729	35.37	294.9
19	.1641	1.227	10.23	35	.5567	4.165	34.72	51	1.182	8.843	73.72	67	2.040	15.26	127.2	105	5.011	37.48	312.5
20	.1818	1.360	11.34	36	.5891	4.406	36.74	52	1.229	9.193	76.65	68	2.102	15.72	131.1	108	5.301	39.66	330.6
21	.2004	1.499	12.50	37	.6222	4.655	38.81	53	1.277	9.550	79.62	69	2.164	16.19	135.0	111	5.600	41.89	349.3
22	.2200	1.646	13.72	38	.6563	4.910	40.93	54	1.325	9.913	82.64	70	2.227	16.66	138.9	114	5.906	44.18	368.4
23	.2404	1.799	14.99	39	.6913	5.171	43.12	55	1.375	10.28	85.72	71	2.291	17.14	142.9	117	6.221	46.54	388.0
24	.2618	1.958	16.33	40	.7272	5.440	45.36	56	1.425	10.66	88.88	72	2.356	17.63	146.9	120	6.545	48.96	408.2
25	.2841	2.125	17.72	41	.7640	5.715	47.65	57	1.477	11.05	92.12	73	[illegible]	18.12	[illegible]				

N2-20[illegible]
Revision [illegible]

Table 2. Properties of Saturated Steam and Saturated Water (Pressure)

Press.	Temp.	Volume, ft³/lbm			Enthalpy, Btu/lbm			Entropy, Btu/lbm × R			Energy, Btu/lbm	
psia	F	Water v_f	Evap. v_{fg}	Steam v_g	Water h_f	Evap. h_{fg}	Steam h_g	Water s_f	Evap. s_{fg}	Steam s_g	Water u_f	Steam u_g
800.0	518.21	0.02087	0.54809	0.56896	509.8	689.6	1199.4	0.7111	0.7051	1.4163	506.7	1115.2
790.0	516.76	0.02083	0.55584	0.57667	508.1	691.6	1199.7	0.7094	0.7082	1.4176	505.0	1115.4
780.0	515.30	0.02080	0.56377	0.58457	506.3	693.6	1199.9	0.7076	0.7114	1.4190	503.3	1115.5
770.0	513.83	0.02076	0.57191	0.59267	504.5	695.7	1200.2	0.7058	0.7146	1.4204	501.5	1115.7
760.0	512.34	0.02072	0.58025	0.60097	502.7	697.7	1200.4	0.7040	0.7178	1.4218	499.8	1115.9
750.0	510.84	0.02069	0.58880	0.60949	500.9	699.8	1200.7	0.7022	0.7210	1.4232	498.0	1116.1
740.0	509.32	0.02065	0.59757	0.61822	499.1	701.9	1200.9	0.7003	0.7243	1.4246	496.2	1116.3
730.0	507.78	0.02061	0.60657	0.62719	497.2	703.9	1201.2	0.6985	0.7276	1.4260	494.4	1116.4
720.0	506.23	0.02058	0.61581	0.63639	495.4	706.0	1201.4	0.6966	0.7309	1.4275	492.6	1116.6
710.0	504.67	0.02054	0.62530	0.64585	493.5	708.1	1201.6	0.6947	0.7343	1.4290	490.8	1116.8
700.0	503.08	0.02050	0.63505	0.65556	491.6	710.2	1201.8	0.6928	0.7377	1.4304	488.9	1116.9
690.0	501.48	0.02047	0.64507	0.66554	489.7	712.4	1202.1	0.6908	0.7411	1.4319	487.1	1117.1
680.0	499.86	0.02043	0.65538	0.67581	487.8	714.5	1202.3	0.6889	0.7446	1.4334	485.2	1117.2
670.0	498.22	0.02039	0.66598	0.68637	485.8	716.6	1202.5	0.6869	0.7481	1.4350	483.3	1117.4
660.0	496.57	0.02036	0.67688	0.69724	483.9	718.8	1202.7	0.6849	0.7516	1.4365	481.4	1117.5
650.0	494.89	0.02032	0.68811	0.70843	481.9	720.9	1202.8	0.6828	0.7552	1.4381	479.4	1117.6
640.0	493.19	0.02028	0.69967	0.71995	479.9	723.1	1203.0	0.6808	0.7588	1.4396	477.5	1117.8
630.0	491.48	0.02024	0.71159	0.73182	477.9	725.3	1203.2	0.6787	0.7625	1.4412	475.5	1117.9
620.0	489.74	0.02021	0.72387	0.74408	475.8	727.5	1203.4	0.6766	0.7662	1.4428	473.5	1118.0
610.0	487.98	0.02017	0.73654	0.75671	473.8	729.7	1203.5	0.6745	0.7700	1.4445	471.5	1118.1
600.0	486.20	0.02013	0.74962	0.76975	471.7	732.0	1203.7	0.6723	0.7738	1.4461	469.5	1118.2
590.0	484.40	0.02009	0.76312	0.78321	469.6	734.2	1203.8	0.6701	0.7777	1.4478	467.4	1118.3
580.0	482.57	0.02006	0.77706	0.79712	467.5	736.5	1203.9	0.6679	0.7816	1.4495	465.3	1118.4
570.0	480.72	0.02002	0.79148	0.81150	465.3	738.7	1204.1	0.6657	0.7855	1.4512	463.2	1118.5
560.0	478.84	0.01998	0.80639	0.82637	463.1	741.0	1204.2	0.6634	0.7895	1.4529	461.1	1118.5
550.0	476.94	0.01994	0.82183	0.84177	460.9	743.3	1204.3	0.6611	0.7936	1.4547	458.9	1118.6
540.0	475.01	0.01990	0.83781	0.85771	458.7	745.7	1204.4	0.6587	0.7977	1.4565	456.7	1118.7
530.0	473.05	0.01986	0.85437	0.87423	456.5	748.0	1204.5	0.6564	0.8019	1.4583	454.5	1118.7
520.0	471.07	0.01982	0.87155	0.89137	454.2	750.4	1204.5	0.6540	0.8062	1.4601	452.3	1118.8
510.0	469.05	0.01978	0.88937	0.90915	451.9	752.7	1204.6	0.6515	0.8105	1.4620	450.0	1118.8
500.0	467.01	0.01975	0.90787	0.92762	449.5	755.1	1204.7	0.6490	0.8148	1.4639	447.7	1118.8
490.0	464.93	0.01971	0.92710	0.94681	447.2	757.6	1204.7	0.6465	0.8193	1.4658	445.4	1118.9
480.0	462.82	0.01967	0.94711	0.96677	444.7	760.0	1204.8	0.6439	0.8238	1.4677	443.0	1118.9
470.0	460.68	0.01963	0.96793	0.98756	442.3	762.5	1204.8	0.6413	0.8284	1.4697	440.6	1118.9
460.0	458.50	0.01959	0.98962	1.00921	439.8	765.0	1204.8	0.6387	0.8331	1.4718	438.2	1118.9
450.0	456.28	0.01954	1.01224	1.03179	437.3	767.5	1204.8	0.6360	0.8378	1.4738	435.7	1118.9
440.0	454.03	0.01950	1.03585	1.05535	434.8	770.0	1204.8	0.6332	0.8427	1.4759	433.2	1118.8
430.0	451.74	0.01946	1.06051	1.07998	432.2	772.6	1204.8	0.6304	0.8476	1.4781	430.6	1118.8
420.0	449.40	0.01942	1.08631	1.10573	429.6	775.2	1204.7	0.6276	0.8527	1.4802	428.0	1118.8
410.0	447.02	0.01938	1.11331	1.13269	426.9	777.8	1204.7	0.6247	0.8578	1.4825	425.4	1118.7
400.0	444.60	0.01934	1.14162	1.16095	424.2	780.4	1204.6	0.6217	0.8630	1.4847	422.7	1118.7
390.0	442.13	0.01930	1.17132	1.19061	421.4	783.1	1204.5	0.6187	0.8683	1.4870	420.0	1118.6
380.0	439.61	0.01925	1.20252	1.22177	418.6	785.8	1204.4	0.6156	0.8738	1.4894	417.2	1118.5
370.0	437.04	0.01921	1.23535	1.25456	415.7	788.6	1204.3	0.6125	0.8794	1.4918	414.4	1118.4
360.0	434.41	0.01917	1.26993	1.28910	412.8	791.3	1204.1	0.6092	0.8851	1.4943	411.5	1118.3
350.0	431.73	0.01912	1.30642	1.32554	409.8	794.2	1204.0	0.6059	0.8909	1.4968	408.6	1118.1
345.0	430.36	0.01910	1.32542	1.34452	408.3	795.6	1203.9	0.6043	0.8939	1.4981	407.1	1118.1
340.0	428.99	0.01908	1.34497	1.36405	406.8	797.0	1203.8	0.6026	0.8969	1.4994	405.6	1118.0
335.0	427.59	0.01905	1.36507	1.38413	405.3	798.5	1203.7	0.6009	0.8999	1.5008	404.1	1117.9
330.0	426.18	0.01903	1.38577	1.40480	403.7	799.9	1203.6	0.5991	0.9030	1.5021	402.5	1117.8
325.0	424.75	0.01901	1.40707	1.42608	402.1	801.4	1203.5	0.5974	0.9061	1.5035	401.0	1117.7
320.0	423.31	0.01899	1.42902	1.44801	400.5	802.9	1203.4	0.5956	0.9092	1.5048	399.4	1117.7
315.0	421.84	0.01896	1.45164	1.47060	398.9	804.4	1203.3	0.5938	0.9124	1.5062	397.8	1117.6
310.0	420.36	0.01894	1.47496	1.49390	397.3	805.9	1203.2	0.5920	0.9157	1.5076	396.2	1117.5
305.0	418.87	0.01892	1.49902	1.51793	395.7	807.4	1203.0	0.5901	0.9190	1.5091	394.6	1117.4
300.0	417.35	0.01889	1.52384	1.54274	394.0	808.9	1202.9	0.5882	0.9223	1.5105	392.9	1117.2
295.0	415.81	0.01887	1.54948	1.56835	392.3	810.4	1202.7	0.5863	0.9257	1.5120	391.3	1117.1
290.0	414.25	0.01885	1.57597	1.59482	390.6	812.0	1202.6	0.5844	0.9291	1.5135	389.6	1117.0
285.0	412.67	0.01882	1.60336	1.62218	388.9	813.6	1202.4	0.5824	0.9326	1.5150	387.9	1116.9
280.0	411.07	0.01880	1.63169	1.65049	387.1	815.1	1202.3	0.5805	0.9361	1.5166	386.1	1116.7
275.0	409.45	0.01878	1.66101	1.67978	385.4	816.7	1202.1	0.5784	0.9397	1.5181	384.4	1116.6
270.0	407.80	0.01875	1.69137	1.71013	383.6	818.3	1201.9	0.5764	0.9433	1.5197	382.6	1116.5
265.0	406.13	0.01873	1.72284	1.74157	381.7	820.0	1201.7	0.5743	0.9470	1.5214	380.8	1116.3
260.0	404.44	0.01870	1.75548	1.77418	379.9	821.6	1201.5	0.5722	0.9508	1.5230	379.0	1116.2
255.0	402.72	0.01868	1.78935	1.80802	378.0	823.3	1201.3	0.5701	0.9546	1.5247	377.2	1116.0
250.0	400.97	0.01865	1.82452	1.84317	376.1	825.0	1201.1	0.5679	0.9585	1.5264	375.3	1115.8
245.0	399.19	0.01863	1.86107	1.87970	374.2	826.6	1200.9	0.5657	0.9625	1.5281	373.4	1115.6
240.0	397.39	0.01860	1.89909	1.91769	372.3	828.4	1200.6	0.5634	0.9665	1.5299	371.4	1115.5
235.0	395.56	0.01857	1.93867	1.95725	370.3	830.1	1200.4	0.5611	0.9706	1.5317	369.5	1115.3
230.0	393.70	0.01855	1.97991	1.99846	368.3	831.8	1200.1	0.5588	0.9748	1.5336	367.5	1115.[illegible]
225.0	391.80	0.01852	2.02291	2.04143	366.2	833.6	1199.9	0.5564	0.9790	1.5354	365.5	1114.[illegible]
220.0	389.88	0.01850	2.06779	2.08629	364.2	835.4	1199.6	0.5540	0.9834	1.5374	363.4	1114.[illegible]
215.0	387.91	0.01847	2.11469	2.13315	362.1	837.2	1199.3	0.5515	0.9878	1.5393	361.3	[illegible]
210.0	385.91	0.01844	2.16373	2.18217	359.9	839.1	1199.0	0.5490	0.9923	1.5413	359.2	[illegible]
205.0	383.88	0.01841	2.21508	2.23349	357.7	840.9	1198.7	0.5465	0.9969	1.5434	357.0	1113.[illegible]
200.0	381.80	0.01839	2.26890	2.28728	355.5	842.8	1198.3	0.5438	1.0016	1.5454	354.8	1113.[illegible]

Table 2. Properties of Saturated Steam and Saturated Water (Pressure)

Press.	Temp.	Volume, ft³/lbm			Enthalpy, Btu/lbm			Entropy, Btu/lbm × R			Energy, Btu/lbm	
psia	F	Water v_f	Evap. v_{fg}	Steam v_g	Water h_f	Evap. h_{fg}	Steam h_g	Water s_f	Evap. s_{fg}	Steam s_g	Water u_f	Steam u_g
200.0	381.80	0.01839	2.2689	2.2873	355.5	842.8	1198.3	0.5438	1.0016	1.5454	354.8	1113.7
198.0	380.96	0.01838	2.2912	2.3095	354.6	843.6	1198.2	0.5428	1.0035	1.5463	353.9	1113.6
196.0	380.12	0.01836	2.3139	2.3322	353.7	844.4	1198.1	0.5417	1.0054	1.5471	353.0	1113.5
194.0	379.26	0.01835	2.3370	2.3554	352.8	845.1	1197.9	0.5406	1.0074	1.5480	352.1	1113.4
192.0	378.40	0.01834	2.3606	2.3790	351.9	845.9	1197.8	0.5395	1.0094	1.5489	351.2	1113.2
190.0	377.53	0.01833	2.3847	2.4030	350.9	846.7	1197.6	0.5384	1.0113	1.5498	350.3	1113.1
188.0	376.65	0.01832	2.4093	2.4276	350.0	847.5	1197.5	0.5373	1.0133	1.5507	349.4	1113.0
186.0	375.77	0.01831	2.4344	2.4527	349.1	848.3	1197.3	0.5362	1.0153	1.5516	348.4	1112.9
184.0	374.88	0.01830	2.4600	2.4783	348.1	849.1	1197.2	0.5351	1.0174	1.5525	347.5	1112.8
182.0	373.98	0.01828	2.4862	2.5045	347.2	849.9	1197.0	0.5339	1.0194	1.5534	346.5	1112.7
180.0	373.08	0.01827	2.5129	2.5312	346.2	850.7	1196.9	0.5328	1.0215	1.5543	345.6	1112.5
178.0	372.16	0.01826	2.5402	2.5585	345.2	851.5	1196.7	0.5316	1.0236	1.5552	344.6	1112.4
176.0	371.24	0.01825	2.5681	2.5864	344.2	852.3	1196.5	0.5305	1.0257	1.5562	343.6	1112.3
174.0	370.31	0.01824	2.5966	2.6149	343.2	853.1	1196.4	0.5293	1.0279	1.5571	342.7	1112.2
172.0	369.37	0.01823	2.6258	2.6440	342.2	853.9	1196.2	0.5281	1.0300	1.5581	341.7	1112.0
170.0	368.42	0.01821	2.6556	2.6738	341.2	854.8	1196.0	0.5269	1.0322	1.5591	340.7	1111.9
168.0	367.47	0.01820	2.6861	2.7043	340.2	855.6	1195.8	0.5256	1.0344	1.5601	339.7	1111.8
166.0	366.50	0.01819	2.7173	2.7355	339.2	856.5	1195.7	0.5244	1.0367	1.5611	338.6	1111.6
164.0	365.53	0.01818	2.7493	2.7674	338.2	857.3	1195.5	0.5232	1.0389	1.5621	337.6	1111.5
162.0	364.54	0.01817	2.7820	2.8001	337.1	858.2	1195.3	0.5219	1.0412	1.5631	336.6	1111.3
160.0	363.55	0.01815	2.8155	2.8336	336.1	859.0	1195.1	0.5206	1.0435	1.5641	335.5	1111.2
158.0	362.55	0.01814	2.8498	2.8679	335.0	859.9	1194.9	0.5194	1.0458	1.5652	334.5	1111.0
156.0	361.53	0.01813	2.8849	2.9031	333.9	860.8	1194.7	0.5181	1.0482	1.5662	333.4	1110.9
154.0	360.51	0.01812	2.9210	2.9391	332.8	861.6	1194.5	0.5168	1.0506	1.5673	332.3	1110.7
152.0	359.48	0.01810	2.9579	2.9760	331.8	862.5	1194.3	0.5154	1.0530	1.5684	331.2	1110.6
150.0	358.43	0.01809	2.9958	3.0139	330.6	863.4	1194.1	0.5141	1.0554	1.5695	330.1	1110.4
149.0	357.91	0.01808	3.0151	3.0332	330.1	863.9	1194.0	0.5134	1.0566	1.5700	329.6	1110.3
148.0	357.38	0.01808	3.0347	3.0528	329.5	864.3	1193.9	0.5127	1.0579	1.5706	329.0	1110.3
147.0	356.84	0.01807	3.0545	3.0726	329.0	864.8	1193.8	0.5120	1.0591	1.5712	328.5	1110.2
146.0	356.31	0.01806	3.0746	3.0927	328.4	865.2	1193.6	0.5114	1.0604	1.5717	327.9	1110.1
145.0	355.77	0.01806	3.0950	3.1130	327.8	865.7	1193.5	0.5107	1.0616	1.5723	327.4	1110.0
144.0	355.23	0.01805	3.1156	3.1337	327.3	866.2	1193.4	0.5100	1.0629	1.5729	326.8	1109.9
143.0	354.69	0.01805	3.1365	3.1546	326.7	866.6	1193.3	0.5093	1.0642	1.5734	326.2	1109.8
142.0	354.14	0.01804	3.1577	3.1757	326.1	867.1	1193.2	0.5086	1.0655	1.5740	325.6	1109.7
141.0	353.59	0.01803	3.1792	3.1972	325.5	867.5	1193.1	0.5079	1.0668	1.5746	325.1	1109.7
140.0	353.04	0.01803	3.2010	3.2190	325.0	868.0	1193.0	0.5071	1.0681	1.5752	324.5	1109.6
139.0	352.48	0.01802	3.2230	3.2411	324.4	868.5	1192.8	0.5064	1.0694	1.5758	323.9	1109.5
138.0	351.92	0.01801	3.2454	3.2634	323.8	868.9	1192.7	0.5057	1.0707	1.5764	323.3	1109.4
137.0	351.36	0.01801	3.2681	3.2861	323.2	869.4	1192.6	0.5050	1.0720	1.5770	322.7	1109.3
136.0	350.79	0.01800	3.2912	3.3091	322.6	869.9	1192.5	0.5043	1.0733	1.5776	322.1	1109.2
135.0	350.23	0.01799	3.3145	3.3325	322.0	870.4	1192.4	0.5035	1.0747	1.5782	321.5	1109.1
134.0	349.65	0.01799	3.3382	3.3562	321.4	870.8	1192.2	0.5028	1.0760	1.5788	320.9	1109.0
133.0	349.08	0.01798	3.3622	3.3802	320.8	871.3	1192.1	0.5020	1.0774	1.5794	320.3	1108.9
132.0	348.50	0.01797	3.3866	3.4046	320.2	871.8	1192.0	0.5013	1.0788	1.5800	319.7	1108.8
131.0	347.92	0.01797	3.4113	3.4293	319.6	872.3	1191.9	0.5005	1.0801	1.5807	319.1	1108.7
130.0	347.33	0.01796	3.4364	3.4544	319.0	872.8	1191.7	0.4998	1.0815	1.5813	318.5	1108.6
129.0	346.74	0.01795	3.4619	3.4799	318.3	873.3	1191.6	0.4990	1.0829	1.5819	317.9	1108.5
128.0	346.15	0.01794	3.4878	3.5057	317.7	873.8	1191.5	0.4982	1.0843	1.5826	317.3	1108.4
127.0	345.55	0.01794	3.5141	3.5320	317.1	874.3	1191.3	0.4975	1.0858	1.5832	316.7	1108.3
126.0	344.95	0.01793	3.5407	3.5586	316.4	874.8	1191.2	0.4967	1.0872	1.5839	316.0	1108.2
125.0	344.35	0.01792	3.5678	3.5857	315.8	875.3	1191.1	0.4959	1.0886	1.5845	315.4	1108.1
124.0	343.74	0.01792	3.5953	3.6132	315.2	875.8	1190.9	0.4951	1.0901	1.5852	314.8	1108.0
123.0	343.13	0.01791	3.6232	3.6411	314.5	876.2	1190.8	0.4943	1.0915	1.5858	314.1	1107.9
122.0	342.51	0.01790	3.6516	3.6695	313.9	876.8	1190.7	0.4935	1.0930	1.5865	313.5	1107.8
121.0	341.89	0.01790	3.6804	3.6983	313.2	877.3	1190.5	0.4927	1.0945	1.5872	312.8	1107.7
120.0	341.27	0.01789	3.7097	3.7275	312.6	877.8	1190.4	0.4919	1.0960	1.5879	312.2	1107.6
119.0	340.64	0.01788	3.7394	3.7573	311.9	878.3	1190.2	0.4911	1.0975	1.5885	311.5	1107.5
118.0	340.01	0.01787	3.7697	3.7875	311.3	878.8	1190.1	0.4903	1.0990	1.5892	310.9	1107.4
117.0	339.37	0.01787	3.8004	3.8183	310.6	879.3	1189.9	0.4894	1.1005	1.5899	310.2	1107.3
116.0	338.73	0.01786	3.8316	3.8495	309.9	879.9	1189.8	0.4886	1.1021	1.5906	309.5	1107.2
115.0	338.08	0.01785	3.8634	3.8813	309.3	880.4	1189.6	0.4877	1.1036	1.5913	308.9	1107.0
114.0	337.43	0.01785	3.8957	3.9136	308.6	880.9	1189.5	0.4869	1.1052	1.5921	308.2	1106.9
113.0	336.78	0.01784	3.9286	3.9464	307.9	881.4	1189.3	0.4860	1.1067	1.5928	307.5	1106.8
112.0	336.12	0.01783	3.9620	3.9798	307.2	882.0	1189.2	0.4852	1.1083	1.5935	306.8	1106.7
111.0	335.46	0.01782	3.9960	4.0138	306.5	882.5	1189.0	0.4843	1.1099	1.5942	306.1	1106.6
110.0	334.79	0.01782	4.0306	4.0484	305.8	883.1	1188.9	0.4834	1.1115	1.5950	305.4	1106.5
109.0	334.11	0.01781	4.0658	4.0837	305.1	883.6	1188.7	0.4826	1.1132	1.5957	304.7	1106.3
108.0	333.44	0.01780	4.1017	4.1195	304.4	884.1	1188.5	0.4817	1.1148	1.5965	304.0	1106.2
107.0	332.75	0.01779	4.1382	4.1560	303.7	884.7	1188.4	0.4808	1.1165	1.5972	303.3	1106.1
106.0	332.06	0.01779	4.1753	4.1931	303.0	885.2	1188.2	0.4799	1.1181	1.5980	302.6	1106.0
105.0	331.37	0.01778	4.2132	4.2309	302.2	885.8	1188.0	0.4790	1.1198	1.5988	301.9	1105.8
104.0	330.67	0.01777	4.2517	4.2695	301.5	886.4	1187.9	0.4780	1.1215	1.5995	301.2	1105.7
103.0	329.97	0.01776	4.2910	4.3087	300.8	886.9	1187.7	0.4771	1.1232	1.6003	300.4	1105.6
102.0	329.26	0.01776	4.3310	4.3487	300.0	887.5	1187.5	0.4762	1.1249	1.6011	299.7	1105.4
101.0	328.54	0.01775	4.3717	4.3895	299.3	888.1	1187.3	0.4752	1.1267	1.6019	299.0	1105.3
100.0	327.82	0.01774	4.4133	4.4310	298.5	888.6	1187.2	0.4743	1.1284	1.6027	298.2	1105.2

Table 2. Properties of Saturated Steam and Saturated Water (Pressure)

Press.	Temp.	Volume, ft³/lbm			Enthalpy, Btu/lbm			Entropy, Btu/lbm × R			Energy, Btu/lb	
psia	F	Water v_l	Evap. v_{lg}	Steam v_g	Water h_l	Evap. h_{lg}	Steam h_g	Water s_l	Evap. s_{lg}	Steam s_g	Water u_l	Steam u_g
100.0	327.82	0.017740	4.4133	4.4310	298.5	888.6	1187.2	0.4743	1.1284	1.6027	298.2	1105.2
99.0	327.10	0.017732	4.4556	4.4734	297.8	889.2	1187.0	0.4733	1.1302	1.6036	297.5	1105.0
98.0	326.36	0.017724	4.4988	4.5166	297.0	889.8	1186.8	0.4724	1.1320	1.6044	296.7	1104.9
97.0	325.63	0.017716	4.5429	4.5606	296.3	890.4	1186.6	0.4714	1.1338	1.6052	295.9	1104.8
96.0	324.88	0.017708	4.5878	4.6055	295.5	891.0	1186.4	0.4704	1.1356	1.6061	295.2	1104.6
95.0	324.13	0.017700	4.6337	4.6514	294.7	891.5	1186.2	0.4694	1.1375	1.6069	294.4	1104.5
94.0	323.37	0.017692	4.6805	4.6982	293.9	892.1	1186.0	0.4684	1.1393	1.6078	293.6	1104.3
93.0	322.61	0.017684	4.7282	4.7459	293.1	892.7	1185.9	0.4674	1.1412	1.6086	292.8	1104.2
92.0	321.84	0.017675	4.7770	4.7947	292.3	893.3	1185.7	0.4664	1.1431	1.6095	292.0	1104.0
91.0	321.06	0.017667	4.8268	4.8445	291.5	893.9	1185.5	0.4654	1.1450	1.6104	291.2	1103.9
90.0	320.28	0.017659	4.8777	4.8953	290.7	894.6	1185.3	0.4643	1.1470	1.6113	290.4	1103.7
89.0	319.49	0.017651	4.9296	4.9473	289.9	895.2	1185.0	0.4633	1.1489	1.6122	289.6	1103.6
88.0	318.69	0.017642	4.9827	5.0004	289.0	895.8	1184.8	0.4622	1.1509	1.6131	288.8	1103.4
87.0	317.89	0.017634	5.0370	5.0546	288.2	896.4	1184.6	0.4611	1.1529	1.6140	287.9	1103.3
86.0	317.08	0.017625	5.0925	5.1101	287.4	897.0	1184.4	0.4601	1.1549	1.6150	287.1	1103.1
85.0	316.26	0.017617	5.1493	5.1669	286.5	897.7	1184.2	0.4590	1.1569	1.6159	286.2	1102.9
84.0	315.43	0.017608	5.2073	5.2249	285.7	898.3	1184.0	0.4579	1.1590	1.6169	285.4	1102.8
83.0	314.60	0.017600	5.2667	5.2843	284.8	899.0	1183.8	0.4568	1.1611	1.6178	284.5	1102.6
82.0	313.75	0.017591	5.3276	5.3451	283.9	899.6	1183.5	0.4556	1.1632	1.6188	283.7	1102.4
81.0	312.90	0.017582	5.3898	5.4074	283.0	900.3	1183.3	0.4545	1.1653	1.6198	282.8	1102.3
80.0	312.04	0.017573	5.4536	5.4711	282.1	900.9	1183.1	0.4534	1.1675	1.6208	281.9	1102.1
79.0	311.17	0.017565	5.5189	5.5364	281.3	901.6	1182.8	0.4522	1.1696	1.6218	281.0	1101.9
78.0	310.29	0.017556	5.5858	5.6034	280.3	902.3	1182.6	0.4510	1.1718	1.6229	280.1	1101.7
77.0	309.41	0.017547	5.6544	5.6720	279.4	902.9	1182.4	0.4498	1.1741	1.6239	279.2	1101.5
76.0	308.51	0.017538	5.7248	5.7423	278.5	903.6	1182.1	0.4486	1.1763	1.6250	278.3	1101.4
75.0	307.61	0.017529	5.7969	5.8144	277.6	904.3	1181.9	0.4474	1.1786	1.6260	277.3	1101.2
74.0	306.69	0.017519	5.8710	5.8885	276.6	905.0	1181.6	0.4462	1.1809	1.6271	276.4	1101.0
73.0	305.77	0.017510	5.9469	5.9645	275.7	905.7	1181.4	0.4449	1.1833	1.6282	275.4	1100.8
72.0	304.83	0.017501	6.0250	6.0425	274.7	906.4	1181.1	0.4437	1.1856	1.6293	274.5	1100.6
71.0	303.89	0.017491	6.1051	6.1226	273.7	907.1	1180.8	0.4424	1.1880	1.6304	273.5	1100.4
70.0	302.93	0.017482	6.1875	6.2050	272.7	907.8	1180.6	0.4411	1.1905	1.6316	272.5	1100.2
69.0	301.96	0.017472	6.2721	6.2896	271.7	908.5	1180.3	0.4398	1.1929	1.6327	271.5	1100.0
68.0	300.99	0.017463	6.3592	6.3767	270.7	909.3	1180.0	0.4385	1.1954	1.6339	270.5	1099.8
67.0	299.95	0.017453	6.4488	6.4662	269.7	910.0	1179.7	0.4372	1.1979	1.6351	269.5	1099.6
66.0	298.99	0.017443	6.5410	6.5584	268.7	910.8	1179.4	0.4358	1.2005	1.6363	268.5	1099.3
65.0	297.98	0.017433	6.6359	6.6533	267.6	911.5	1179.1	0.4344	1.2031	1.6375	267.4	1099.1
64.0	296.95	0.017423	6.7337	6.7511	266.6	912.2	1178.9	0.4330	1.2058	1.6388	266.4	1098.9
63.0	295.91	0.017413	6.8345	6.8519	265.5	913.0	1178.6	0.4316	1.2084	1.6401	265.3	1098.7
62.0	294.86	0.017403	6.9384	6.9558	264.4	913.8	1178.2	0.4302	1.2112	1.6413	264.2	1098.4
61.0	293.79	0.017393	7.0456	7.0630	263.3	914.6	1177.9	0.4287	1.2139	1.6427	263.1	1098.2
60.0	292.71	0.017383	7.1562	7.1736	262.2	915.4	1177.6	0.4273	1.2167	1.6440	262.0	1098.0
59.0	291.62	0.017372	7.2705	7.2879	261.1	916.2	1177.3	0.4258	1.2196	1.6453	260.9	1097.7
58.0	290.50	0.017362	7.3886	7.4059	259.9	917.0	1177.0	0.4243	1.2224	1.6467	259.8	1097.5
57.0	289.38	0.017351	7.5106	7.5280	258.8	917.8	1176.6	0.4227	1.2254	1.6481	258.6	1097.2
56.0	288.24	0.017340	7.6369	7.6543	257.6	918.7	1176.3	0.4212	1.2284	1.6495	257.4	1097.0
55.0	287.08	0.017329	7.7676	7.7850	256.4	919.5	1175.9	0.4196	1.2314	1.6510	256.2	1096.7
54.0	285.90	0.017319	7.9030	7.9203	255.2	920.4	1175.6	0.4180	1.2345	1.6524	255.0	1096.4
53.0	284.71	0.017307	8.0433	8.0606	254.0	921.2	1175.2	0.4163	1.2376	1.6539	253.8	1096.2
52.0	283.50	0.017296	8.1888	8.2061	252.8	922.1	1174.9	0.4147	1.2408	1.6555	252.6	1095.9
51.0	282.27	0.017285	8.3398	8.3571	251.5	923.0	1174.5	0.4130	1.2441	1.6570	251.3	1095.6
50.0	281.02	0.017274	8.4967	8.5140	250.2	923.9	1174.1	0.4112	1.2474	1.6586	250.1	1095.3
49.0	279.74	0.017262	8.6597	8.6770	248.9	924.8	1173.7	0.4095	1.2507	1.6602	248.8	1095.0
48.0	278.45	0.017250	8.8293	8.8465	247.6	925.7	1173.3	0.4077	1.2542	1.6619	247.4	1094.7
47.0	277.14	0.017238	9.0058	9.0231	246.2	926.6	1172.9	0.4059	1.2577	1.6636	246.1	1094.4
46.0	275.80	0.017226	9.1898	9.2070	244.9	927.6	1172.5	0.4040	1.2612	1.6653	244.7	1094.1
45.0	274.44	0.017214	9.3816	9.3988	243.5	928.6	1172.0	0.4021	1.2649	1.6671	243.3	1093.8
44.0	273.06	0.017202	9.5819	9.5991	242.1	929.5	1171.6	0.4002	1.2686	1.6689	241.9	1093.5
43.0	271.65	0.017189	9.7911	9.8083	240.6	930.5	1171.2	0.3983	1.2724	1.6707	240.5	1093.1
42.0	270.21	0.017177	10.0100	10.0272	239.2	931.5	1170.7	0.3962	1.2763	1.6726	239.0	1092.8
41.0	268.74	0.017164	10.2392	10.2563	237.7	932.6	1170.2	0.3942	1.2803	1.6745	237.5	1092.4
40.0	267.25	0.017151	10.4794	10.4965	236.1	933.6	1169.8	0.3921	1.2844	1.6765	236.0	1092.1
39.0	265.72	0.017138	10.7315	10.7487	234.6	934.7	1169.3	0.3900	1.2885	1.6785	234.5	1091.7
38.0	264.17	0.017124	10.9964	11.0136	233.0	935.8	1168.8	0.3878	1.2928	1.6806	232.9	1091.3
37.0	262.58	0.017111	11.2752	11.2923	231.4	936.9	1168.2	0.3856	1.2972	1.6827	231.3	1090.9
36.0	260.95	0.017097	11.5689	11.5860	229.7	938.0	1167.7	0.3833	1.3017	1.6849	229.6	1090.5
35.0	259.29	0.017083	11.8788	11.8959	228.0	939.1	1167.1	0.3809	1.3063	1.6872	227.9	1090.0
34.0	257.58	0.017069	12.2063	12.2234	226.3	940.3	1166.6	0.3785	1.3110	1.6895	226.2	1089.7
33.0	255.84	0.017054	12.5529	12.5700	224.5	941.5	1166.0	0.3760	1.3159	1.6919	224.4	1089.2
32.0	254.05	0.017039	12.9205	12.9376	222.7	942.7	1165.4	0.3735	1.3209	1.6944	222.6	1088.8
31.0	252.22	0.017024	13.3110	13.3280	220.8	943.9	1164.8	0.3709	1.3260	1.6969	220.7	1088.4
30.0	250.34	0.017009	13.7266	13.7436	218.9	945.2	1164.1	0.3682	1.3313	1.6995	218.8	1087.8
29.0	248.40	0.016993	14.1695	14.1865	217.0	946.5	1163.5	0.3654	1.3368	1.7022	216.9	1087.4
28.0	246.41	0.016977	14.6437	14.6607	214.9	947.9	1162.8	0.3626	1.3425	1.7050	214.8	1086.8
27.0	244.36	0.016961	15.1515	15.1684	212.9	949.2	1162.1	0.3596	1.3483	1.7080	212.8	1086.3
26.0	242.25	0.016944	15.6909	15.7078	210.7	950.6	1161.4	0.3566	1.3544	1.7110	210.6	1085.8
25.0	240.07	0.016927	16.2845	16.3014	208.5	952.1	1160.6	0.3535	1.3607	1.7142	208.4	1085.2

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Table 2. Properties of Saturated Steam and Saturated Water (Pressure)

Press. psia	Temp. F	Volume, ft³/lbm			Enthalpy, Btu/lbm			Entropy, Btu/lbm × R			Energy, Btu/lbm	
		Water v_f	Evap. v_{fg}	Steam v_g	Water h_f	Evap. h_{fg}	Steam h_g	Water s_f	Evap. s_{fg}	Steam s_g	Water u_f	Steam u_g
25.0	240.07	0.016927	16.284	16.301	208.52	952.1	1160.6	0.3535	1.3607	1.7141	208.44	1085.2
24.5	238.95	0.016918	16.596	16.613	207.39	952.8	1160.2	0.3518	1.3639	1.7157	207.31	1084.9
24.0	237.82	0.016909	16.919	16.936	206.24	953.6	1159.8	0.3502	1.3672	1.7174	206.17	1084.6
23.5	236.66	0.016900	17.256	17.273	205.07	954.3	1159.4	0.3485	1.3706	1.7191	205.00	1084.3
23.0	235.49	0.016891	17.608	17.624	203.88	955.1	1159.0	0.3468	1.3740	1.7208	203.81	1084.0
22.5	234.29	0.016882	17.974	17.991	202.67	955.9	1158.6	0.3451	1.3775	1.7226	202.60	1083.7
22.0	233.07	0.016873	18.356	18.373	201.44	956.7	1158.1	0.3433	1.3811	1.7244	201.37	1083.4
21.5	231.83	0.016863	18.756	18.772	200.18	957.5	1157.7	0.3415	1.3847	1.7262	200.12	1083.0
21.0	230.57	0.016854	19.174	19.190	198.90	958.4	1157.3	0.3396	1.3885	1.7281	198.84	1082.7
20.5	229.28	0.016844	19.611	19.628	197.60	959.2	1156.8	0.3377	1.3923	1.7300	197.54	1082.3
20.0	227.96	0.016834	20.070	20.087	196.27	960.1	1156.3	0.3358	1.3962	1.7320	196.21	1082.0
19.5	226.62	0.016824	20.551	20.568	194.91	960.9	1155.8	0.3338	1.4002	1.7341	194.85	1081.6
19.0	225.24	0.016814	21.057	21.074	193.52	961.8	1155.3	0.3318	1.4043	1.7361	193.47	1081.2
18.5	223.84	0.016803	21.590	21.607	192.11	962.7	1154.8	0.3297	1.4085	1.7383	192.05	1080.9
18.0	222.41	0.016793	22.151	22.168	190.66	963.7	1154.3	0.3276	1.4129	1.7405	190.60	1080.5
17.5	220.94	0.016782	22.743	22.760	189.18	964.6	1153.8	0.3255	1.4173	1.7428	189.12	1080.1
17.0	219.44	0.016771	23.369	23.385	187.66	965.6	1153.2	0.3232	1.4219	1.7451	187.61	1079.7
16.5	217.90	0.016760	24.031	24.048	186.11	966.6	1152.7	0.3209	1.4265	1.7475	186.06	1079.2
16.0	216.32	0.016749	24.733	24.750	184.52	967.6	1152.1	0.3186	1.4314	1.7500	184.47	1078.8
15.5	214.70	0.016738	25.479	25.496	182.88	968.6	1151.5	0.3162	1.4363	1.7525	182.84	1078.3
15.0	213.03	0.016726	26.274	26.290	181.21	969.7	1150.9	0.3137	1.4415	1.7552	181.16	1077.9
14.696	212.00	0.016719	26.782	26.799	180.17	970.3	1150.5	0.3121	1.4447	1.7568	180.12	1077.6
14.5	211.32	0.016714	27.121	27.138	179.48	970.7	1150.2	0.3111	1.4468	1.7579	179.44	1077.4
14.0	209.56	0.016702	28.027	28.043	177.71	971.9	1149.6	0.3085	1.4522	1.7607	177.67	1076.9
13.5	207.75	0.016689	28.997	29.014	175.89	973.0	1148.9	0.3058	1.4579	1.7636	175.84	1076.4
13.0	205.88	0.016676	30.040	30.057	174.00	974.2	1148.2	0.3029	1.4638	1.7667	173.96	1075.9
12.5	203.95	0.016663	31.163	31.180	172.06	975.4	1147.5	0.3000	1.4698	1.7699	172.02	1075.3
12.0	201.96	0.016650	32.377	32.394	170.05	976.6	1146.7	0.2970	1.4762	1.7731	170.02	1074.8
11.5	199.89	0.016636	33.693	33.710	167.98	977.9	1145.9	0.2938	1.4827	1.7766	167.94	1074.2
11.0	197.75	0.016622	35.125	35.142	165.82	979.3	1145.1	0.2906	1.4896	1.7802	165.79	1073.6
10.5	195.52	0.016607	36.689	36.705	163.59	980.7	1144.2	0.2872	1.4968	1.7839	163.55	1072.9
10.0	193.21	0.016592	38.404	38.420	161.26	982.1	1143.3	0.2836	1.5043	1.7879	161.23	1072.3
9.5	190.80	0.016577	40.293	40.310	158.84	983.6	1142.4	0.2799	1.5121	1.7920	158.81	1071.6
9.0	188.27	0.016561	42.385	42.402	156.30	985.1	1141.4	0.2760	1.5204	1.7964	156.28	1070.8
8.5	185.63	0.016545	44.716	44.733	153.65	986.8	1140.4	0.2719	1.5292	1.8011	153.63	1070.0
8.0	182.86	0.016527	47.328	47.345	150.87	988.5	1139.3	0.2676	1.5384	1.8060	150.84	1069.2
7.5	179.93	0.016510	50.277	50.294	147.93	990.2	1138.2	0.2630	1.5482	1.8112	147.91	1068.4
7.0	176.84	0.016491	53.634	53.650	144.83	992.1	1136.9	0.2581	1.5587	1.8168	144.81	1067.4
6.5	173.56	0.016472	57.490	57.506	141.54	994.1	1135.6	0.2530	1.5699	1.8229	141.52	1066.5
6.0	170.05	0.016451	61.967	61.984	138.03	996.2	1134.2	0.2474	1.5820	1.8294	138.01	1065.4
5.5	166.29	0.016430	67.232	67.249	134.26	998.5	1132.7	0.2414	1.5951	1.8365	134.24	1064.3
5.0	162.24	0.016407	73.515	73.532	130.20	1000.9	1131.1	0.2349	1.6094	1.8443	130.18	1063.1
4.8	160.52	0.016398	76.383	76.400	128.47	1001.9	1130.4	0.2321	1.6155	1.8477	128.46	1062.5
4.6	158.73	0.016388	79.493	79.509	126.69	1003.0	1129.7	0.2292	1.6219	1.8512	126.68	1062.0
4.4	156.89	0.016379	82.876	82.892	124.84	1004.1	1128.9	0.2262	1.6286	1.8548	124.83	1061.4
4.2	154.96	0.016368	86.57	86.59	122.92	1005.2	1128.1	0.2231	1.6355	1.8586	122.90	1060.8
4.0	152.96	0.016358	90.63	90.64	120.92	1006.4	1127.3	0.2199	1.6428	1.8626	120.90	1060.2
3.8	150.88	0.016347	95.09	95.11	118.83	1007.6	1126.5	0.2165	1.6504	1.8669	118.82	1059.6
3.6	148.70	0.016336	100.04	100.06	116.65	1008.9	1125.6	0.2129	1.6584	1.8713	116.63	1058.9
3.4	146.41	0.016324	105.55	105.57	114.36	1010.3	1124.6	0.2091	1.6669	1.8760	114.35	1058.2
3.2	144.00	0.016312	111.73	111.75	111.95	1011.7	1123.6	0.2051	1.6759	1.8810	111.94	1057.5
3.0	141.47	0.016300	118.71	118.73	109.42	1013.2	1122.6	0.2009	1.6854	1.8864	109.41	1056.7
2.8	138.78	0.016287	126.66	126.67	106.73	1014.7	1121.5	0.1964	1.6956	1.8921	106.73	1055.8
2.6	135.93	0.016274	135.78	135.80	103.88	1016.4	1120.3	0.1917	1.7066	1.8982	103.87	1054.9
2.4	132.88	0.016260	146.39	146.40	100.84	1018.2	1119.0	0.1865	1.7183	1.9048	100.83	1054.0
2.2	129.61	0.016245	158.86	158.87	97.57	1020.1	1117.6	0.1810	1.7311	1.9121	97.56	1053.0
2.0	126.07	0.016230	173.74	173.76	94.03	1022.1	1116.2	0.1750	1.7450	1.9200	94.03	1051.8
1.8	122.22	0.016213	191.84	191.85	90.18	1024.3	1114.5	0.1684	1.7604	1.9288	90.18	1050.6
1.6	117.98	0.016196	214.31	214.33	85.95	1026.8	1112.7	0.1611	1.7775	1.9386	85.94	1049.3
1.4	113.26	0.016178	243.00	243.02	81.23	1029.5	1110.7	0.1529	1.7969	1.9498	81.23	1047.8
1.2	107.91	0.016158	280.95	280.96	75.90	1032.6	1108.5	0.1436	1.8192	1.9628	75.89	1046.1
1.0	101.74	0.016136	333.59	333.60	69.73	1036.1	1105.8	0.1326	1.8455	1.9781	69.73	1044.1
0.9	98.24	0.016124	368.41	368.42	66.24	1038.1	1104.3	0.1264	1.8606	1.9870	66.24	1042.9
0.8	94.38	0.016112	411.67	411.69	62.39	1040.3	1102.6	0.1195	1.8775	1.9970	62.39	1041.7
0.7	90.09	0.016099	466.93	466.94	58.10	1042.7	1100.8	0.1117	1.8966	2.0083	58.10	1040.3
0.60	85.218	0.016085	540.0	540.1	53.245	1045.5	1098.7	0.1028	1.9186	2.0215	53.243	1038.7
0.50	79.586	0.016071	641.5	641.5	47.623	1048.6	1096.3	0.0925	1.9446	2.0370	47.621	1036.9
0.40	72.869	0.016056	792.0	792.1	40.917	1052.4	1093.3	0.0799	1.9762	2.0562	40.916	1034.7
0.35	68.939	0.016048	898.6	898.6	36.992	1054.6	1091.6	0.0725	1.9951	2.0676	36.991	1033.4
0.30	64.484	0.016040	1039.7	1039.7	32.541	1057.1	1089.7	0.0641	2.0168	2.0809	32.540	1032.0
0.25	59.323	0.016032	1235.5	1235.5	27.382	1060.1	1087.4	0.0542	2.0425	2.0967	27.382	1030.2
0.20	53.160	0.016025	1526.3	1526.3	21.217	1063.5	1084.7	0.0422	2.0738	2.1160	21.217	1028.2
0.15	45.453	0.016020	2004.7	2004.7	13.498	1067.9	1081.4	0.0271	2.1140	2.1411	13.498	1025.8
0.10	35.023	0.016020	2945.5	2945.5	3.026	1073.8	1076.8	0.0061	2.1705	2.1766	3.026	1022.3
0.08865	32.018	0.016022	3302.4	3302.4	0.0003	1075.5	1075.5	0.0000	2.1872	2.1872	0.000	1021.3

DATA SHEET 5.5

Verification of the WSS Aux. Boiler Pressure Step Control

Page 1 of 1
Step No. 4.4.1.2.3

E22

Set Point of Pressure Control (psig)	Deviation of Boiler Press. from Set Point (psi)	No. of Heating Elements Energized
260		
250		
240		
230		
220		
210		
200		
190		
180		
170		
160		
150		

DATA SHEET DELETED BY
FRF N2-POT-41-1-5
1/19/87

DATA SHEET 5.7
Verification of Steam Trap Operation

Page 1 of 1
Step No. 4.4.3.1

STEAM TRAP 2WSS-TRP	LOCATION	TRAP OPERATION	VERIFIED BY INITIAL/DATE
1	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
2	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
3	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
4	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
5	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
6	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
7	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
8	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
9	Manifold Skid 2WSS-SKD38	OK	JM 10/14/86
96	Asphalt Strain 1B Jacket	OK	JM 10/14/86
97	Asphalt Strain 1A Jacket	OK	JM 10/14/86
98	Asphalt Strain 4B Jacket	OK	JM 10/14/86
99	Asphalt Strain 4A Jacket	OK	JM 10/14/86
100	Asphalt Pump P3B Jacket	OK	JM 10/14/86
101	Asphalt Pump P3A Jacket	OK	JM 10/14/86
102	Asphalt Meter FE202 Jacket	OK	JM 10/14/86
103	Asphalt Tank Heater H41B	OK	JM 10/14/86
104	Asphalt Tank Heater H41C	OK	JM 10/14/86
105	Asphalt Tank Heater H41A	OK	JM 10/14/86
119	Steam Supply to Tracer Station ST.1 Low Point Trap	OK	JM 10/14/86
120	RV241 Discharge Drain Trap	OK	JM 10/14/86
121	SV240 Discharge Drain Trap	OK	JM 10/14/86
122	RV242 Discharge Drain Trap	OK	JM 10/14/86
127	Steam Line 2WSS-500949-4 Trap	OK	JM 10/14/86
128	Steam Line 2WSS-50095-4 Trap	OK	JM 10/14/86
129	Steam Line 2WSS-500953-4 Trap	OK	JM 10/14/86
130	Steam Line 2WSS-500954-4 Trap	OK	JM 10/14/86
132	Steam Line 2WSS-750422-4 Trap	OK	JM 10/14/86
133	Steam Line 2WSS-500931-4 Trap	OK	JM 10/14/86
134	Steam Tracer No. ST-1-3	OK	JM 10/14/86
135	Steam Tracer No. ST-1-4	OK	JM 10/14/86
136	Steam Tracer No. ST-2-16	OK	JM 10/14/86
137	Steam Tracer No. ST-2-15	OK	JM 10/14/86
138	Steam Tracer No. ST-1-1	OK	JM 10/14/86
139	Steam Tracer No. ST-1-2	OK	JM 10/14/86
140	Steam Tracer No. ST-1-8	OK	JM 10/14/86
141	Steam Tracer No. ST-1-7	OK	JM 10/14/86
142	Steam Tracer No. ST-1-5	OK	JM 10/14/86
143	Steam Tracer No. ST-1-6	OK	JM 10/14/86
144	Steam Tracer No. ST-1-11	OK	JM 10/14/86
145	Steam Tracer No. ST-2-14	OK	JM 10/14/86
146	Steam Tracer No. ST-2-13	OK	JM 10/14/86
147	Steam Tracer No. ST-2-18	OK	JM 10/14/86

DATA SHEET 5.8

Cooling and Heatup of Asphalt Tank

Page 1 of 1
Step No. 4.4.4.2.7

TS# 17

Time (hr.)	Tank Temperature (2WSS-TI114)		Verified By
	Cooling[1]	Heatup[2]	Initial/Date
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
22			
24			
26			
28			
30			
32			
34			
36			
38			
40			
42			
44			
46			
48			

NOTES:
1. Tank Temperature when heating is switched from WSS Aux. Steam to ASR Aux. Steam
2. Tank temperature when heating is switched from ASR Aux. Steam to WSS Aux. Steam

Page 1 of 1
Procedure Step 4.6.4

DATA SHEET 5.9

Calibration of Sample Valves and Standpipe

Waste Sludge Sampling (2WSS-AOV352), ml

Sample No.	Standpipe Only	Standpipe & Sample Valve
1	57	73
2	60	80
3	56	75
4	63	79
5	60	77
6	61	81
TOTAL	357	465
Average	Total/6 = 59.5 (A)	Total/6 = 77.5 (B)

Sample Volume (B)-(A) = 18 ml

Dilution Factor $\frac{(B)-(A)}{(B)}$ = 0.232

Verified By: (Initial/Date): 10/31/86

Waste Concentrate Sampling (2WSS-AOV356), ml

Sample No.	Standpipe Only	Standpipe & Sample Valve
1	60	72
2	58	86
3	61	77
4	63	79
5	56	75
6	60	78
TOTAL	358	467
Average	Total/6 = 59.6 (A)	Total/6 = 77.8 (B)

Sample Volume (B)-(A) = 18.2 ml

Dilution Factor $\frac{(B)-(A)}{(B)}$ = 0.233

Verified By: (Initial/Date): 12/22/86

REC[illegible]

DATA SH[illegible] 5.10

Extruder Barrel Heatup

Page 1 of 2
Step No. 4.8.3.1

BARREL SECTION	STEAM VALVE COOLING WATER VALVE	TEMP. CONTROL	0 MIN		20 MIN		40 MIN		60 MIN		80 MIN		100 MIN		120 MIN		140 MIN	
			%	°F	%	°F	%	°F	%	°F	%	°F	%	°F	%	°F	%	°F
1	TVX136 TVY136	TIC136	50	90	55	90	60	90	65	104	~~70~~ 0 JM 10/15/86	154	~~75~~ 60 JM 10/15/86	176	~~80~~ 45 JM 10/15/86	188	85	
2	TV137	TIC137	0	88	10	88	20	88	30	200	~~40~~ 0 JM 10/15/86	274	~~50~~ 0 JM 10/15/86	264	~~60~~ 20 JM 10/15/86	268	70	
3	TV138 V56	TIC138 Manual[3]	0 0	82	10 0	83	20 0	83	30 0	228	~~40~~ 0 0 JM 10/15/86	316	~~50~~ 0 20 JM 10/15/86	270	~~60~~ 0 40 JM 10/15/86	272	70 0	
4	TV139 V57	TIC139 Manual[3]	0 0	93	10 0	98	20 0	98	30 0	102	~~40~~ 10 0 JM 10/15/86	190	~~50~~ 0 0 JM 10/15/86	335	~~60~~ 0 40 JM 10/15/86	292	70 0	
5	TV140	TIC141[2]	0	140	10	140	20	143	~~30~~ 10 JM 10/13/86	137	~~40~~ 20 JM 10/15/86	165	~~50~~ 0 JM 10/15/86	312	~~60~~ 30 JM 10/15/86	297	70	
6	TV141 V58	Manual[3]	0	112	0	114	0	116	0	124	0	165	0	309	0	290	0	
7	TVX142 TVY142	TIC142[1]	50	90	55	90	60	90	65	96	70	90	~~75~~ 50 JM 10/15/86	250	~~80~~ 60 JM 10/15/86	210	85	

VERIFIED BY/DATE 10/15/86 SEE ATTACHED CHART FROM TEMP. RECORDER

1. Split-Range Controller
   Setting: TIC 0------------50-----100%
   Steam Valve Position: TVX Close-------Close---Fully Open
   Cooling Water Valve Position: TVY Fully Open--Close----Close

   Proportional Controller
   Setting: TIC---0--------100
   Steam Valve Position TV---Close--Fully Open

2. Control Both Sections 5 & 6 Steam Valves.

3. Cooling Water to Steam Domes Only.

DATA SHE 5.10

Extruder Barrel Heatup

Page 2 of 2
Step No. 4.8.3.1

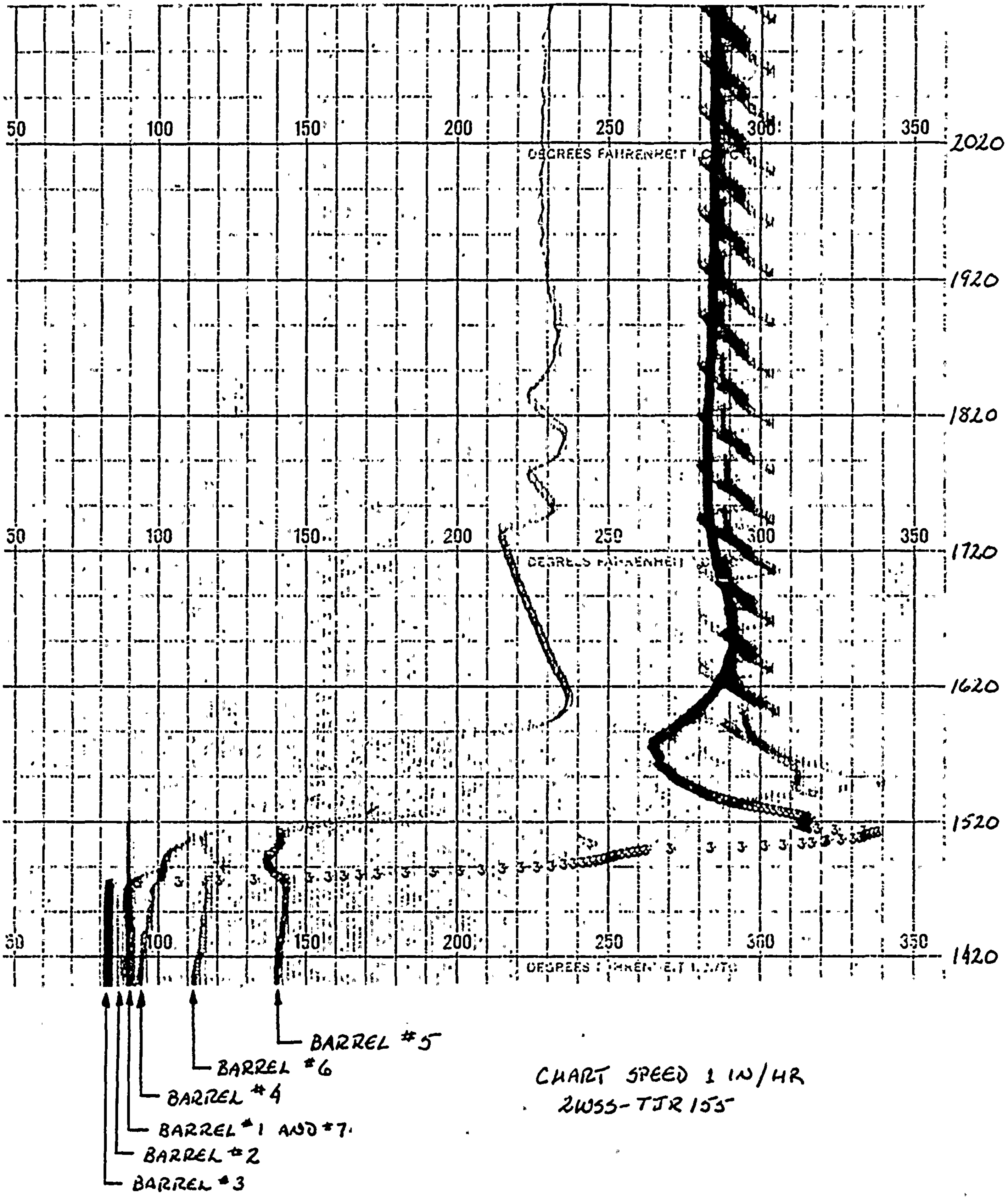
BARREL SECTION	STEAM VALVE COOLING WATER VALVE	TEMP. CONTROL	MIN		MIN		MIN		140 MIN		160 MIN		180 MIN		200 MIN		MIN	
			%	°F	%	°F	%	°F	%	°F	%	°F	%	°F	%	°F	%	°F
1	TVX136 TVY136	TIC136[1]	90		95		100		Auto	174	Auto	184	Auto	158	Auto	165	Auto	
2	TV137	TIC137	80		90		100		Auto	264	Auto	264	Auto	272	Auto	268	Auto	
3	TV138 V56	TIC138 Manual[3]	80 0		90 0		100 0		Auto 0	286	Auto 0	292	Auto 0	296	Auto 0	285	Auto 0	
4	TV139 V57	TIC139 Manual[3]	80 0		90 0		100 0		Auto 0	290	Auto 0	292	Auto 0	292	Auto 0	295	Auto 0	
5	TV140	TIC141[2]	80		90		100		Auto	294	Auto	293	Auto	292	Auto	295	Auto	
6	TV141 V58	Manual[3]	0		0		0		0	290	0	294	0	292	0	295	0	
7	TVX142 TVY142	TIC142[1]	90		90		100		Auto	237	Auto	229	Auto	212	Auto	216	Auto	

VERIFIED BY/DATE 10/15/86

1. Split-Range Controller			Proportional Controller	
Setting:	TIC	0------------50-----100%	Setting:	TIC---0--------100
Steam Valve Position:	TVX	Close-------Close---Fully Open	Steam Valve Position	TV---Close--Fully Open
Cooling Water Valve Position:	TVY	Fully Open--Close----Close		

2. Control Both Sections 5 & 6 Steam Valves.

3. Cooling Water to Steam Domes Only.



BARREL #5

BARREL #6

BARREL #4

BARREL #1 AND #7.

BARREL #2

BARREL #3

CHART SPEED 1 IN/HR
2WSS-TJR155

DATA SHEET 5.11

Extruder Current Draw

Page 1 of 1
Step No. 4.10.2.1

Motor RPM	Meter 2WSS-IR135 Reading (%)	Current (Amp)	Verified By/ Initial/Date
300	17	17	11/26/86
600	35	22	11/26/86
900	55	25	11/26/86
1200	72	28	11/26/86
1500	94	32	11/26/86
1800	NA	NA	/
2100	NA	NA	/

NOTE: 1. Current Meter reading 0--100% equivalent to 4--20 ma signal representing current draw of 0--147 amp.
2. Extruder RPM is 1/6 of Motor RPM

Data Sheet 5.12
LINER STORAGE LOCATION

Page 1 of 2

Procedure Step No.	Grid Location	Liner Number	Time Set	Remarks	Initial/ Date
	A6				
	A5				
	B5				
	C5				
	C6				
	C7				
	B7				
	A7				
	B6				
	J4				
	I6				
	H3				
	F7				
	G1				
	E5				

DATA SHEET DELETED BY
FRF N2-POT-41-1-5 1/9/87

Data Sheet 5.12
LINER STORAGE LOCATION

Page 2 of 2

Procedure Step No.	Grid Location	Liner Number	Time Set	Remarks	Initial/ Date
	D2				
	C1				
	E3				
	G5				
	H6				
	I7				
	F4				
	D6				
	G3				
	H2				
	A3				
	F2				
	D4				
	B2				
	J6				

DATA SHEET DELETED BY FRF N2-POT-41-1.5
1/19/87

Data Sheet 5.13
Page 1 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 1
DATE: 12/2/86 TIME: 1745 START FINISH

WASTE TYPE: [✓ FL DR FILTER CAKE]/SPNT RESINS/EVAP BTM
VERIFIED BY: / 12/2/86

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	WASTE SLUDGE TANK (TK8)		
Level (%)	30%	NA	
Volume (Gal)	568		
Volume (ml)	2.1 x10^6	NA	
Suspended Solids (wt%)	NA		
Total Solids (wt%)	2.4%		
Moisture in Solids (wt%)	97.6%		
Specific Gravity	0.9712		
pH	6.0		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.37 (MAX)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.: 0.065 (MW)
Actual: 0.08

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE ATTACHED SHEET								
2									
3	12/2/86								
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling ONE
Filling Time 1745 Start Finish 1600 (12/3/86)
Cooling Time 1600 Start Finish
Capping

LINER EXAMINATION

	Date	Time
Liner Integrity	12/2/86	1630
Free Standing Water (Visual)		
Compression Strength		
Presence of Voids/Depressions		

Remarks: SOME OF WASTE APPEARED TO BE POWDEX OR ECODEX, NO BEAD RESIN NOTED.
TEST VOID, PROCEDURE REVISED BY FRF N2-POT-41-1-4

RECORD COPY

FILTER CAKE / MIXED RESINS

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL
1800	200	270	290	350	354	194	~~0.08~~ 0.08	0.284	30
1900	200	270	290	350	328	188	0.08	0.272	29
2000	200	270	290	350	334	189	0.08	0.263	29
2100	205	265	290	355	345	189	0.08	0.272	28
2200	200	265	285	350	318	190	0.08	0.284	28
2300	200	265	285	350	307	190	0.08	0.238	25
0000	200	265	285	365	307	191	0.08	0.219	24
0100	200	265	285	345	310	190	0.08	0.294	22
0200	200	265	280	345	307	190	0.08	0.261	20
0300	200	265	280	365	306	190	0.08	0.270	20
0400	200	265	280	350	322	190	0.08	0.265	19
0500	200	265	280	345	309	190	0.08	0.255	18
0600	200	265	280	345	307	190	0.08	0.245	17
0700	200	265	280	355	306	190	0.08	0.238	16
0800	200	265	280	345	304	190	0.08	0.257	16
0900	205	265	280	345	304	190	0.08	0.257	14
1000	205	263	285	354	310	190	0.08	0.253	13
1100	198	265	277	346	308	190	0.08	0.289	12
1200	198	264	278	344	303	189	0.08	0.257	10
1300	193	264	280	350	310	190	0.08	0.270	9
1400	197	264	277	344	303	196	0.08	0.275	8
1500	198	263	279	353	305	199	0.08	0.274	7

Data Sheet 5.13
Page 2 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 1 (SECTION 4.11.1) DATE: 12/4/86 TIME: START 2130 FINISH 1530 12/6/86

WASTE TYPE: [✓ FL DR FILTER CAKE]/SPNT RESINS/EVAP BTM VERIFIED BY: / 12/4/86

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8		
Level (%)	82%	NONE	
Volume (Gal)	800		
Volume (ml)	2.96×10^6	NONE	
Suspended Solids (wt%)	NA		
Total Solids (wt%)	9.4%		
Moisture in Solids (wt%)	90.6%		
Specific Gravity	1.039		
pH	7.8		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.331 GPM MAX
Waste/Asphalt Ratio 0.477
Asphalt Feed Rate (GPM) Calc.: 0.065 MIN
Actual: 0.12/0.15

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE SECTION 4.11.1								
2	DATA SHEET								
3									
4									
5									
6									
7	12/6/86								

FILLING & CAPPING

Liner No. Z73-72
One or Three Pass Filling ONE
Filling Time 2130 Start Finish 1530 12/6/86
Cooling Time 1530 12/6/86 Start Finish 12/10/86
Capping 12/11/86

LINER EXAMINATION

	Date	Time
Liner Integrity	12/4/86	2100
Free Standing Water (Visual)	12/10/86	1500
Compression Strength	12/10/86	1500
Presence of Voids/Depressions	12/11/86	1500

NO VOIDS NOTED, APPROXIMATE 4" DEPRESSION IN CENTER OF MONOLITH.

Remarks: WASTE FEED FLOW ELEMENT (2WSS-FE200) INOPERATIVE. FLOWRATE MONITORED BY DISTILLATE SKID DISCHARGE AND METERING PUMP RPM. REFER TO TEST SUMMARY NOTE TS#69 AND EXCEPTION E46 1/19/87

Data Sheet 5.13
Page 3 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 2 (SECTION 4.11.2)
DATE: 12/7/86 TIME: START 0600 FINISH

WASTE TYPE: FL DR FILTER CAKE/[✓ SPNT RESINS]/EVAP BTM
VERIFIED BY: 12/7/86

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8		
Level (%)	46%	NONE	
Volume (Gal)	660		
Volume (ml)	2.44 x 10⁶	NONE	
Suspended Solids (wt%)	NA		
Total Solids (wt%)	13.5%		
Moisture in Solids (wt%)	86.5%		
Specific Gravity	1.026		
pH	4.3		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.399 MAX
Waste/Asphalt Ratio 0.65
Asphalt Feed Rate (GPM) Calc.: 0.0824 MIN
Actual: 0.12, 0.15 GPM

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE SECTION 4.11.2								
2	DATA SHEET.								
3									
4									
5									
6									
7	12/8/86								

FILLING & CAPPING

Liner No. 6103-03
One or Three Pass Filling ONE
Filling Time 0625 Start Finish 0730 12/8/86
Cooling Time 0730 12/8/86 Start Finish 12/12/86
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time	
Liner Integrity	12/7/86	0400	TS#106
Free Standing Water (Visual)	12/12/86	1300	TS#107
Compression Strength	12/12/86	1300	
Presence of Voids/Depressions			

NO VOIDS VISIBLE, APPROXIMATE 6" DEPRESSION IN CENTER OF MONOLITH.

Remarks: WASTE FEED FLOW METER (FE200) STILL INOPERATIVE. FEED FLOW DETERMINED BY PUMP SPEED AND DISTILLATE SKID DISCHARGE FLOW. REFER TO TEST SUMMARY NOTE TS#69 AND EXCEPTION E46 1/19/87

RECORD COPY

Data Sheet 5.13
Page 4 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 3 (SECTION 4.11.3) DATE: 12/8/86 TIME: 2000 START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/[✓ EVAP BTM] VERIFIED BY: JM / 12/8/86

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2LWS-TK10		
Level (%)	36	CAUSTIC ADD	
Volume (Gal)	3100		
Volume (ml)	1.15×10^7	0.52 GALL	
Suspended Solids (wt%)	NA		
Total Solids (wt%)	16.3%		
Moisture in Solids (wt%)	83.7%		
Specific Gravity	1.1023		
pH	10.45, ADJUSTED TO 9.6		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.56 MAX
Waste/Asphalt Ratio 0.93
Asphalt Feed Rate (GPM) Calc.: 0.10
Actual: 0.14

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE DATA SHEETS IN								
2									
3	PROCEDURE SECTION								
4									
5									
6	12/9/86								
7									

FILLING & CAPPING

Liner No. 6103-02
[✓ One] or Three Pass Filling
Filling Time 2000 Start Finish

Cooling Time Start Finish
Capping

LINER EXAMINATION

	Date	Time
Liner Integrity	12/8/86	2000
Free Standing Water (Visual)		
Compression Strength		
Presence of Voids/Depressions		

Remarks: FIRST LINER ABORTED AT ~~101~~ JM 12/9/86 1030, 12/9/86 DUE TO WATER DISCHARGE (REFER TO TS#97). NEW LINER STARTED @ 1145. SYSTEM SHUTDOWN TO BATCH TO TANK AND RESAMPLE.
NEW DATA ON NEXT PAGE

RECORD COPY

Data Sheet 5.13
'age 5 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 4 (SECTION 4.11.3) DATE: 12/~~9~~10/86 JM 12/10/86 TIME: 0850 START 0640 12/11/86 FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/[✓ EVAP BTM] VERIFIED BY: / JM 12/10/86

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2LWS-TK10		
Level (%)	46	NONE REQ'D	
Volume (Gal)	3600		
Volume (ml)	1.33×10^7	NONE REQ'D	
Suspended Solids.(wt%)	NA		
Total Solids (wt%)	25.2%		
Moisture in Solids (wt%)	74.8%		
pecific Gravity	1.26		
pH	9.5		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.56 MAX
Waste/Asphalt Ratio 0.793
Asphalt Feed Rate (GPM) Calc.: 0.178
Actual: 0.2

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE DATA SHEETS IN								
2									
3	PROCEDURE SECTION								
4									
5									
6	12/11/86								
7									

FILLING & CAPPING

Liner No. 6103-02
[✓ One] or Three Pass Filling
Filling Time 1145 12/9/86 Start Finish 0640 12/11/86
Cooling Time 0640 Start Finish 12/16/86
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time
Liner Integrity	12/8/86	2000
Free Standing Water (Visual)	NONE 12/16/86	
Compression Strength	12/17/86	0800
Presence of Voids/Depressions	12/17/86	1500

NO VOIDS NOTED, APPROXIMATE 2-3" DEPRESSION IN CENTER OF MONOLITH.

Remarks: LINER FILLED TO HIGH-HIGH LEVEL TRIP POINT - ACTUAL LEVEL 36"

Data Sheet 5.13
Page 6 of 20
Procedure Step 4.11

- WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 1 (REVERICATION) DATE: 1/20/87 TIME: 1400 START 1700 FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM MIXED RESINS AND FLOOR DRAIN FILTER CAKE VERIFIED BY: 1/20/87

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8	ADDED 13 GALLONS CAUSTIC TO RAISE pH TO 10.5-11.0, CONDUCTIVITY TO > 100 μmho	
Level (%)	94		
Volume (Gal)	1250		
Volume (ml)	4.75 x 10⁶		
Suspended Solids (wt%)	NA		
Total Solids (wt%)	15.21		
Moisture in Solids (wt%)	84.79		
Specific Gravity	1.012		
pH	8.6		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.410 MAX.
Waste/Asphalt Ratio 0.69
Asphalt Feed Rate (GPM) Calc.: 0.095 MIN
Actual: 0.2

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE DATA SHEET (ATTACHED)								
2									
3	1/22/87								
4									
5									
6									
7									

FILLING & CAPPING

Liner No. 1
[✓ One] ~~or Three~~ Pass Filling
Filling Time 1400 Start Finish 1700
Cooling Time 1700 Start Finish 1/22/87 1600
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time
	1/20/87	
Liner Integrity	1/20/87	1330
Free Standing Water (Visual)	NONE	1/20/87
Compression Strength	1/22/87	1600
Presence of Voids/Depressions		

REFER TO TEST SUMMARY NOTE TS# 140

Remarks: ~~DATA SHEET NOT USED 12/11/86~~ 1/20/87
REVERIFICATION - REFER TO EXCEPTION E46

MIXED RESINS AND FLOOR DRAW FILTER CAKE

LINER NO. 1

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL
1400	202	250	300	345	322	210	0.2	0.25	94%
1500	200	250	290	345	312	211	0.2	0.25	92%
1600	200	250	270	350	303	211	0.2	0.25	90%
1700	200	250	270	350	302	210	0.2	0.25	85%

Data Sheet 5.13
'age 7 of 20
Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 1 (REVERIFICATION) DATE: 1/20/87 TIME: 1700 START 2400 FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM MIXED RESINS AND FLOOR DRAIN FILTER CAKE VERIFIED BY: 1/20/87

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8	NONE	
Level (%)	88		
Volume (Gal)	1180		
Volume (ml)	4.5×10^6		
Suspended Solids (wt%)	NA		
Total Solids (wt%)	15.9		
Moisture in Solids (wt%)	84.1		
Specific Gravity	1.005		
pH	10.2		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.416 MAX.
Waste/Asphalt Ratio 0.69
Asphalt Feed Rate (GPM) Calc.: 0.10
Actual: 0.25

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE DATA SHEET (ATTACHED)								
2									
3									
4	1/27/87								
5									
6									
7									

FILLING & CAPPING

Liner No. 2
[✓ One] ~~or Three~~ Pass Filling
Filling Time 1700 Start Finish 2400

Cooling Time 2400 Start Finish
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time
Liner Integrity	1/20/87	1630
Free Standing Water (Visual)	NONE 1/21/87	
Compression Strength	1/23/87	1430
Presence of Voids/Depressions		

REFER TO TEST SUMMARY NOTE TS# 141

Remarks: ~~DATA SHEET NOT USED 12/4/86~~ 1/20/87
REVERIFICATION - REFER TO EXCEPTION E46

RECORD COPY

MIXED RESINS AND FLOOR DRAIN FILTER CAKE

LINER NO. 2

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL
1800	200	250	270	350	303	211	0.25	0.29	86%
2000	200	250	276	345	303	208	0.25	0.29	82%
2200	203	248	288	345	306	204	0.25	0.29	78%
2400	200	245	305	340	301	207	0.25	0.29	74%

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 2 (REVERIFICATION) DATE: 1/21/87 TIME: 0700 START 1730 FINISH

WASTE TYPE: BEAD RESIN ~~FL OR FILTER CAKE/SPNT RESINS/EVAP BTM~~ VERIFIED BY: 1/21/87

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8		
Level (%)	77%	11 GALLONS OF	
Volume (Gal)	1050		
Volume (ml)	4.0x10⁶	CAUSTIC ADDED TO	
Suspended Solids (wt%)	NA	INCREAS CONDUCTIVITY	
Total Solids (wt%)	13		
Moisture in Solids (wt%)	87	TO >100 µmho.	
Specific Gravity	1.014		
pH	10.3		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.4 GPM MAX
Waste/Asphalt Ratio 0.58
Asphalt Feed Rate (GPM) Calc.: 0.09 (MIN)
Actual: 0.24

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1	SEE ATTACHED DATA SHEET								
2									
3	1/27/87								
4									
5									
6									
7									

FILLING & CAPPING

Liner No. 3
~~One or~~ Three Pass Filling
Filling Time 0700 Start Finish 1730
Cooling Time 1730 Start Finish 1/23/87 1830
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time
Liner Integrity	1/21/87	0630
Free Standing Water (Visual)	NONE 1/22/87	
Compression Strength	1/23/87	1830
Presence of Voids/Depressions		

REFER TO TEST SUMMARY NOTE
TS# 141

Remarks: ~~DATA SHEET NOT USED~~ ~~12/11/86~~ 1/21/87
REVERIFICATION - REFER TO EXCEPTION E46.

MIXED RESINS AND FLOOR DRAIN FILTER CAKE
LINER NO.S 3 AND 4
(THREE PASS FILL)

TIME	BARREL #1	BARREL #2	BARRELL #3	BARREL #4	BARREL #5/6	BARREL #7	ASPH. FLOW	WASTE FLOW	TANK LEVEL
0800	195	245	270	345	306	210	0.25	0.35	77%
1000	197	245	270	344	305	210	0.24	0.32	73%
1200	200	242	260	346	303	210	0.24	0.32	69%
1400	200	245	260	346	303	210	0.23	0.30	63%
1600	196	245	260	346	302	208	0.24	0.32	59%
1800	200	245	260	348	302	207	0.24	0.29	52%
2000	200	245	258	344	306	207	0.25	0.30	50%

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. 2 (REVERIFICATION) DATE: 1/21/87 TIME: 0900 START 2000 FINISH

WASTE TYPE: BEAD RESIN ~~FL OR FILTER CAKE/SPNT RESINS/EVAP BTM~~ VERIFIED BY: JM 1/21/87

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank	2WSS-TK8		
Level (%)	75%	NONE	
Volume (Gal)	1030		
Volume (ml)	3.9×10^6		
Suspended Solids (wt%)	NA		
Total Solids (wt%)	13		
Moisture in Solids (wt%)	87		
Specific Gravity	1.014		
pH	10.3		

WASTE SOLIDIFICATION

Waste Feed Rate (GPM) 0.4 MAX
Waste/Asphalt Ratio 0.58
Asphalt Feed Rate (GPM) Calc.: 0.09 MIN
Actual: 0.24

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2	SEE ATTACHED DATA SHEET								
3									
4	JM 1/22/87								
5									
6									
7									

FILLING & CAPPING

Liner No. 4
~~One or~~ Three Pass Filling
Filling Time 0900 Start Finish 2000
Cooling Time 2000 Start Finish 1/23/87 1830
Capping NOT CAPPED

LINER EXAMINATION

	Date	Time
Liner Integrity	1/21/87	0630
Free Standing Water (Visual)	NONE 1/22/87	
Compression Strength	1/23/87	1830
Presence of Voids/Depressions		

REFER TO TEST SUMMARY NOTE TS# 141

Remarks: ~~DATA SHEET NOT USED JM 12/11/86~~ JM 1/21/87
REVERIFICATION - REFER TO EXCEPTION E46

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids,(wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO.	DATE:	TIME: START	FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
pecific Gravity			
H			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED SM 12/11/86

RECORD COPY

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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish

Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids.(wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO.	DATE:	TIME: START	FINISH
WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM	VERIFIED BY: /		

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date	Time
Liner Integrity	
Free Standing Water (Visual)	
Compression Strength	
Presence of Voids/Depressions	

Remarks: DATA SHEET NOT USED 12/11/86

Data Sheet 5.13
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Procedure Step 4.11

- WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

Data Sheet 5.13
age 17 of 20
Procedure Step 4.11

- WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish

Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO. DATE: TIME: START FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish

Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO.	DATE:	TIME:	START	FINISH

WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM VERIFIED BY: /

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date Time
Liner Integrity
Free Standing Water (Visual)
Compression Strength
Presence of Voids/Depressions

Remarks: DATA SHEET NOT USED 12/11/86

Data Sheet 5.13
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Procedure Step 4.11

WASTE SOLIDIFICATION PERFORMANCE TEST SUMMARY

BATCH NO.	DATE:	TIME: START	FINISH
WASTE TYPE: FL DR FILTER CAKE/SPNT RESINS/EVAP BTM	VERIFIED BY: /		

Quantities and Properties	Waste Feed	Waste Preparation Wtr. Add/ Caustic/Acid Decant	Prepared Feed to Extruder
Source Tank			
Level (%)			
Volume (Gal)			
Volume (ml)			
Suspended Solids (wt%)			
Total Solids (wt%)			
Moisture in Solids (wt%)			
Specific Gravity			
pH			

WASTE SOLIDIFICATION

Waste Feed Rate (GPM)
Waste/Asphalt Ratio
Asphalt Feed Rate (GPM) Calc.:
Actual:

Barrel Temp Profile (°F)

	0	1	2	3	4	5	6	7	8 (HR)
1									
2									
3									
4									
5									
6									
7									

FILLING & CAPPING

Liner No.
One or Three Pass Filling
Filling Time Start Finish
Cooling Time Start Finish
Capping

LINER EXAMINATION

Date	Time
Liner Integrity	
Free Standing Water (Visual)	
Compression Strength	
Presence of Voids/Depressions	

Remarks: DATA SHEET NOT USED 12/11/86

RECORD COPY

FILE COPY

Data Sheet 5.20
Page 1 of 3
Procedure Step 4.11

VERIFICATION OF DISTILLATE QUALITIES FROM EXTRUDER-EVAPORATOR & DISTILLATE SKID

BATCH NO.	WASTE TYPE	SAMPLE NO.	SAMPLING LOCATION Discharge From:	DISTILLATE ANALYSES pH	 Conductivity (mmhos/cm)	 Suspended Solids (PPM)	 T.O.C.	SAMPLE TAKEN BY Int./Date/Time	ANALYSES BY Int./Date
1	FILTER SLUDGE	1A	Pump Disch.		NOT	TAKEN			
		1B	Rough. Flt.		NOT	TAKEN			M. MENARD
		1C	Polish. Flt.	6.5	142	1.28 mg/l	12.48	JM/12/3/86/0400	12/3/86
1	FILTER SLUDGE	2A	Pump Disch.		NOT	TAKEN			
		2B	Rough. Flt.		NOT	TAKEN			P. CHALONE
		2C	Polish. Flt.	6.6	511	3.35 mg/l	10.86	JM 12/3/86/1300	12/3/86
		3A	Pump Disch.						
		3B	Rough. Flt.						
		3C	Polish Flt.						
		4A	Pump Disch.						
		4B	Rough. Flt.						
		4C	Polish. Flt.						
		5A	Pump Disch.						
		5B	Rough. Flt.						
		5C	Polish. Flt.						
		6A	Pump Disch.						
		6B	Rough. Flt.						
		6C	Polish. Flt.						

NOT USED JM 12/3/86

Data Sheet 5.20
Page 2 of 3
Procedure Step 4.11

VERIFICATION OF DISTILLATE QUALITIES FROM EXTRUDER-EVAPORATOR & DISTILLATE SKID

BATCH NO.	WASTE TYPE	SAMPLE NO.	SAMPLING LOCATION Discharge From:	DISTILLATE ANALYSES pH	Conductivity (mmhos/cm)	Suspended Solids (PPM)	T.O.C.	SAMPLE TAKEN BY Int./Date/Time	ANALYSES BY Int./Date
1	WASTE SLUDGE	1A	Pump Discn.	9.14	657	93.8	509	JM 12/4/86 2200	J. BACH 12/4/86
		1B	Rough. Flt.	7.75	673	8	411	JM 12/4/86 2200	↓
		1C	Polish. Flt.	6.93	88.2	10.8	67	JM 12/4/86 2200	
3 ~~2~~ JM 12/11/86	WASTE CONCENTRATED	2A	Pump Disch.			NOT TAKEN			
		2B	Rough. Flt.			NOT TAKEN			
		2C	Polish. Flt.	8.6	401	0.22 mg/l	5.618	JM 12/11/86 0230	M. MENARD 12/11/86
		3A	Pump Disch.						
		3B	Rough. Flt.						
		3C	Polish Flt.						
		4A	Pump Disch.						
		4B	Rough. Flt.						
		4C	Polish. Flt.						
		5A	Pump Disch.						
		5B	Rough. Flt.						
		5C	Polish. Flt.						
		6A	Pump Disch.						
		6B	Rough. Flt.						
		6C	Polish. Flt.						

NOT USED JM 12/11/86

Data Sheet 5.20
Page 3 of 3
Procedure Step 4.11

VERIFICATION OF DISTILLATE QUALITIES FROM EXTRUDER-EVAPORATOR & DISTILLATE SKID

BATCH NO.	WASTE TYPE	SAMPLE NO.	SAMPLING LOCATION Discharge From:	DISTILLATE ANALYSES				SAMPLE TAKEN BY Int./Date/Time	ANALYSES BY Int./Date
				pH	Conductivity (mmhos/cm)	Suspended Solids (PPM)	T.O.C.		
		1A	Pump Discn.						
		1B	Rough. Flt.						
		1C	Polish. Flt.						
		2A	Pump Disch.						
		2B	Rough. Flt.						
		2C	Polish. Flt.						
		3A	Pump Disch.						
		3B	Rough. Flt.						
		3C	Polish Flt.						
		4A	Pump Disch.						
		4B	Rough. Flt.						
		4C	Polish. Flt.						
		5A	Pump Disch.						
		5B	Rough. Flt.						
		5C	Polish. Flt.						
		6A	Pump Disch.						
		6B	Rough. Flt.						
		6C	Polish. Flt.						

NOT USED 12/4/86

Section 6.0

Procedure Title: WASTE SOLIDIFICATION SYSTEM
Procedure Number N2-POT-41-1

Page 1 of ______

EXCEPTION SHEET

EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	AUTHORIZATION SSS/DATE (IF REQUIRED)
E1	4.1.1 4.1.4.3	THE FOLLOWING EXTRUDER/ EVAPORATER SPEED CONTROL LOOP CALIBRATIONS ARE NOT COMPLETE: 1) IL2WSS-046 2) IL2WSS-063 3) IL2WSS-068	THE EXTRUDER/EVAPORATOR HAS NOT BEEN RUN THROUGH THE SPEED RANGES REQUIRED AS OF THIS DATE. CALIBRATIONS WILL BE COMPLETED PRIOR TO OR DURING STEP 4.10.2.3.	Dale C. McCully 10/6/86	TS#32 TS#33
E2	4.1.1 4.1.4.3	THE DRUM LEVEL PROBES (LT23A, LT23B) HAVE NOT BEEN CALIBRATED (IL2WSS-051, 052)	ULTRASONIC LEVEL PROBES DO NOT FUNCTION AS DESIGNED AWAITING RESOLUTION OF PROBLEM REPORT # 5584. REQUIRED COMPLETE TO FINISH SECTION 4.10 AND START SECT. 4.11.	Dale C. McCully 10/6/86	TS#89
E3	4.1.1 4.1.4.3	THE EXTRUDER/EVAPORATOR BARREL #7 TEMPERATURE CONTROL LOOP CALIBRATION (IL2WSS-074) HAS NOT BEEN COMPLETED.	LOOP CALIBRATION IS NOT COMPLETE DUE TO FAILED TEMPERATURE TRANSMITTER. DUE TO EXCESSIVE LEAD TIME FOR REPLACEMENT TRANSMITTER, A TEMPORARY UNIT WAS INSTALLED TO MAKE LOOP FUNCTIONAL. REFERENCE DR # 23331 TEMP. MOD # 86-10-03	Dale C. McCully 10/6/86	TS#38

Section 6.0

Procedure Title: WASTE SOLIDIFICATION SYSTEM
Procedure Number N2-POT-41-1

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EXCEPTION SHEET

EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E4	4.1.1 4.1.4.3	THE ASPHALT METERING PUMP SPEED / FLOW CONTROL LOOP (IL2WSS-099) CALIBRATION IS NOT COMPLETE.	CALIBRATION IS NOT COMPLETE DUE TO FAILED COMPONENTS 1) FLOW TOTALIZER (DR# 23704) 2) FLOW ELEMENT (DR# 23848) CALIBATION WILL BE COMPLETED PRIOR TO STARTING SECTION 4.11	Dal. C. McElly 10/6/86	TS# 111
E5	4.1.1 4.1.4.3	THE LUBE OIL TANK TEMPERATURE ELEMENT (2WSS-TE165) LOOP CALIBRATION IS NOT COMPLETE (IL2WSS-124)	LOOP CALIBRATION PACKAGE IS IN THE FIELD FOR WORK.	Dal. C. McElly 10/6/86	TS# 38
E6	4.1.1	LOOP CALIBRATION OF LOWER DECANT VALVE 2WSS-HV122 (IL2WSS-158) HAS NOT BEEN COMPLETED.	VALVE WAS ADDED BY ECN WSS. THIS EXCEPTION HAS NO EFFECT ON PREOP. VALVE IS FUNCTIONAL.	Dal. C. McElly 10/6/86	
E7	4.1.1	ELECTRICAL TESTING OF CONTROL CIRCUIT 2WSSN15 HAS NOT BEEN COMPLETED.	TESTING TO BE COMPLETED PENDING RESOLUTION OF PROBLEM REPORT # 5845. REFERENCE DR# 23744.	Dal. C. McElly 10/6/86 NOTE: TESTING COMPLETED 10/31/86 10/31/86	

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Section 6.0

Procedure Title: WASTE SOLIDIFICATION SYSTEM
Procedure Number N2-POT-41-1

Page 3 of ______

EXCEPTION SHEET

EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E8	4.1.4.3	THE WASTE LINE FEED RADIATION MONITORS (2WSS-RE207, RE208) HAVE NOT BEEN CALIBRATED.	CALIBRATION OF THESE MONITORS HAS NO EFFECT ON THIS PREOP. THE FUNCTION OF THESE MONITORS WAS VERIFIED DURING PERFORMANCE OF N2-POT-80A-1, SECTION 4.13.6	Dale C. McCully 10/6/86	
E9	4.1.4.3	ASPHALT RETURN HEADER TEMPERATURE INDICATOR 2WSS-TI359 HAS NOT BEEN CALIBRATED.	PROVIDES LOCAL INDICATION ONLY, HAS NO EFFECT ON THE PERFORMANCE OF THIS TEST.	Dale C. McCully 10/6/86	
E10	4.1.4.3	THE FOLLOWING PRESSURE CONTROL VALVES HAVE NOT BEEN CALIBRATED: 2WSS-PCV247, PCV238, PCV394, AND PCV396.	THESE VALVES HAVE BEEN ADJUSTED TO THE REQUIRED PRESSURES. CALIBRATION OF THESE VALVES DOES NOT EFFECT THIS TEST AND WILL BE PERFORMED AT A LATER DATE.	Dale C. McCully 10/6/86	
E11	4.1.4.3	TEMPERATURE CONTROL VALVES 2WSS-TCV395 AND TCV397 HAVE NOT BEEN CALIBRATED.	CALIBRATION OF THESE CONTROL VALVES WILL BE COMPLETED PRIOR TO PERFORMING SECTION 4.4.4.1	Dale C. McCully 10/6/86 SEE NOTE AFTER TEST SUMMARY NOTE TS#115 JM 12/22/86	

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Section 6.0

Procedure Title: WASTE SOLIDIFICATION SYSTEM
Procedure Number N2-POT-41-1

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EXCEPTION SHEET

EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION	
				LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E 12	4.8.1.1 4.8.1.5 4.8.1.5.1	TESTING OF LUBE OIL PUMPS WILL NOT BE PERFORMED AS WRITTEN.	IF THE OVERLOAD HEATERS ARE REMOVED FROM THE PUMP BREAKERS, THE PUMP PROTECTIVE CIRCUITRY WILL PROHIBIT PUMP OPERATION (LOW FLOW, LOW PRESSURE). TEST WILL BE PERFORMED AS WRITTEN EXCEPT HEATERS WILL NOT BE REMOVED OR REPLACED, STEP 4.8.1.2 WILL NOT BE SIMULATED, AND 4.8.1.5.1 WILL NOT NEED TO BE DONE.	Dale C. McCall 10/9/86	
E 13	4.8.2.1 4.8.2.5 4.8.2.6	TESTING OF DISTILLATE PUMPS CANNOT BE PERFORMED AS WRITTEN.	IF THE OVERLOAD HEATERS ARE REMOVED FROM THE PUMP BREAKER, THE PUMP PROTECTIVE CIRCUITRY WILL PROHIBIT PUMP OPERATION (LOW FLOW, LOW PRESSURE). TEST WILL BE PERFORMED AS WRITTEN EXCEPT HEATERS WILL NOT BE REMOVED OR REPLACED. STEP 4.8.2.6 WILL NOT BE DONE.	Dale C. McCall / 10/9/86	

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E 14	4.4.2.1.4	RECORD ASPHALT RECIRC. SYSTEM LINE TEMPERATURES ON DATA SHEET 5.3. IS NOT POSSIBLE.	THE ASPHALT SYSTEM INSULATION HAS BEEN COMPLETED. THERE HAS BEEN NO MEANS PROVIDED TO DETERMINE LINE TEMPERATURE WITHOUT INSULATION REMOVAL. THE ASPHALT SYSTEM HAS BEEN IN OPERATION FOR 4 MONTHS WITH NO PROBLEMS. THIS IS POSITIVE INDICATION OF PROPER OPERATION.	Dale C. McCullough 10/13/86 REFER TO FRF N2-POT-41-1-5 [illegible] 1/19/87	
E 15	4.3.8.3	VERIFY NUMBER OF DRIP PANS ON DRIP PAN COUNTER.	DRIP PAN COUNTER INDICATES THE NUMBER OF PANS USED NOT THE NUMBER OF PANS LOADED IN STACK.	Dale C. McCullough 10/14/86	
E 16	4.3.8.4	VERIFY DRIP PAN AVAILABLE LIGHT.	THE LIMIT SWITCH THAT WAS SUPPOSED TO PROVIDE THIS INDICATION WAS DELETED BY A DRAWING REVISION BY THE VENDOR PRIOR TO CONSTRUCTION: THIS INDICATION IS REDUNDANT AND NOT REQUIRED FOR OPERATION.	Dale C. McCullough 10/14/86	

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EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	AUTHORIZATION SSS/DATE (IF REQUIRED)
E17	4.8.3.1.7	INCREASE CONTROLLER SETTING ONLY WHEN TEMPERATURE HAS STABALIZED, AND RECORD STEADY-STATE TEMPERATURES.	THE ONLY HEAT REMOVAL DURING EXTRUDER STARTUP IS DUE TO AMBIENT LOSSES. TEMPERATURES TEND TO INCREASE RAPIDLY WHEN THE CONTROLLERS ARE INCREASED TO ABOUT 30% OUTPUT. IF CONTROLLER OUTPUTS ARE NOT DECREASED, TEMPERATURE WILL INCREASE AND STABALIZE AT THE STEAM TEMPERATURE (ABOUT 400 °F). TEMPERATURES WILL NOT STABALIZE FOR ABOUT 2 HOURS AFTER CONTROLLERS ARE PLACED IN AUTOMATIC. THE TEMPERATURE STABALIZATION AND RESPONSE IS MUCH FASTER WHEN THE MACHINE IS OPERATING DUE TO HEAT REMOVAL BY THE PROCESS FLUID.	Dale G. McCall / 10/15/86	

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EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E18	4.6.1.2	FILL WASTE SLUDGE TANK (2WSS-TK8) TO HIGH LEVEL	THE TANK LEVEL INDICATION AND HI LEVEL ALARM ARE CALIBRATED	Dale C. McCully 10/27/86	TS*37
	4.6.1.5	ALARM (85%) WITH FLUSH WATER FROM CNS.	FOR A SPECIFIC GRAVITY OF 1.15 WHEN FILLING WITH WATER ONLY.		
	4.6.1.3		THIS GIVES A 15% LOW ERROR IN INDICATION. THE INTENT OF THESE		
	4.6.1.4		STEPS IS PERFORMED BY STEPS 4.6.1.21 AND 4.6.1.22. STEPS 4.6.1.2		
	4.6.1.8		AND 4.6.1.5 WILL BE DELETED, STEPS 4.6.1.3 AND 4.6.1.4 WILL BE PERFORMED		
			DURING STEP 4.6.1.8. THE BATCH METER PRESET IN STEP 4.6.1.5 WILL		
			BE CHANGED FROM 300 TO 1000 GALLS. TO REACH 93% TANK LEVEL.		
E19	4.6.1.10	LOWER TANK LEVEL BY OPENING DRAW VALVE	ALTHOUGH THIS METHOD WILL WORK, THIS WOULD ALLOW THE	Dale C. McCully 10/27/86	
	4.6.1.14	2WSS-V311.	RESIN SLURRY TO BE DRAINED TO THE DRAIN SYSTEM. INSTEAD,		
	4.6.1.18		THE DECANT PUMP (2WSS-P10) WILL BE USED TO LOWER TANK		
			LEVEL.		

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	AUTHORIZATION SSS/DATE (IF REQUIRED)
E20	4.6.3.1	TESTING OF THE WASTE SLUDGE TRANSFER PUMP CANNOT BE PERFORMED AS WRITTEN.	IF THE OVERLOAD HEATERS ARE REMOVED FROM THE PUMP BREAKER, THE LOW FLOW TRIP WILL PROHIBIT PUMP OPERATION. ALL STEPS WILL BE PERFORMED AS WRITTEN EXCEPT OVERLOAD HEATERS WILL NOT BE REMOVED OR REPLACED AND LEAD 10045 WILL NOT BE LIFTED OR RE-LANDED. ALL STEPS THAT SPECIFY SIMULATION OF PUMP OPERATION WILL BE ACTUALLY PERFORMED	Dale C. McCully 10/27/86	
	4.6.3.2				
	4.6.3.3				
	4.6.3.20				
	4.6.3.21				
	4.6.3.22				
E21	4.6.3.15	DELETE STEPS 4.6.3.15 AND 4.6.3.16	AS WRITTEN, STEP 4.6.3.15 IS INCORRECT. THE INTENT OF THIS STEP IS PERFORMEND BY STEPS 4.6.3.7 THROUGH 4.6.3.11. STEP 4.6.3.16 IS TO RESTART THE PUMP WHICH WILL NOT BE REQUIRED DUE TO DELETING PREVIOUS STEP.	Dale C. McCully 10/27/86	
	4.6.3.16				

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EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	AUTHORIZATION SSS/DATE (IF REQUIRED)
E22	4.4.1.2.3	DATA SHEET 5.5 WILL NOT BE COMPLETED.	THE DATA REQUIRED BY THIS DATA SHEET IS MEANINGLESS. THE INTENT IS TO RECORD VERIFICATION OF PRESSURE CONTROLLER/HEATER STEP CONTROLLER OPERATION. THIS WAS ACCOMPLISHED BY VERIFYING THAT HEATERS STEP OFF WHEN PRESSURE SETPOINT IS LOWERED, STEP ON WHEN PRESSURE REACHES SETPOINT, AND STEP ON WHEN PRESSURE SETPOINT IS INCREASED,	Dale A. McElhy 10/28/86 DATA SHEET DELETED BY ERF N2-POT-41-1-5 JM 1/19/87	
E23	4.7.1.6 4.7.1.14 4.7.1.16	INSERT A SINGLE POINT CHANGE IN LWS CMPTR FOR LWS-TK10 LEVEL TO ALLOW TRANSFER PUMP OPERATION.	DURING TEST, TANK LEVEL WAS 0%. CHANGE IS REQUIRED TO PERMIT PUMP OPERATION DUE TO LOW LEVEL TRIP. FOR STEP 4.7.1.14, THE SINGLE POINT CHANGE WAS REMOVED TO TRIP THE PUMP. POINT REINSERTED FOR STEP 4.7.1.16 TO PERMIT PUMP OPERATION FOR NEXT STEP.	Dale A. McElhy 11/4/86	
E24	4.7.1.19 4.7.1.20	STEPS TO BE PERFORMED AFTER COMPLETION OF STEP 4.7.1.22	THERMAL OVERLOAD HEATERS AND LEAD 10039 DON'T NEED TO BE RESTORED UNTIL COMPLETION OF PUMP TRIPS	D.A. McElhy 11/4/86	

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E25	4.10.1.8 4.10.1.8.1	START THE SLUDGE TANK AGITATOR AND TRANSFER PUMP.	CANNOT BE PERFORMED DUE TO REPAIRS IN PROGRESS ON TRANSFER PUMP 2WSS-P11. THIS EQUIPMENT IS NOT REQUIRED TO PERFORM THIS SECTION.	Dale C. McNally 11/26/86	
E26	4.10.2.4.3 4.10.2.4.4 4.10.2.7.3 4.10.2.7.4.5 4.10.2.9.3 4.10.2.9.4.4	CONCENTRATED METERING PUMP 2WSS-P7A WILL NOT RUN.	THIS IS APPEARANTLY DUE TO AN ELECTRICAL MALFUNCTION OF THE START SWITCH. THIS WILL NOT AFFECT THIS SECTION OF THE PRE-OP. PUMP ALTERNATION WAS WRITTEN INTO THE PROCEDURE ONLY TO MINIMIZE SUCCESSIVE TRIPS ON ONE PUMP.	Dale C. McNally 11/26/86	TS#62
E27	4.10.2.6.4 4.10.2.6.5	SIMULATION OF EXCESSIVE EXTRUDER TORQUE REQUIRES LIFTING A LEAD VICE PLACING A JUMPER	THIS CONTACT IS A NORMALLY CLOSED CONTACT THAT OPENS ON HIGH-HIGH TORQUE. THIS IS A MINOR PROCEDURAL CORRECTION AND HAS NO AFFECT ON THE PREOP ACCEPTANCE.	Dale C. McNally 11/26/86	
E28	4.10.2.7.4 4.10.2.7.5	SIMULATION OF EXTRUDER OVERSPEED REQUIRES LIFTING A LEAD VICE PLACING A JUMPER.	THIS CONTACT IS A NORMALLY CLOSED CONTACT THAT OPENS ON OVERSPEED. THIS IS A MINOR PROCEDURAL CORRECTION AND HAS NO AFFECT ON THE PREOP ACCEPTANCE.	Dale C. McNally 11/26/86	

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E29	4.10.2.9.4	MODICON LOGIC POINTS FOR LUBE OIL PUMPS ARE	THIS IS A MINOR PROCEDURAL CORRECTION AND HAS NO AFFECT	Dale G. McElf 11/26/86	
	4.10.2.9.4.5	INCORRECT - SHOULD BE 10227 (P13A) OR 10233 (P13B)	ON THE PREOP ACCEPTANCE.		
E30	4.10.3 4.10.3.1	SECTION 4.10.3 WILL BE PERFORMED USING THE	CONCENTRATES OPERATIONS ARE REQUIRED DUE TO MAINTENANCE	Dale G. McElf 11/28/86	
	4.10.3.2 4.10.3.3	WASTE CONCENTRATES METERING PUMP P7B VICE WASTE	OF THE WASTE SLUDGE TRANSFER PUMP (P11). THE INTENT OF THIS		
	4.10.3.4 4.10.3.5.3	SLUDGE METERING PUMP P12A AND P12B. METERING	SECTION IS TO VERIFY THE EXTRUDER/EVAPORATOR WILL TRIP		
	4.10.3.5.3.1 4.10.3.5.3.2	PUMP FLOW RATES WILL BE LIMITED TO 0.5GPM	WHEN PROCESS TEMPERATURE IS NOT WITHIN THE SPECIFIED RANGE		
	4.10.3.6.1.5 4.10.3.6.7	AFFECTED PROCEDURE STEPS (CONT.)	TO PREVENT DISCHARGE OF WATER. THIS PROTECTIVE FUNCTION IS		
	4.10.3.6.8.6 4.10.3.7.3	4.10.3.12.1.5, 4.10.3.12.7, 4.10.3.12.8.6, 4.10.3.13.3,	INDEPENDENT OF THE WASTE STREAM BEING PROCESSED.		
	4.10.3.8.1.5 4.10.3.8.7	4.10.3.14.1.5, 4.10.3.14.7, 4.10.3.14.8.6, 4.10.3.15.3,			
	4.10.3.8.8.6 4.10.3.9.3	4.10.3.16.1.5, 4.10.3.16.7, 4.10.3.16.8.1.5			
	4.10.3.10.1.5 4.10.3.10.7				
	4.10.3.10.8.6 4.10.3.11.3				

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	AUTHORIZATION SSS/DATE (IF REQUIRED)
E31	4.10.3.6 4.10.3.6.2	EXTRUDER BARREL TEMPERATURE CONTROL VALVE FAILURE	PROCEDURE WAS WRITTEN PRIOR TO UNDERSTANDING THE CAPABILITIES OF	Dale C. Mc 11/28/86	
	4.10.3.6.3 4.10.3.6.8	SIMULATION WILL BE ACCOMPLISHED BY MANUALLY	THE TEMPERATURE CONTROLLERS. THIS WILL ALSO ~~[illegible]~~ HELP THE		
	4.10.3.6.9 4.10.3.8	CONTROLLING THE VALVES VIA THE RESPECTIVE TEMPERATURE	OPERATORS UNDERSTAND THE OPERATION OF THE EXTRUDER TEMPERATURE		
	4.10.3.8.2 4.10.3.8.3	CONTROLLER VICE LIFTING OF LEADS AND USE OF TEST EQUIPMENT.	CONTROL SYSTEM. THIS CHANGE DOES NOT AFFECT THE INTENT OF THESE		
	4.10.3.8.8 4.10.3.8.9	AFFECTED PROCEDURE STEPS (CONT.)	STEPS.		
	4.10.3.10 4.10.3.10.2	4.10.3.16.2, 4.10.3.16.3 4.10.3.16.8, 4.10.3.16.9			
	4.10.3.10.3 4.10.3.10.8				
	4.10.3.10.9 4.10.3.12				
	4.10.3.12.2 4.10.3.12.3				
	4.10.3.12.8 4.10.3.12.9				
	4.10.3.14 4.10.3.14.2				
	4.10.3.14.3 4.10.3.14.8				
	4.10.3.14.9 4.10.3.16				

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E32	4.10.3.8.8 (all) 4.10.3.8.9 4.10.3.8.10 4.10.3.9 (all)	UNABLE TO ATTAIN HIGH TEMPERATURE TRIP OF EXTRUDER BARREL #2.	TEMPERATURE CONTROL VALVE FOR BARREL 2 IS FULL OPEN (MAXIMUM STEAM FLOW) WHEN PROCESSING WASTE. TEMPERATURE IS MAINTAINED STABLE ABOUT 15°F BELOW SETPOINT. HIGH TEMPERATURE FOR THIS BARREL WILL OCCUR ONLY WITH DECREASED OR NO FEED (WASTE) FLOW.	Dale A. [illegible]	11/29/86
E33	4.10.3.14 THROUGH 4.10.3.14.7	UNABLE TO DECREASE EXTRUDER BARREL #6 TEMPERATURE TO LOW TEMP. TRIP SETPOINT.	WASTE/ASPHALT MIXTURE IS PREHEATED IN BARREL 4 TO 350°F. THE TEMPERATURE OF THE MIXTURE INTO BARREL 6 WILL ALWAYS BE ABOVE THE LOW TEMP. TRIP POINT UNLESS THERE IS A MALFUNCTION IN BARREL 4. DURING PROCESSING, BARREL 6 TEMP. CONTROL VALVE REMAINS CLOSED AT ALL TIMES.	Dale A. [illegible]	11/30/86

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E34	4.10.2.5 4.10.2.5.7	SIMULATION OF EXTRUDER DC DRIVE MALFUNCTION REQUIRES A JUMPER VICE LIFTING OF LEAD 206.	THIS CONTACT IS A NORMALLY OPEN CONTACT THAT CLOSES ON DRIVE MALFUNCTION. THIS IS A MINOR PROCEDURAL CORRECTION.	Dale C. McCully 12/1/86	
E35	4.11.1.1.1 THROUGH 4.11.1.1.12	STEPS WILL NOT BE PERFORMED.	THE WASTE SLUDGE TANK ALREADY CONTAINS A MIXTURE OF FILTER CAKE AND POWDERED RESINS. NO WASTE PREPARATION IS REQUIRED TO START PROCESSING PER THIS SECTION.	Dale C. McCully 12/2/86	TS#73
E36	4.11.1.3.4	SYSTEM FLOW RATES ARE DETERMINED BY CHEMISTRY DEPT. DURING SAMPLE PER N2-CSP-14.	THE MAXIMUM WASTE FLOW RATE AND MINIMUM ASPHALT FLOW RATE ARE DETERMINED BY CHEMISTRY. THESE FLOW RATES WILL YIELD A 50/50 RATIO OF WASTE TO ASPHALT.	Dale C. McCully 12/2/86	TS#73

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E37	4.11.1.3.~~13~~ 12 HL 12/2/86	ASPHALT FLOW RATE WILL BE ADJUSTED TO THE FLOWRATE DETERMINED BY SAMPLE N2-CSP-14.	10% OF CALCULATED FLOW IS TOO LOW TO EFFECTIVELY CONTROL (~0.25GPM) AND IS TOO LOW TO PROVIDE SUFFICIENT LUBRICATION OF THE EXTRUDER/EVAPORATOR.	Dale C. McNell 12/2/86	TS#73
E38	4.11.1.3.15	STEP CANNOT BE PERFORMED IN THIS ORDER.	THE WASTE METERING PUMP FLOWRATE CANNOT BE ADJUSTED UNTIL THE METERING PUMP HAS BEEN STARTED. WASTE FLOWRATE WILL BE ADJUSTED DURING STEP 4.11.1.3.19.	Dale C. McNell 12/2/86	TS#73
E39	4.11.1.3.17 ~~4.11.1.3.18~~ HL 12/2/86	HL 12/2/86 STEP~~S~~ WILL NOT BE PERFORMED.	DUE TO THE INABILITY OF THE SLUDGE/CONCENTRATES FLOW METERS TO MEASURE FLOW TO THIS DATE, (REFER TO WR# 115029), THE ASPHALT FLOW CONTROLLER CANNOT BE PLACED IN RATIO CONTROL. PROPER FLOWRATES WILL BE MONITORED DURING PROCESSING (REFER TO TEST SUMMARY NOTE TS#69).	Dale C. McNell 12/2/86	TS#73
E40	4.11.1.3.20	STEP WILL NOT BE PERFORMED.	ASPHALT FLOW WAS SET TO REQUIRED RATE IN STEP 4.11.1.3.12. WASTE FLOW WAS SET TO DESIRED RATE IN STEP 4.11.1.3.19. NO FURTHER FLOW CHANGES WILL OCCUR FOR THIS LINER	Dale C. McNell 12/2/86	TS#73

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EXCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E41	4.11.1.3.14 4.11.1.3.16 4.11.1.3.19	WASTE SLUDGE METERING PUMP 2WSS-P12A IS NOT OPERABLE, P12B MUST BE RUN.	METERING PUMP P12A HAS A FAILED MECHANICAL SEAL AND REQUIRES REPAIR. METERING PUMP TO BE RUN DOES NOT AFFECT PERFORMANCE OF TEST.	Dale C McNulty 12/2/86	TS#73
E42	4.10.4 4.10.4.1 4.10.4.2 4.10.4.3 4.10.6 4.10.7 4.10.8	STEPS WILL NOT BE PERFORMED.	STEPS LISTED ARE LINE-UP AND SHUTDOWN STEPS FOR STEP 4.10.5 (ALL). STEP 4.10.5 WILL BE PERFORMED IN CONJUNCTION WITH THE PROCESSING OF WASTE DURING SECTION 4.11.3. THE INTENT OF THIS PORTION OF THE TEST IS TO GET AN IDEA OF THE TIME REQUIRED TO FILL A 50 FT^3 LINER AND TO VERIFY SYSTEM SHUTDOWN ON LINER HIGH/HIGH LEVEL. THIS INTENT WILL BE MET.	Dale C McNulty 12/8/86	

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	SSS/DATE (IF REQUIRED)
E43	4.4.4.1.1.2 4.4.4.1.2.2	FLUSH WATER SOLENOID VALVES (SOV304, 305) DO NOT TRIP CLOSED ON LOW FLOW.	SYSTEM LOGIC IS SET UP FOR FLOW SWITCHES TO PROVIDE MALFUNCTION ANNUNCIATION ONLY. NO TRIP IS PROVIDED	Dale C. McCulley	12/22/86
E44	4.4.4.1.1.7 4.4.4.1.1.8 4.4.4.1.2.7 4.4.4.1.2.8	STEPS WILL NOT BE PERFORMED.	STEPS WERE WRITTEN TO TEST LOW TEMPERATURE SWITCHES (TSL304, 305). THESE SWITCHES WERE DELETED AS A RESULT OF PROBLEM REPORT #6215, E&DCR C54057.	Dale C. McCulley	12/22/86
E45	4.1.4.7	CHANGES TO REQUIRED POSITIONS AS LISTED ON INITIAL VALVE LINEUP, ATTACHMENT 9.2.	CHANGES AS DESCRIBED IN TEST SUMMARY NOTE TS#2, WERE REQUIRED DUE TO SYSTEM OPERATIONAL STATUS, THESE CHANGES HAVE BEEN EVALUATED AND HAVE NO AFFECT ON THE ACCEPTANCE OR PERFORMANCE OF THIS PROCEDURE.	Dale C. McCulley	1/15/87

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XCEPT. NO.	PROC. STEP	DESCRIPTION	REASON AND DISPOSITION	AUTHORIZATION LEVEL III/DATE	 SSS/DATE (IF REQUIRED)
E46	SECTION 4.11.1, 4.11.2	PROCESSING PER SECTION 4.11.1 (MIXED RESIN AND FILTER SLUDGE) AND SECTION 4.11.2 (BEAD RESIN) WAS PERFORMED USING AN ALTERNATE METHOD OF MONITORING THE WASTE FEED RATE. REFER TO TEST SUMMARY NOTE TS*69	AT THE TIME OF PERFORMING THESE SECTIONS, THE WASTE SLUDGE METERING DISCHARGE FLOW ELEMENT (2WSS-FE200) WAS INOPERATIVE. TROUBLESHOOTING AND CALIBRATION OF THE FLOW ELEMENT HAS SINCE BEEN COMPLETED. SOLIDIFICATION OF A MIXED RESIN WASTE STREAM WILL BE PERFORMED TO VERIFY PROPER OPERATION, AND REVERIFY DATA SHEET 5.13.	Dale C. McCullough	1/19/87 TS*/26

7.0 ACCEPTANCE CRITERIA

7.1 The ability of the waste solidification system to receive inputs from the LWS system for processing has been demonstrated by the following steps:

TS# 118

4.6.1.6, 4.6.1.7, 4.6.1.8, 4.6.1.11, 4.6.1.12, 4.6.1.13, 4.6.1.14, 4.6.1.15, 4.6.1.16, 4.6.1.17. (FSAR Table 14.2-58)

7.2 The Extruder/Evaporator process control has been demonstrated by the following steps:

4.10.2.8.4, 4.10.3.6, (all), 4.10.3.8 (all), 4.10.3.10 (all), 4.10.3.12 (all), 4.10.3.14 (all), 4.10.3.16 (all) (FSAR Table 14.2-58)

7.3 The ability to process the various waste forms via the Extruder/Evaporator has been demonstrated by section 4.11. (FSAR Table 14.2-58)

7.4 The solidified products meet the requirements of steps 4.11.4.3.1, 4.11.4.3.2, and 4.11.4.3.3. (FSAR Table 14.2-58)

INITIALS/DATE

8.0 SYSTEM RESTORATION

8.1 Verify that all preoperational test temporary modifications have been removed. Where preoperational test temporary modifications cannot be restored to pretest conditions, insure that they are controlled in accordance with SAP-118.

12/22/86

8.2 Place the Waste Solidification System in service in accordance witn plant requirements per SSS determination.

12/22/86

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dure Step 4.1.4.3

INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2SWR-RAK408:	Seal Water Control Station for 2WSS-P6			
2SWR-FS118	Low flow alarm	5/30/86	18 MOS.	
2SWR-PI134	Seal water pressure at pump	11/5/85	18 MOS.	JM 9/26/86
2SWR-RAK48A:	Seal water control station for 2WSS-P7A			
2SWR-FS10A	Low flow alarm	8/9/86	18 MOS.	
2SWR-PI23A	Seal water pressure at pump	11/4/85	18 MOS.	JM 9/26/86
2SWR-RAK48B:	Seal water control station for 2WSS-P7B			
2SWR-FS10B	Low flow alarm	2/24/86	18 MOS.	
R-PI23B	Seal water pressure at pump	11/4/85	18 MOS.	JM 9/26/86
R-RAK209:	Seal water control station for 2WSS-P11			
WR-FS119	Low flow alarm	2/24/86	18 MOS.	
2SWR-PI135	Seal water pressure at pump	11/4/85	18 MOS.	JM 9/26/86
2SWR-RAK49A:	Seal water control station for 2WSS-P12A			
2SWR-FS11A	Low flow alarm	2/28/86	18 MOS.	
2SWR-PI24A	Seal water pressure at pump	11/4/85	18 MOS.	JM 9/26/86
2SWR-RAK49B:	Seal water control station for 2WSS-P12B			
2SWR-FS11B	Low flow alarm	2/26/86	18 MOS.	
2SWR-PI24B	Seal water pressure at pump	11/4/85	18 MOS.	JM 9/26/86

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-PS26A	Waste Conc. Metering P7A Discharge Thermal Relief	5/15/86	18 mos.	JM, 9/26/86
2WSS-PS26B	Waste Conc. Metering P7B Discharge Thermal Relief	5/15/86	18 mos.	JM, 9/26/86
2WSS-PS28A	Asphalt line Thermal Relief Discharge	5/26/86	18 mos.	JM, 9/26/86
2WSS-PS28B	Asphalt line Thermal Relief Discharge	6/14/86	18 mos.	JM, 9/26/86
2WSS-PS30A	Asphalt line Thermal Relief Discharge	6/19/86	18 mos.	JM, 9/26/86
S-PS30B	Asphalt line Thermal Relief Discharge	5/25/86	18 mos.	JM, 9/26/86
2WSS-PS32A	Asphalt line Thermal Relief Discharge	5/26/86	18 mos.	JM, 9/26/86
2WSS-PS32B	Asphalt line Thermal Relief Discharge	5/25/86	18 mos.	JM, 9/26/86
2WSS-PS51A	Asphalt Metering Pump P5A Discharge	5/24/86	18 mos.	JM, 9/26/86
2WSS-PS51B	Asphalt Metering Pump P5B Discharge	5/24/86	18 mos.	JM, 9/26/86
2WSS-PS307	WSS Aux. Boiler Steam Press. Low	8/28/86	18 mos.	JM, 9/26/86
2WSS-PS311	Cond. to Hot Flush Water Ejector J73 Press. Low	5/16/86	18 mos.	JM, 9/26/86
2WSS-PS318	Aux. Boiler Makeup Water Press. Low	3/20/86	18 mos.	JM, 9/26/86
2WSS-PS362	Waste Conc. Sampling Line Thermal Relief	5/20/86	18 mos.	JM, 9/26/86

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-PS363	Waste Conc. Sampling Line Thermal Relief	5/20/86	18 mos.	JM 9/26/86
2WSS-PS366	Waste Conc. to Transfer Pump P6 Thermal Relief	4/21/86	18 mos.	JM 9/26/86
2WSS-PS367	Cond. to Hot Flush Water Ejector J74 Press. Low	5/16/86	18 mos.	JM 9/26/86
2WSS-PS368	Waste Conc. Transfer Pump P6 Discharge Thermal Relief	7/3/86	18 mos.	JM 9/26/86
2WSS-PS370	Waste Conc. Feed to Extruder Thermal Relief	5/15/86	18 mos.	JM 9/26/86
S-PS388	Cond. to Cold Flush Water Header Press. Low	5/19/86	18 mos.	JM 9/26/86
2WSS-FE111/ FS111	Waste Conc. Transfer Pump P6 Suction Flow Low	4/30/86	18 mos.	JM 9/26/86
2WSS-PT303/ PI303	WSS Aux. Boiler Steam Header Press.	4/10/86	18 mos.	JM 9/26/86
2WSS-PT323	Waste Conc. Transfer Pump P6 Disch. Press.	7/3/86	18 mos.	JM 9/26/86
2WSS-TIS322	Waste Conc. to LWS FL. Dr. Coll. Surge TK17 Temp. High	4/17/86	18 mos	JM 9/26/86
2WSS-FS304	Hot Flush Water to Waste Conc. Metering Pumps P7A/B Flow Low	5/14/86	18 mos.	JM 9/26/86
2WSS-TIS304	Hot Flush Water to Waste Conc. Metering Pumps P7A/B Temp. High	5/21/86	18 mos.	JM 9/26/86
2WSS-FS305	Hot Flush Water to Waste Conc. Transfer Pump P6 Flow Low	9/12/86	18 mos.	JM 9/26/86
2WSS-TIS305	Hot Flush Water to Waste Conc. Transfer Pump P6 Temp. High	7/3/86	18 mos.	JM 9/26/86

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date	
2WSS-PSX108	Waste Sludge Transfer Pump P11 Discharge Press Low	9/16/86	18 mos.	JM, 9/26/86	
2WSS-PSY108	Waste Sludge Transfer Pump P11 Discharge Press High	9/16/86	18 mos.	JM, 9/26/86	
2WSS-PS365	Cond. to Steam Dome Boilout TK 46 & Distillate TK17 Press. Low	5/16/86	18 mos.	JM, 9/26/86	
2WSS-SSLY135	Extruder/Evap. RPM			/	E1
2WSS-PS3A	Asphalt Recirc. Pump P3A Disch. Press High	6/13/86	18 mos.	JM, 9/26/86	
~~-PS19A~~	~~Asphalt Recirc. Pump P3A Suction Press Low~~ DELETED	FRF N2-POT-41-1-1		JM 9/11/86	
2WSS-PS3B	Asphalt Recirc. Pump P3B Disch. Press. High	6/13/86	18 mos.	JM, 9/26/86	
~~2WSS-PS19B~~	~~Asphalt Recirc. Pump P3B Suction Press. Low~~ DELETED	FRF N2-POT-41-1-1		JM 9/11/86 /	
2WSS-TE22A/ TS22A	Lube Oil Heater H34A Temp. High	7/28/86	18 mos.	JM, 9/26/86	
2WSS-TE22B/ TS22B	Lube Oil Heater H34B Temp. High	7/28/86	18 mos.	JM, 9/26/86	
2WSS-LT23A/ LI23A	Radwaste Liner Liquid Level			/	E2
2WSS-LT23B/ LI23B	Radwaste Liner Liquid Level			/	E2
2WSS-FE100/ FIT100/FY100	Waste Sludge Tank TK8 Feed	8/12/86	18 mos.	JM, 9/26/86	
2WSS-LE101/ LS101/LI101	Waste Sludge Tank TK8 Level Low	8/28/86	18 mos.	JM, 9/26/86	
S-LS102	Waste Sludge Tank TK8 Level High	7/9/86	18 mos.	JM, 9/26/86	

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-FE103/ FIT103	Waste Sludge Transfer Pump P11 Suction Flow	9/11/86	18 mos.	JM, 9/26/36
2WSS-FE104/ FT104/FQIS104	Cold Flush Water Flow	8/7/86	18 mos.	JM 9/26/86
2WSS-AE105/ AIT105/AR105/ AS105	Waste Sludge pH	5/8/86	18 mos.	JM, 9/26/86
2WSS-FS106	Decant Pump P10 Suction Flow Low	5/15/86	18 mos.	JM, 9/26/86
-FS107	Waste Sludge Transfer Pump P11 Suction Flow Low	4/30/86	18 mos.	JM, 9/26/86
-LSX/Y213	Steam Dome Boilout Tank Level High/Low	8/25/86	18 mos.	JM, 9/26/86
2WSS-AE110/ AIT110/AS110	Waste Conc. pH	5/7/86	18 mos.	JM, 9/26/86
2WSS-IT/IS135	Extruder/Evap. Motor Torque High			/ E1
2WSS-PS112/ PI112	Asphalt TK2 Heating Steam Press. Low	6/23/86	18 mos.	JM, 9/26/86
2WSS-TE114/ TI114	Asphalt TK2 Temp.	8/26/86	18 mos.	JM, 9/26/86
2WSS-LE115/ LT/115/LS115	Asphalt Tank, TK2 Level High	6/3/86	18 mos	JM, 10/6/86
2WSS-PDIS116	Asphalt Recirc. Strainers Differential Press. High	6/13/86	18 mos.	JM, 9/26/86
2WSS-SC135/ SCLX135/ SCLY135	Extruder/Evap. Motor Speed Control			/ E1
-TEX136/ 36/TIC136/ 5	Extruder Barrel Section #1 Temp.	6/8/86	18 mos.	JM, 9/26/86

INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-TEX137/ TT137/TIC137 TS137	Extruder Barrel Section #2 Temp.	6/8/86	18 mos.	JM, 9/26/86
2WSS-TEX138/ TT138/TIC138 TS138	Extruder Barrel Section #3 Temp.	6/8/86	18 mos.	JM, 9/26/86
2WSS-TEX139/ TT139/TIC139/ TS139	Extruder Barrel Section #4 Temp.	6/9/86	18 mos.	JM, 9/26/86
2WSS-TE140/ TT140/TI140/ TS140	Extruder Barrel Section #5 Temp.	6/14/86	18 mos.	JM, 9/26/86
-TEX141/ 41/TIC141/ 1	Extruder Barrel Section #6 Temp.	9/5/86	18 mos.	JM, 9/26/86
2WSS-TEX142/ TT142/TIC142/ TS142	Extruder Barrel Section #7 Temp.			/
2WSS-PS143/ PI143	Steam to Steam Domes Press. High	6/15/86	18 mos.	JM, 9/26/86
2WSS-LS144	Steam Dome #3 Level High	8/11/86	18 mos.	JM, 9/26/86
2WSS-LS145	Steam Dome #4 Level High	8/14/86	18 mos.	JM, 9/26/86
2WSS-LS146	Steam Dome #6 Level High	8/11/86	18 mos.	JM, 9/26/86
2WSS-TE162/ TS162	Lube Oil Return Line Temp. Low	8/26/86	18 mos.	JM, 9/26/86
2WSS-LS163	Lube Oil Tank Level Low	8/9/86	18 mos.	JM, 9/26/86
2WSS-FE167/ FS167	Lube Oil Flow Low	6/16/86	18 mos.	JM, 9/26/86
S-PS168/ 8	Lube Oil Filter Discharge Press. Low	8/25/86	18 mos.	JM, 9/26/86

E3

INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date	
2WSS-PDIS170	Lube Oil Filter Differential Press. High	7/20/86	18 MOS.	JM 9/26/86	
2WSS-LE/LT179	Distillate Coll. Tank 17 Level	8/21/86	18 MOS.	JM 9/26/86	
2WSS-FIC180	Distillate Skid Flow Control	8/13/86	18 MOS.	JM 9/26/86	
2WSS-TS181	Distillate Cooler Disch. Temp High	5/20/86	18 MOS.	JM 9/26/86	
2WSS-PDIS187	Distillate Roughing Filter Differential Press. High	7/29/86	18 MOS.	JM 9/26/86	
2WSS-PS188/ 88	Distillate Pumps, P18A/B, Disch. Press. Low	6/6/86	18 MOS.	JM 9/26/86	
-PS223	WSS Aux. Boiler B24 Steam Press. High	4/9/86	18 MOS.	JM 9/26/86	
2WSS-FE/FT200	Waste Sludge Flow to Extruder	8/20/86	18 MOS.	JM 9/26/86	
2WSS-FE/FT201	Waste Conc. Flow to Extruder	7/31/86	18 MOS.	JM 9/26/86	JM 10/6/8
2WSS-FE/FT202	Asphalt Flow to Extruder			/	~~E5~~ E4
2WSS-LS222	WSS Aux. Boiler Level Low	4/14/86	18 MOS.	JM 9/26/86	
2WSS-TE174/ TIC174	Lube Oil Cooler E16 Disch. Temp. High	8/9/86	18 MOS.	JM 9/26/86	
2WSS-TE165	Lube Oil Tank 14 Temp.			/	E5
2WSS-PS226	WSS Aux. Boiler Steam Press. Low	4/9/86	18 MOS.	JM 9/26/86	
2WSS-TS228	Boiler Blowdown Separator Discharge Temp. High	4/15/86	18 MOS.	JM 9/26/86	
2WSS-RE207	Waste Sludge Feed to Extruder Radiation			/	E8
SS-RE208	Waste Conc. Feed to Extruder Radiation			/	E8
-LS231	Condensate Return TK 22 Level Low	4/12/86	18 MOS.	JM 9/26/86	

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-LC235	WSS Aux. Boiler Level Control	4/14/86	18 mos.	JM / 9/26/86
2WSS-PC225	WSS Aux. Boiler B24 Press. Control	7/22/86	18 mos.	JM / 9/26/86
2WSS-LS389	Chem. Feed Tank TK44 Level Low	4/9/86	18 mos.	JM / 9/26/86
2WSS-TS393	WSS Aux. Boiler Cabinet Heater	5/31/86	18 mos.	JM / 9/26/86
2WSS-TEY136	Extruder Barrel Section #1 Temp.	6/14/86	18 mos.	JM / 9/26/86
2WSS-TEY137	Extruder Barrel Section #2 Temp.	6/14/86	18 mos.	JM / 9/26/86
2WSS-TEY138	Extruder Barrel Section #3 Temp.	6/14/86	18 mos.	JM / 9/26/86
-TEY139	Extruder Barrel Section #4 Temp.	6/14/86	18 mos.	JM / 9/26/86
-TEY141	Extruder Barrel Section #6 Temp.	6/14/86	18 mos.	JM / 9/26/86
2WSS-TEY142	Extruder Barrel Section #7 Temp.	6/14/86	18 mos.	JM / 9/26/86
2WSS-PI113	Asphalt Tank TK2 Fill Line Press.	6/9/86	18 mos.	JM / 9/26/86
2WSS-PI157	Steam Supply Line to Manifold Skid SKD38 Press.	6/15/86	18 mos.	JM / 9/26/86
2WSS-PI171	Lube Oil Pump P13A/B Disch. Press.	7/14/86	18 mos.	JM / 9/26/86
2WSS-PI182	Distillate Quench Line Press.	4/14/86	18 mos.	JM / 9/26/86
2WSS-PI188	Distillate Pump P18A/B Disch. Press.	4/14/86	18 mos.	JM / 9/26/86
2WSS-PI19A	Asphalt Recirc. Pump P3A Suction Press.	6/4/86	18 mos.	JM / 9/26/86
2WSS-PI19B	Asphalt Recirc. Pump P3B Suction Press.	6/5/86	18 mos.	JM / 9/26/86
2WSS-PI224	WSS Aux Boiler Steam Press.	3/27/86	18 mos.	JM / 9/26/86
2WSS-PI229	Boiler Feed Pump Disch. Press.	3/26/86	18 mos.	JM / 9/26/86

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date
2WSS-PI3A	Asphalt Recirc. Pump P3A Disch. Press.	6/11/86	18 mos.	JM, 9/26/86
2WSS-PI3B	Asphalt Recirc. Pump P3B Disch. Press.	6/10/86	18 mos.	JM, 9/26/86
2WSS-PI330	Steam Supply Header to Asphalt System Press.	9/26/86	18 mos.	JM, 9/26/86
2WSS-TI183	Distillate to Distillate Cooler E20 Temp.	5/21/86	18 mos.	JM, 9/26/86
2WSS-TI211	Lube Oil Tank TK14 Temp.	5/21/86	18 mos.	JM, 9/26/86
-TI227	Blowdown Separator D45 Disch. Temp.	5/22/86	18 mos.	JM, 9/26/86
-TI232	Cond. Return Tank Temp.	5/22/86	18 mos.	JM, 9/26/86
2WSS-TI173	Cooling Water from Lube Oil Cooler E16 Temp.	5/21/86	18 mos.	JM, 9/26/86
2WSS-TI184	Distillate from Distillate Cooler E20 Temp.	5/21/86	18 mos.	JM, 9/26/86
2WSS-TI185	Cooling Water to Distillate Cooler E20 Temp.	5/21/86	18 mos.	JM, 9/26/86
2WSS-TI186	Cooling Water from Distillate Cooler E20 Temp.	5/21/86	18 mos.	JM, 9/26/86
2WSS-TI359	Asphalt Return Header Temp.			/ E9
2WSS-SSHP5A/B	Asphalt Pump P5A/B Motor RPM High	5/30/86	18 mos.	JM, 9/30/86
2WSS-SSHP7A/B	Waste Conc. Pump P7A/B Motor RPM High	4/25/86	18 mos.	JM 9/30/86
2WSS-SSHP12A/B	Waste Sludge Pump P12A/B Motor RPM High	4/24/86	18 mos.	JM 9/30/86

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INSTALLED INSTRUMENT CALIBRATION LIST

Device Number	Description	Latest Cal. Date	Calibration Interval	Verified by Initials/Date	
2WSS-PCV246	Steam to Extruder Press. Regulator	10/2/86	18 mos.	/ 10/6/86	
2WSS-PCV247	Steam to Asphalt System Press. Regulator			/	E10
2WSS-LCV237	Cond. Return Tank Level Control Valve			/	TS#4
2WSS-PCV238	Makeup Water to Cond. Return TK. Press Control Valve			/	E10
2WSS-FG164	Lube Oil Recycle Flow to Tank			/	TS#4
2WSS-FI21A/B	Lube Oil Flow to Extruder Support Bearings			/	TS#4
S-FI175	Lube Oil Flow to Extruder Gear Box			/	TS#4
2WSS-LG221	WSS Aux. Boiler Level			/	TS#4
2WSS-LG230	Cond. Return Tank TK 22 Level			/	TS#4
2WSS-TE395/ TCV395	Hot Flush Water to Waste Conc. Metering Pump Temp. Control			/	E11
2WSS-PCV394	Steam to Hot Flush Water Ejector J74 Press. Control			/	E10
2WSS-TE397/ TCV397	Hot Flush Water to Waste Conc. Recirc. Piping Temp. Control			/	E11
2WSS-PCV396	Steam to Hot Flush Water Ejector J73 Press. Control			/	E10

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
	Waste Sludge Tank (FSK 31-3A)				
2LWS-V557	Caustic Addition Discharge B.V. To Sludge Tank 8	O	O	9/26/86	
2LWS-V784	Caustic Addition Discharge Drain Valve	C	C	9/26/86	
2LWS-V281	Acid Addition Discharge B.V. To Sludge Tank 8	O	O	9/26/86	
2LWS-V786	Acid Addition Discharge Drain Valve	C	C	9/26/86	
2LWS-V756	Acid addition Discharge Check Valve to Sludge Tank 8	C	C	9/26/86	
2WSS-V335	Caustic Addition Discharge Check Valve to Sludge Tank 8	C	C	9/26/86	
2WSS-V29	Sludge Transfer Pump 11 Recirculation B.V. To Sludge Tank 8	O	O	9/26/86	
2WSS-HV129	Sludge Transfer Pump 11 Recirc. 3-Way B.V. To Sludge Tank 8	O TO TK8	O TO TK 8	9/26/86	
2WSS-HV126	Decant Pump 10 Discharge B.V. To Spent Resin Tank	C	C	9/26/86	
2WSS-V313	Decant Pump 10 Discharge Drain Valve	C	C	9/26/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-HV121	Decant Pump 10 Suction B.V.	C	C	JM 9/26/86	
2WSS-V318	Decant Pump 10 Suction Drain Valve	C	C	JM 9/26/86	
2WSS-HV117	Spent Resin Transfer Pump 7 Discharge B.V. to Sludge Tank 8	C	C	JM 9/26/86	
2WSS-HV118	Filter Backwash Transfer Pump 16A & 16B Discharge to Sludge Tank 8	C	C	JM 9/26/86	
2WSS-V301	Instrument Isolation Valve to 2WSS-LT101	O	O	JM 9/26/86	
2WSS-V302	Instrument Drain Valve to 2WSS-LT101	C	C	JM 9/26/86	
2WSS-V311	Sludge Tank 8 Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-HV128	Sludge Tank 8 Discharge	Position II (Through)	POSITION II	JM 9/26/86	
2WSS-V303	Air Connection B.V. For Unplugging Process Line	C	C	JM 9/26/86	
2WSS-V721	Sludge Transfer Pump 11 Suction B.V	O	O	JM 9/26/86	
2WSS-V524	Sludge Transfer Pump 11 Suction Drain Valve	C	C	JM 9/26/86	
2WSS-V312	Sludge Transfer Pump 11 Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-V308	Sludge Transfer Pump 11 Discharge B.V	O	O	JM 9/26/86	

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Procedure Step 4.1.4.1.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V309	Air Connection B.V. For Unplugging Process Line	C	C	JM 9/26/86	
2WSS-AOV401	Waste Sludge Recirc. Loop Block Valve	O	O	JM 9/26/86	
2WSS-AOV402	Waste Sludge Recirc.	C	C	JM 9/26/86	
2WSS-V326	Sludge Metering Pump 12A Discharge drain B.V.	C	C	JM 9/26/86	
2WSS-HV9A	Sludge Metering Pump 12A Suction B.V.	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WSS-V324	Sludge Metering Pump 12A Suction Drain Valve	C	C	JM 9/26/86	
2WSS-HV8A	Sludge Metering Pump 12A Discharge B.V	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WWS-HV8A	Sludge Metering Pump 12A Discharge B.V	O			TS#2
2WSS-V336	Sludge Metering Pump 12A & 12B Discharge Header Vent B.V.	C	C	JM 9/26/86	
2WSS-HV8B	Sludge Metering Pump 12B Discharge B.V.	C	C	JM 9/26/86	
2WSS-HV217	Waste Sludge Feed Emergency Flush Valve	C	C	JM 9/26/86	
2WSS-HV203	Waste Sludge Feed System Discharge B.V.	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WSS-V740	Backup Facility Isol. Valve	C	C	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
WSS-V329	Cond. Makeup Check Valve to Metering Pump 12B Discharge	C	C	JM 9/26/86	
2WSS-V327	Sludge Metering Pump 12B Discharge	C	C	JM 9/26/86	
2WSS-HV9B	Sludge Metering Pump 12B Suction B.V.	C	C	JM 9/26/86	
2WSS-V325	Sludge Metering Pump 12B Suction drain B.V.	C	C	JM 9/26/86	
	Evap. Bottoms Tank (FSK31-3C)				
2WSS-HV131	Evap. Bottoms Tank Disch. Valve	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WSS-RV320	Conc. Trans. Pump Suction Relief Valve	NA	NOT GAGGED	JM 9/26/86	NOT GAGGED
2WSS-HV130	Conc. Trans. Pump Disch. Valve	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WSS-V342	Conc. Trans. Pump Drain Valve	C	C	JM 9/26/86	
2WSS-RV321	Conc. Trans. Pump Disch. Relief Valve	NA	NOT GAGGED	JM 9/26/86	NOT GAGGED
2WSS-V339	Conc. Trans. Pump Disch. Vent Valve	C	C	JM 9/26/86	
2WSS-V340	Conc. Trans. Pump Recirc. Vent Valve	C	C	JM 9/26/86	
2WSS-V341	Conc. Trans. Pump 3-Way Recirc. (to Evap. Btm. Tk.)	O	O TO BOTTOMS TANK (TK10)	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2LWS-V558	Caustic Addition Block. Valve	O	O	JM 9/26/86	
2LWS-V306	Acid Addition Block Valve	O	O	JM 9/26/86	
2WSS-V343	Caustic Addition Line Vent	C	C	JM 9/26/86	
2WSS-V344	Acid Add. Line Vent Valve	C	C	JM 9/26/86	
2WSS-V714	Waste Conc. Transfer Pump Pumpout Connection	C	C	JM 9/26/86	
2WSS-AOV403	Recirc. Loop Block Valve	O	O	JM 9/26/86	
2WSS-AOV404	Concentrates to Truck Bay Isol. Valve	C	C	JM 9/26/86	
2WSS-AOV405	Backup Facility Concentrates Line Flush Valve	C	C	JM 9/26/86	
2WSS-V741	Backup Facility Isol. Valve	C	C	JM 9/26/86	
	Waste Concenc. Metering Pumps (FSK31-3D)				
2WSS-HV11A	Conc. Metering Pump 7A Suction Valve	~~O~~C JM 9/25/86	C	JM 9/26/86	TS#2
WSS-V355	Conc. Pump 7A Suction Drain Valve	C	C	JM 9/26/86	
2WSS-V357	Conc. Pump 7A Disch. Drain Valve	C	C	JM 9/26/86	
2WSS-RV25A	Conc. Pump 7A Discn. Relief Valve	NA	NOT GAGGED	JM 9/26/86	NOT GAGGED

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-HV10A	Conc. Pump 7A Disch. Blocking Valve	~~O~~ C JM 9/25/86.	C	JM 9/26/86	TS#2
2WSS-HV11B	Conc. Metering Pump 7B Suct. Valve	C	C	JM 9/26/86	
2WSS-V356	Conc. Met. Pmp. 7B Suct. Drain Valve	C	C	JM 9/26/86	
2WSS-V358	Conc. Met. Pmp. 7B Disch. Drain Valve	C	C	JM 9/26/86	
2WSS-RV25B	Conc. Met. Pmp. 7B Disch. Relief Valve	NA	NOT GAGGED	JM 9/26/86	NOT GAGGED
2WSS-HV10B	Conc. Met. Pmp. 7B Disch. Block Valve	C	C	JM 9/26/86	
2WSS-RV325	Conc. Met. Pmp. 7A and 7B Disch. Hdr. Relief Valve	NA	NOT GAGGED	JM 9/26/86	NOT GAGGED
2WSS-V359	Conc. Met. Pmp. 7A and 7B Disch. Vent Valve	C	C	JM 9/26/86	
2WSS-HV21B	Conc. Met. Pmp. 7A and 7B Disch. Hdr. Recirc. Valve	C	C	JM 9/26/86	
2WSS-HV204	Conc. Met. Pmp. Disch. Hdr. Block Valve	~~O~~ C JM 9/25/86	C ~~O~~ JM 9/26/86	JM 9/26/86	TS#2
	Asphalt Recirculating Pump (FSK31-3E)				
2WSS-V2	Asphalt Truck Fill Connection (Outside Building)	C	C	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V3	3-Way Fill Valve To Either Asphalt Strainer 1A or 1B	O	O	JM 9/26/86	
2WSS-V13	Asphalt Inlet Strainer 1A Drain Valve	C	C	JM 9/26/86	
2WSS-V14	Asphalt Inlet Strainer 1B Drain Valve	C	C	JM 9/26/86	
2WSS-V4	3-Way Asphalt Fill Valve From Either Asphalt Strainer 1A or 1B	O	O	JM 9/26/86	
2WSS-V372	Asphalt Recirc. Pump 3A and 3B Suction Strainer Drain Valve	C	C	JM 9/26/86	
2WSS-V5	Asphalt Recirc. Pump 3A Suction B.V.	O	O	JM 9/26/86	
2WSS-V7	Asphalt Recirc. Pump 3B Suction B.V.	C	C	JM 9/26/86	
2WSS-V373	Asphalt Recirc. Pump 3A Suction Drain Valve	C	C	JM 9/26/86	
2WSS-V374	Asphalt Recirc. Pump 3B Suction Drain Valve	C	C	JM 9/26/86	
2WSS-V417	Asphalt Recirc. Pump 3A Drain Valve	C	C	JM 9/26/86	
2WSS-V418	Asphalt Recirc. Pump 3B Drain Valve	C	C	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V375	Asphalt Recirc. Pump P3A Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-V376	Asphalt Recirc. Pump P3B Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-V6	Asphalt Recirc. Pump 3A Discharge B.V.	O	O	JM 9/26/86	
2WSS-V8	Asphalt Recirc. Pump 3B Discharge B.V.	C	C	JM 9/26/86	
2WSS-V377	Recirc. Pump 3A and 3B Discharge Header Vent	C	C	JM 9/26/86	
2WSS-V9	Asphalt Recirc. Pump 3A and 3B Disch. 3-Way Valve To Recirc. Str. 4A or 4B.	O	O	JM 9/26/86	
2WSS-V15	Asphalt Recirc. Strainer 4A Drain Valve	C	C	JM 9/26/86	
2WSS-V16	Asphalt Recirc. Strainer 4B Drain Valve	C	C	JM 9/26/86	
2WSS-V10	Asphalt Recirc. Strainer 4A/ 4B 3-Way Outlet Valve	O	O	JM 9/26/86	
2WSS-V379	Asphalt Recirc. Strainer 4A/ 4B Outlet B.V.	~~C~~ O JM 9/25/86	O	JM 9/26/86	TS#2
2WSS-V378	Asphalt Tank 2 Pumpout B.V. Through Recirc. Pump 3B	C	C	JM 9/26/86	
2WSS-V380	Asphalt Recirc. Pump 3A and 3B Discharge Recirc. B.V.	C	C	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
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VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
	Asphalt Metering Pumps (FSK31-3F)				
2WSS-V12	Asphalt Metering Pump 5B Suction Block Valve	O	O	JM 9/26/86	
2WSS-V11	Asphalt Metering Pump 5A Suction Block Valve	~~C~~ O JM 9/25/86	O	JM 9/26/86	TS#2
2WSS-V381	Asphalt Metering Pump 5A Suction Strainer Drain Valve	C			TS#2
2WSS-V382	Asphalt Metering Pump 5B Suction Strainer Drain Valve	C			TS#2
2WSS-V385	Asphalt Metering pump 5B Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-V384	Asphalt Metering Pump 5A Discharge Drain Valve	C	C	JM 9/26/86	
2WSS-V528	Asphalt Metering Pumps 5A & 5B Discharge Relief Drain Valve	C	C	JM 9/26/86	
2WSS-HV12A	Asphalt Metering Pump 5A Discharge Block Valve	~~O~~ C JM 9/25/86	C	JM 9/26/86	TS#2
2WSS-HV12B	Asphalt Metering Pump 5B Discharge Block Valve	C	C	JM 9/26/86	
2WSS-~~V386~~ V749 JM 9/25/86	Asphalt Metering Pumps 5A & 5B Discharge Vent Valve	C	C	JM 9/26/86	TS#2
2WSS-V527	Asphalt Metering Pumps 5A & 5B Discharge Check Valve	C	C	JM 9/26/86	
2WSS-V383	Recirc. Pumps 3A & B Recirc. Vent Valve to TK-2	C	C	JM 9/26/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V~~475~~ 748 JM 9/25/86	Asphalt to Extruder Flow Meter, 2WSS-FE202, Vent Valve	C	C	JM 9/26/86	TS#2
	Extruder-Evaporator Manifold Skid (FSK-31-3G)				
2WSS-V30	Aux. Boiler Steam Block Valve	0	O	JM 9/27/86	
2WSS-V584	Stm. Hdr. "Y" Strainer Drain Exit Valve	C	C	JM 9/27/86	
2WSS-V32	Steam Block Valve To Barr. Sect. #1	0	O	JM 9/27/86	
2WSS-V33	Steam Block Valve To Barr. Sect. #2	0	O	JM 9/27/86	
2WSS-V34	Steam Block Valve To Barr. Sect. #3	0	O	JM 9/27/86	
2WSS-V35	Steam Block Valve To Barr. Sect. #4	0	O	JM 9/27/86	
2WSS-V36	Steam Block Valve To Barr. Sect. #5 and #6	0	O	JM 9/27/86	
2WSS-V37	Steam Block Valve To Barr. Sect. #7	0	O	JM 9/27/86	
2WSS-TVX136	Temp. Control Valve for Barr. Sect. #1	V	V	JM 9/27/86	
2WSS-TV137	Temp. Control Valve for Barr. Sect. #2	V	V	JM 9/27/86	
2WSS-TV138	Temp. Control Valve for Barr. Sect. #3	V	V	JM 9/27/86	
2WSS-TV139	Temp. Control Valve for Barrel Sect. #4	V	V	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-TV141	Temp. Control Valve for Barrel Sect. #5 and #6	V	V	JM 9/27/86	
2WSS-TVX142	Temp. Control Valve for Barr. Sect. #7	V	V	JM 9/27/86	
2WSS-V54	Cooling Water Inlet Valve To Skid	0	O	JM 9/27/86	
2WSS-V585	Cooling Water "Y" Strain Drain Valve	C	C	JM 9/27/86	
2WSS-AOV154	Cooling Water Block Valve To Sect. 7	~~O~~ C JM 9/25/86	C	JM 9/27/86	TS#2
2WSS-V55	Cooling Water Block Valve To Steam Domes	0	O	JM 9/27/86	
2WSS-AOV153	Cooling Water Block Valve To Sect. 1	~~O~~ C JM 9/25/86	C	JM 9/27/86	TS#2
2WSS-RV245	Relief Valve on Cooling Water Inlet To Steam Domes	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V147	Isolation Valve To PI 157	0	O	JM 9/27/86	
2WSS-V146	PI157 Bleed Valve	C	C	JM 9/27/86	
2WSS-V31	Steam Header Inlet Block Valve	0	O	JM 9/27/86	
2WSS-PCV246	Steam Header Press. Cont. Valve	V	V	JM 9/27/86	
2WSS-SOV147	Steam Block Valve To Steam Dome #3	C	C	JM 9/27/86	
2WSS-SOV148	Steam Block Valve To Steam Dome #4	C	C	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-SOV149	Steam Block Valve To Steam Dome #6		C C	JM 9/27/86	
2WSS-RV242	Steam Header Relief Valve		NA NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V38	Steam Block Valve To Steam Dome #3,4,6	JM 9/25/86	~~C~~ O O	JM 9/27/86	TS#2
2WSS-V77	Steam Trap, TRP01, Isolation Valve		0 O	JM 9/27/86	
2WSS-V78	Steam Trap, TRP01, Isolation Valve		0 O	JM 9/27/86	
2WSS-RV243	Cooling Water Disch. R.V. From Barrel Sect. #1	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-TVY136	Cooling Water Disch. Temp. Control Valve-Barrel Sect. #1		V V	JM 9/27/86	
2WSS-V56	Cooling Water Disch. From Steam Dome #3		0 O	JM 9/27/86	
2WSS-V57	Cooling Water Disch. From Steam Dome #4		0 O	JM 9/27/86	
2WSS-V58	Cooling Water Disch. From Steam Dome #6		0 O	JM 9/27/86	
2WSS-RV244	Cooling Water Disch. R.V. From Barrel Sec. #7		NA NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-TVY142	Cooling Water Disch. Temp. from Barrel Section #7 Control Valve		V V	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V60	Cooling Water Disch. Header Block Valve	O	O	JM 9/27/86	
2WSS-V73	Steam Trap, TRP08, Isolation Valve	O	O	JM 9/27/86	
2WSS-V74	Steam Trap, TRP08, Isolation Valve	O	O	JM 9/27/86	
2WSS-V71	Steam Trap, TRP07, Isolation Valve	O	O	JM 9/27/86	
2WSS-V72	Steam Trap, TRP07, Isolation Valve	O	O	JM 9/27/86	
2WSS-V69	Steam Trap, TRP06, Isolation Valve	O	O	JM 9/27/86	
2WSS-V70	Steam Trap, TRP06, Isolation Valve	O	O	JM 9/27/86	
2WSS-V67	Steam Trap, TRP05, Isolation Valve	O	O	JM 9/27/86	
2WSS-V68	Steam Trap, TRP05, Isolation Valve	O	O	JM 9/27/86	
2WSS-V65	Steam Trap, TRP04, Isolation Valve	O	O	JM 9/27/86	
2WSS-V66	Steam Trap, TRP04, Isolation Valve	O	O	JM 9/27/86	
2WSS-V76	Steam Trap, TRP09, Isolation Valve	O	O	JM 9/27/86	
2WSS-V75	Steam Trap, TRP09, Isolation Valve	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V63	Steam Trap, TRP03, Isolation Valve	O	O	JM 9/27/86	
2WSS-V64	Steam Trap, TRP03, Isolation Valve	O	O	JM 9/21/86	
2WSS-V61	Steam Trap, TRP02, Isolation Valve	O	O	JM 9/27/86	
2WSS-V62	Steam Trap, TRP02, Isolation Valve	O	O	JM 9/27/86	
2WSS-V79	Steam Return Header Block Valve Cond. Return Tank	O	O	JM 9/27/86	
2WSS-V586	Steam supply to Manifold Skid Vent Valve	C	C	JM 9/21/86	
2WSS-602	Cooling Water Return from Extruder Vent Valve	C	C	JM 9/21/86	
2WSS-603	Cooling Water Return from Extruder Vent Valve	C	C	JM 9/27/86	
2WSS-604	Cooling Water Return from Extruder Vent Valve	C	C	JM 9/27/86	
2WSS-605	Cooling Water Return from Extruder Vent Valve	C	C	JM 9/27/86	
2WSS-606	Cooling Water Return from Extruder Vent Valve	C	C	JM 9/27/86	
2WSS-V587	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	
2WSS-V588	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V589	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	
2WSS-V590	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	
2WSS-V591	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	
2WSS-V592	Steam to Barrel Section Vent Valve	C	C	JM 9/27/86	
2WSS-V598	Steam to Steam Dome Vent Valve	C	C	JM 9/27/86	
2WSS-V599	Steam to Steam Dome Vent Valve	C	C	JM 9/27/86	
2WSS-V600	Steam to Steam Dome Vent Valve	C	C	JM 9/27/86	
2WSS-V601	Steam to Steam Dome Vent Valve	C	C	JM 9/27/86	
2WSS-V547	Steam Trap, TRP122 Isolation Valve	O	O	JM 9/27/86	
2WSS-V548	Steam Trap, TRP122 Isolation Valve	O	O	JM 9/27/86	
2WSS-V152	PCV246 Sensing Line Block Valve	O	O	JM 9/27/86	
	Extruder-Evaporator (FSK31-3H)				
2WSS-V490	Flush Water Block Valve To Steam Dome Boilout Tank	O	O	JM 9/27/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-SOV212	Flush Water Block on Steam Dome Boilout Tank Skid	C	C	JM 9/27/86	
2WSS-SOV214	Steam Dome Boilout Tank Discharge To Steam Dome #3	C	C	JM 9/27/86	
2WSS-SOV215	Steam Dome Boilout Tank Discharge To Steam Dome #4	C	C	JM 9/27/86	
2WSS-V491	Steam Dome Boilout Tank Drain	C	C	JM 9/27/86	
2WSS-V39	Steam Block Valve To Steam Dome #3	C	C	JM 9/27/86	
2WSS-SOV216	Steam Dome Boilout Tank Discharge to Steam Dome #6	C	C	JM 9/27/86	
2WSS-V40	Steam Block Valve To Steam Dome #4	C	C	JM 9/27/86	
2WSS-V41	Steam Block Valve To Steam Dome #6	C	C	JM 9/27/86	
2WSS-V149	Steam Dome #3 Distillate To Dist. Coll. Tank	~~O~~ C JM 9/25/86	C	JM 9/27/86	TS#2
2WSS-V150	Steam Dome #4 Distillate To Dist. Coll. Tank	~~O~~ C JM 9/25/86	C	JM 9/27/86	TS#2
2WSS-V151	Steam Dome #6 Distillate To Dist. Coll. Tank	~~O~~ C JM 9/25/86	C	JM 9/27/86	TS#2
	Distillate Collection (FSK-31-3J)				
2WSS-V387	Flush Water Block Valve To Dist. Coll. Tank	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V138	Flush Water Block Valve to Dist. Coll. Tank	C	C	JM 9/27/86	
2WSS-V136	Flush Water Block Valve to Rough FLT19A	C	C	JM 9/27/86	
2WSS-V137	Flush Water Block Valve to Rough FLT19B	C	C	JM 9/27/86	
2WSS-V506	Dist. Rough FLT19A Vent Block Valve	C	C	JM 9/27/86	
2WSS-V~~134~~ 730 JM 9/25/86	Rough FLT19A Drain Block Valve	C	C	JM 9/27/86	TS#2
2WSS-V~~135~~ 731 JM 9/25/86	Rough FLT19B Drain Block Valve	C	C	JM 9/27/86	TS#2
2WSS-V507	Dist. Rough FLT19B Vent Block Valve	C	C	JM 9/27/86	
2WSS-HV177	Rough Filters Inlet Outlet 3-Way Valves	0	O	JM 9/27/86	
WSS-V125	Distillate Coll. Tank Drain Block Valve	C	C	JM 9/27/86	
2WSS-V110	Dist. Pump 18B Suction Block Valve	0	O	JM 9/27/86	
2WSS-V113	Dist. Pump 18A Suction B.V.	0	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V112	Dist. Pump 18A Disch. Valve	O	O	JM 9/27/86	
2WSS-V115	Dist. Pump 18B Disch Valve	O	O	JM 9/27/86	
2WSS-V122	Dist. Pump 18A & 18B Disch. Hdr. Drain	C	C	JM 9/21/86	
2WSS-V120	Inst. Isolation Valve To PI188	O	O	JM 9/27/86	
2WSS-V121	Inst. Drain Valve To PI188	C	C	JM 9/27/86	
2WSS-V124	Polishing FLT Disch. Hdr. Drain Block Valve	C	C	JM 9/27/86	
2WSS-V123	Rough FLT Disch. Hdr. Drain Block Valve	C	C	JM 9/27/86	
2WSS-FV180	Distillate Flow Control Valve	V	V	JM 9/27/86	
2WSS-V126	Instrument Isolation Valve To PI182	O	O	JM 9/27/86	
2WSS-V127	Instrument Drain Valve To PI182	C	C	JM 9/27/86	
2WSS-V116	Distillate Cooler Inlet Block Valve	O	O	JM 9/21/86	
2WSS-V142	Distillate Cooler Drain Block Valve	C	C	JM 9/27/86	
2WSS-RV251	Cooling Water Inlet To Distillate Cooler R.V.	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V141	Cooling Water Inlet Block Valve To Dist. Cooler	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V140	Cooling Water Outlet Block Valve From Dist. Cooler	O	O	JM 9/27/86	
2WSS-RV250	Distillate Cooler Outlet Relief Valve	C	C	JM 9/27/86	NOT GAGGED
2WSS-V128	Polishing FLT21A Vent Valve	C	C	JM 9/27/86	
2WSS-V130	Polishing FLT21A Drain Valve	C	C	JM 9/27/86	
2WSS-V131	Polishing FLT21B Drain Valve	C	C	JM 9/27/86	
2WSS-V129	Polishing FLT21B Vent Valve	C	C	JM 9/27/86	
2WSS-V118	Polishing FLT21A, 21B Disch. 3-Way Valve	O (to FLT21A)	O	JM 9/27/86	
2WSS-V117	Polish. FLT21A, 21B Inlet 3-Way Valve	O (to FLT21A)	O	JM 9/27/86	
2WSS-V710	Roughing FLT19A Outlet Vent Valve	C	C	JM 9/27/86	
2WSS-V711	Roughing FLT19B Outlet Vent Valve	C	C	JM 9/27/86	
2WSS-V712	Roughing FLT19A Inlet Vent Valve	C	C	JM 9/27/86	
2WSS-V713	Roughing FLT19B Inlet Vent Valve	C	C	JM 9/27/86	
2WSS-V83	Lube Oil (FSK 31-3K) Lube Oil Pump 13A Disch. Block Valve to Lube Oil Cooler	O	O	JM 9/27/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V84	Lube Oil Pump 13B Disch. Block Valve to Lube Oil Cooler	O	O	JM 9/27/86	
2WSS-RV248	Lube Oil Pump 13A & Lube Oil TK Relief Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-RV247	Lube Oil Pump 13A & Lube Oil TK Relief Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V91	Lube Oil Pumps 13A & B Disch. Pressure Indicator to Cooler	O	O	JM 9/27/86	
2WSS-V95	Lube Oil Cooler Drain Valve To Lube Oil Tk	C	C	JM 9/27/86	
2WSS-V98	Lube Oil Tk Drain Valve	C	C	JM 9/27/86	
2WSS-V99	Lube Oil Tk Drip Pan Valve	C	C	JM 9/27/86	
2WSS-V103	Cooling Water TV174 Isolation Valve From Lube Oil Cooler	O	O	JM 9/27/86	
2WSS-TV174	Cooling Water Temp. Control Valve Discharge Lube Oil Cooler	V	V	JM 9/27/86	
2WSS-V104	Cooling Water TV174 Isolation Valve From Lube Oil Cooler	O	O	JM 9/27/86	
2WSS-V105	Control Valve TV174 Bypass Valve	C	C	JM 9/27/86	
2WSS-RV249	Lube Oil Cooler Cooling Water Relief Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V101	Cooling Water Supply to Lube Oil Cooler Block Valve	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V102	Cooling Water Return Line Block Valve	C	C	JM 9/27/86	
2WSS-V100	Lube Oil Filter Drain Valve	C	C	JM 9/27/86	
2WSS-V97	Lube Oil Filter Discharge Instrument Block Valve	O	O	JM 9/27/86	
2WSS-V93	Lube Oil Filter Recirc. Valve To Lube Oil TK	C	C	JM 9/27/86	
2WSS-V90	Lube Oil Filter Discharge Block Valve to Lube Oil TK	C	C	JM 9/27/86	
2WSS-V85	Lube Oil Filter Discharge Block Valve To The Extruder Evaporator	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V86	Lube Oil Filter Discharge Block Valve To Ext.-Evap. Support Bearing	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V87	Flow Indicator Block Valve To The Ext.-Evp. Support Bearing	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V88	Flow Indicator Block Valve To The Ext.-Evp. Support Bearing	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V532	Vent Between Ext.-Evap. Support Bearings and Lube Oil Filter	C	C	JM 9/27/86	
2WSS-V533	Vent Between Ext.-Evap. Support Bearing and Lube Oil Filter	C	C	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V530	Vent Between Lube Oil Filter and Ext.-Evp. Gear Box	C	C	JM 9/27/86	
2WSS-V535	Lube Oil Filter Discharge Block Valve To Ext.-Evp. Gear Box	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V531	Vent Between Lube Oil Filter, Gear Box and Thrust Bearing	C	C	JM 9/27/86	
2WSS-V89	Lube Oil Filter Discharge Block Valve to Ext.-Evp. Thrust Bearing	LO	LO	JM 9/27/86	LOCKED OPEN
2WSS-V92	PI1/1 Bleed Valve	C	C	JM 9/27/86	
2WSS-V96	PI/PS168 Bleed Valve	C	C	JM 9/27/86	
2WSS-V607	Lube Oil Line to Extruder-Evap. Gear Box Drain Valve	C	C	JM 9/27/86	
2WSS-V608	Lube Oil Line to Extruder-Evap. Thrust Bearing Drain Valve	C	C	JM 9/27/86	
2WSS-V732	Vent Valves	C	C	JM 9/27/86	
2WSS-V733	Vent Valves	C	C	JM 9/27/86	
2WSS-V738	Vent Valves	C	C	JM 9/27/86	
2WSS-V739	Vent Valves	C	C	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
Auxiliary Boiler (FSK-31-3L)					
2WSS-V168	Aux. Boiler B24 Drain Valve	C	C	JM 9/27/86	
2WSS-V161	INST. Drain Valve LG221	C	C	JM 9/27/86	
2WSS-V162	INST. Drain Valve LS222 and LT235	C	C	JM 9/27/86	
2WSS-V170	Aux. Boiler B24 Drain Valve	C	C	JM 9/27/86	
2WSS-V169	Aux. Boiler B24 Drain Valve	C	C	JM 9/27/86	
2WSS-V157	Aux. Boiler Pressure Indicator Valve	O	O	JM 9/27/86	
2WSS-V158	Aux. Boiler B24 Pressure Indicator Valve	C	C	JM 9/27/86	
2WSS-SV240	Aux. Boiler B24 SAFETY RELIEF Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V172	INST. Drain Valve LG230	C	C	JM 9/27/86	
2WSS-V171	Boiler Feed Water Pump P23A Suction Valve	O	O	JM 9/27/86	
2WSS-V163	Boiler Feed Water Pump P23A Discharge Valve	O	O	JM 9/27/86	
2WSS-V175	Condensate Return Tank TK22 Drain Valve	C	C	JM 9/27/86	
2WSS-RV239	Boiler Feed Pump P23A Disch. Pressure Relief Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V159	Pressure Indicator Valve Boiler Feed Pump P23A Disch.	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-LCV237	Level Control Valve For Condensate Return Tank TK22	V	V	JM 9/27/86	
2WSS-PCV238	Pressure Control Valve For Condensate Return Tank TK22	V	V	JM 9/27/86	
2WSS-V167	Aux. Boiler 824 Makeup Water Feed Valve	O	O	JM 9/27/86	
2WSS-V184	Chem Feed Tank TK44 Makeup Water Valve	C	C	JM 9/27/86	
2WSS-V178	Chem Feed Tank TK44 Drain Valve	C	C	JM 9/27/86	
2WSS-V177	Chem Feed Pump P43 Suction Valve	O	O	JM 9/27/86	
2WSS-RV236	Chem Feed Pump P43 Discharge Relief Valve	NA	NOT GAGGED	JM 9/27/86	NOT GAGGED
2WSS-V173	Chem Feed Pump P43 Discharge Valve	O	O	JM 9/27/86	
	OFF SKID				
2WSS-V443	Aux. Steam Tie in Supply Removable Spool Isolation Valve	C	C	JM 9/27/86	
2WSS-V444	Aux. Steam Tie in Supply Removable Spool Isolation Valve	C	C	JM 9/27/86	
2WSS-V697	Steam Supply For Asphalt Heat Tracing	O	O	JM 9/27/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V706	Steam Supply To Utility Manifold of The Extruder	~~O~~C JM 9/25/86	C	JM 9/29/86	TS#2
2WSS-V442	Aux. Boiler B24 Steam Outlet Valve	O	O	JM 9/29/86	
2WSS-V441	Aux. Boiler B24 Steam Outlet Valve	O	O	JM 9/29/86	
2WSS-V445	Condensate Return Header Valve Removable Spool Isolation Valve	O	O	JM 9/29/86	
2WSS-V446	Condensate Return Header Valve Removable Spool Isolation Valve	O	O	JM 9/29/86	
2WSS-V450	Condensate Return Header Drain Valve	C			TS#2
2WSS-V448	Condensate Return Header Drain Valve Removable Spool Isolation Valve	C	C	JM 9/29/86	
2WSS-SOV228	Quench water to B/D Separator Block Valve	C	C	JM 9/29/86	
2WSS-V181	SOV228 Bypass Valve	C	C	JM 9/29/86	
2WSS-V525	Aux. Steam Supply Block Valve	C	C	JM 9/29/86	
2WSS-V~~205~~ 750 JM 9/25/86	Aux. Boiler Steam Header Drain Valve	C	C	JM 9/29/86	TS#2
2WSS-V449	Aux. Boiler Steam Header Drain Valve	C	C	JM 9/29/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V619	Makeup Water to Cond. Return TK22 Drain Valve	C	C	JM 9/29/86	
2WSS-V620	Makeup Water to Cond. Return TK22 Drain Valve	C	C	JM 9/29/86	
2WSS-V546	Drain Trap, TRP121, Vent Block Valve	O	O	JM 9/29/86	
2WSS-V572	Steam Trap, TRP129, Inlet Block Valve	O	O	JM 9/29/86	
2WSS-V5~~73~~ 574 JM 9/25/86	Steam Trap, TRP129, Outlet Block Valve	O	O	JM 9/29/86	TS#2
2WSS-V5~~74~~573 JM 9/25/86	Steam Trap, TRP129, Inlet Drain	C	C	JM 9/29/86	TS#2
2WSS-V595	Steam Trap, TRP133, Inlet Block Valve	O	O	JM 9/29/86	
2WSS-V5~~96~~ 597 JM 9/25/86	Steam Trap, TRP133, Outlet Block Valve	O	O	JM 9/29/86	TS#2
2WSS-V5~~97~~ 596 JM 9/25/86	Steam Trap, TRP133, Inlet Drain Valve	C	C	JM 9/29/86	TS#2
2WSS-V616	Makeup Water to Cond. Return TK22 Block Valve	O	O	JM 9/29/86	
2WSS-V545	Drain Trap TRP121, Inlet Block Valve	O	O	JM 9/29/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V617	Makeup Water PS318 Root Valve	O	O	JM 9/29/86	
2WSS-V618	Makeup Water to Cond. Return TK22 Vent Valve	C	C	JM 9/29/86	
2WSS-V594	Aux Boiler Steam Header PS307 Root Valve	O	O	JM 9/29/86	
2WSS-V593	Aux Boiler Steam Header PT303 Root Valve	O	O	JM 9/29/86	
2WSS-V698	B/D Separator Vent Block Valve	O	O	JM 9/29/86	
2WSS-V699	B/D Separator Drain Valve	C	C	JM 9/29/86	
2WSS-V485	Steam Distribution (FSK-31-3M/3Q) Instrument Isol. Valve To PI330	O	O	JM 9/29/86	
2WSS-V541	Steam Supply Inlet Isol. Valve To PCV247	O	O	JM 9/29/86	
2WSS-PCV247	Steam Supply Pressure Control Valve	V	V	JM 9/29/86	
2WSS-V542	Steam Supply Outlet Isol. Valve From PCV247	O	O	JM 9/29/86	
2WSS-V19	Steam Supply PCV247 Bypass Valve	C	C	JM 9/29/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V486	Inst. Isol Valve To PI276	~~O~~C JM 9/25/86	C	JM 9/29/86	TS #2
2WSS-RV241	Steam Supply Inlet Header Relief Valve	NA	NOT GAGGED	JM 9/29/86	NOT GAGGED
2WSS-V456	Steam Supply Inlet Isolation Valve To Str. 1B	O	O	JM 9/29/86	
2WSS-V457	Steam Supply Inlet Isolation Valve To Str. 1A	O	O	JM 9/29/86	
2WSS-V458	Steam Supply Inlet Isolation Valve To Str. 4B	O	O	JM 9/29/86	
2WSS-V459	Steam Supply Inlet Isolation Valve To Str. 4A	O	O	JM 9/29/86	
2WSS-V468	Condensate Outlet from Str. 1B Isolation Valve	O	O	JM 9/29/86	
2WSS-V469	Condensate Outlet from Str. 1B Isolation Valve	O	O	JM 9/29/86	
2WSS-V470	Condensate Outlet from Str. 4B Isolation Valve	O	O	JM 9/29/86	
2WSS-V471	Condensate Outlet from Str. 4A Isolation Valve	O	O	JM 9/29/86	
2WSS-V460	Drain From Strainer 1B	C	C	JM 9/29/86	
2WSS-V461	Drain From Strainer 1A	C	C	JM 9/29/86	
2WSS-V462	Drain From Strainer 4B	C	C	JM 9/29/86	
2WSS-V463	Drain From Strainer 4A	C	C	JM 9/29/86	
2WSS-V474	Instrument Isol. Valve To FE202	O	O	JM 9/29/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V478	FE202 Jacket Drain Valve	C	C	JM 9/29/86	
2WSS-V484	Condensate Outlet from FE202 Isolation Valve	O	O	JM 9/29/86	
2WSS-V473	Steam Supply Isol. Valve To Asphalt Recirc. Pump 3B	O	O	JM 9/29/86	
2WSS-V477	Asphalt Recirc. Pump 3B Jacket Drain	C	C	JM 9/29/86	
2WSS-V483	Asphalt Recirc. Pump 3B Condensate Outlet Isolation Valve	O	O	JM 9/29/86	
2WSS-V472	Steam Supply Isol. Valve To Asphalt Recirc. Pump 3A	O	O	JM 9/29/86	
2WSS-V476	Asphalt Recirc. Pump 3A Jacket Drain	C	C	JM 9/29/86	
2WSS-V482	Asphalt Recirc. Pump Condensate Outlet Isolation Valve	O	O	JM 9/29/86	
2WSS-V549	Steam Supply Isol. Valve To Tk 2 Heater 41A	O	O	JM 9/29/86	
2WSS-V550	Steam Supply Isol. Valve To TK 2 Heater 41B	O	O	JM 9/29/86	
2WSS-V551	Steam Supply Isol. Valve To TK 2 Heater 41C	O	O	JM 9/29/86	
2WSS-V25	TK 2 Heater 41B Condensate Outlet Isolation Valve	O	O	JM 9/29/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V26	TK 2 Heater 41C Condensate Outlet Isolation Valve	O	O	JM 9/29/86	
2WSS-V24	TK 2 Heater 41A Condensate Outlet Isolation Valve	O	O	JM 9/29/86	
2WSS-V498	Condensate Line Drain From Heater 41B	C	C	JM 9/29/86	
2WSS-V499	Condensate Line Drain From Heater 41C	C	C	JM 9/29/86	
2WSS-V500	Condensate Line Drain From Heater 41A	C	C	JM 9/29/86	
2WSS-V566	TRP127 Isolation Valve	O	O	JM 9/29/86	
2WSS-V567	Condensate Line to TRP127 Drain Valve	C	C	JM 9/29/86	
2WSS-V568	TRP127 Isolation Valve	O	O	JM 9/29/86	
2WSS-V622	Steam Supply to Tracing Station No. 1 Block Valve	O	O	JM 9/29/86	
2WSS-V678	Condensate Return from Tracing Station No. 1 Drain Valve	C	C	JM 9/29/86	
2WSS-V676	TRP119 Isolation Valve	O	O	JM 9/29/86	
2WSS-V677	TRP119 Isolation Valve	O	O	JM 9/29/86	
2WSS-V700	TRP119 Outlet Check Valve	C	C	JM 9/29/86	
2WSS-V634	Steam Supply to Tracing Station No. 2 B.V.	O	O	JM 9/29/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V696	Steam Supply to Tracing Station No. 2 Line Drain Valve	C	C	JM 10/1/86	
2WSS-V675	Steam Supply to Tracing Station No. 3 Block Valve	O	O	JM 10/1/86	
2WSS-V679	Steam Supply to Tracing Station No. 3 Line Drain Valve	C	C	JM 10/1/86	
2WSS-V654	Condensate Return Line from Tracing Station No. 4 Block Valve	O	O	JM 10/1/86	
2WSS-V695	Condensate Return Line from Tracing Station No. 4 Drain Valve	C	C	JM 10/1/86	
2WSS-V657	Condensate Return Line from Tracing Station No. 5 Block Valve	O	O	JM 10/1/86	
2WSS-V623	Steam Tracer ST-1-1 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V647	Steam Tracer ST-1-1 TRP138 Isolation Valve	O	O	JM 10/1/86	
2WSS-V664	Steam Tracer ST-1-1 TRP138 Outlet Check Valve	C	C	JM 10/1/86	
2WSS-V684	Steam Tracer ST-1-1 Drain Valve	C	C	JM 10/1/86	
2WSS-V624	Steam Tracer ST-1-2 Steam Supply Block Valve	O	O	JM 10/1/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V648	Steam Tracer ST-1-2 TRP139 Isolation Valve	O	O	JM 10/1/86	
2WSS-V685	Steam Tracer ST-1-2 Drain Valve	C	C	JM 10/1/86	
2WSS-V625	Steam Tracer ST-1-3 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V643	Steam Tracer ST-1-3 TRP134 Isolation Valve	O	O	JM 10/1/86	
2WSS-V680	Steam Tracer ST-1-3 Drain Valve	C	C	JM 10/1/86	
2WSS-V626	Steam Tracer ST-1-4 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V644	Steam Tracer ST-1-4 TRP135 Isolation Valve	O	O	JM 10/1/86	
2WSS-V681	Steam Tracer ST-1-4 Drain Valve	C	C	JM 10/1/86	
2WSS-V627	Steam Tracer ST-1-5 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V651	Steam Tracer ST-1-5 TRP142 Isolation Valve	O	O	JM 10/1/86	
2WSS-V628	Steam Tracer ST-1-6 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V652	Steam Tracer ST-1-6 TRP143 Isolation Valve	O	O	JM 10/1/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V089	Steam Tracer ST-1-6 Drain Valve	C	C	JM 10/1/86	
2WSS-V20	Steam Supply to FE202 Regulating Valve	V			TS#2
2WSS-V615	PI112 Root Valve	O	O	JM 10/1/86	
2WSS-V543	Drain Trap TRP120 Isolation Valve	O	O	JM 10/1/86	
2WSS-V675	Condensate Block Valve from Steam Tracing Station No. 3	O	O	JM 10/1/86	
2WSS-V707	PCV247 Sensing Line Block Valve	O	O	JM 10/1/86	
2WSS-V544	Drain Trap TRP120 Isolation Valve	O	O	JM 10/1/86	
2WSS-V569	TRP128 Isolation Valve	O	O	JM 10/1/86	
2WSS-V570	Condensate Line to TRP128 Drain Valve	C	C	JM 10/1/86	
2WSS-V571	TRP128 Isolation Valve	O	O	JM 10/1/86	
2WSS-V575	TRP130 Isolation Valve	O	O	JM 10/1/86	
2WSS-V576	Condensate Line to TRP130 Drain Valve	C	C	JM 10/1/86	
2WSS-V577	TRP130 Isolation Valve	O	O	JM 10/1/86	
2WSS-V578	TRP131 Isolation Valve	O	O	JM 10/1/86	
2WSS-V579	Condensate Line to TRP131 Drain Valve	C	C	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V580	TRP131 Isolation Valve	O	O	JM 10/1/86	
2WSS-V581	TRP132 Isolation Valve	O	O	JM 10/1/86	
2WSS-V582	Condensate Line to TRP132 Drain Valve	C	C	JM 10/1/86	
2WSS-V583	TRP132 Isolation Valve	O	O	JM 10/1/86	
2WSS-V633	Steam Supply Block Valve to Tracer ST-0-11	O	O	JM 10/1/86	
2WSS-V629	Steam Tracer ST-1-7 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V650	Steam Tracer ST-1-7 TRP141 Isolation Valve	O	O	JM 10/1/86	
2WSS-V687	Steam Tracer ST-1-7 Drain Valve	C	C	JM 10/1/86	
2WSS-V630	Steam Tracer ST-1-8 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V649	Steam Tracer ST-1-8 TRP140 Isolation Valve	O	O	JM 10/1/86	
2WSS-V686	Steam Tracer ST-1-8 Drain Valve	C	C	JM 10/1/86	
2WSS-V631	Spare Steam Tracer ST-1-9 Steam Supply Block Valve	C	C	JM 10/1/86	
2WSS-V632	Spare Steam Tracer ST-1-10 Steam Supply Block Valve	C	C	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V633	Steam Tracer ST-0-11 Steam Supply Block Valve	0	O	JM 10/1/86	
2WSS-V653	Steam Tracer ST-0-11 TRP144 Isolation Valve	0	O	JM 10/1/86	
2WSS-V690	Steam Tracer ST-0-11 Drain Valve	C	C	JM 10/1/86	
2WSS-V635	Spare Steam Tracer ST-2-12 Steam Supply Block Valve	C	C	JM 10/1/86	
2WSS-V636	Steam Tracer ST-2-13 Steam Supply Block Valve	0	O	JM 10/1/86	
2WSS-V656	Steam Tracer ST-2-13 TRP146 Isolation Valve	0	O	JM 10/1/86	
2WSS-V692	Steam Tracer ST-2-13 Drain Valve	C	C	JM 10/1/86	
2WSS-V637	Steam Tracer ST-2-14 Steam Supply Block Valve	0	O	JM 10/1/86	
2WSS-V655	Steam Tracer ST-2-14 TRP145 Isolation Valve	0	O	JM 10/1/86	
2WSS-V691	Steam Tracer ST-2-14 Drain Valve	C	C	JM 10/1/86	
2WSS-V638	Steam Tracer ST-2-15 Steam Supply Block Valve	0	O	JM 10/1/86	
2WSS-V646	Steam Tracer ST-2-15 TRP137 Isolation Valve	0	O	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V683	Steam Tracer ST-2-15 Drain Valve	C	C	JM 10/1/86	
2WSS-V639	Steam Tracer ST-2-16 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V645	Steam Tracer ST-2-16 TRP136 Isolation Valve	O	O	JM 10/1/86	
2WSS-V682	Steam Tracer ST-2-16 Drain Valve	C	C	JM 10/1/86	
2WSS-V640	Steam Tracer ST-2-17 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V658	Steam Tracer ST-2-17 TRP147 Isolation Valve	O	O	JM 10/1/86	
2WSS-V693	Steam Tracer ST-2-17 Drain Valve	C	C	JM 10/1/86	
2WSS-V641	Steam Tracer ST-2-18 Steam Supply Block Valve	O	O	JM 10/1/86	
2WSS-V659	Steam Tracer ST-2-18 TRP148 Isolation Valve	O	O	JM 10/1/86	
2WSS-V694	Steam Tracer ST-2-18 Drain Valve	C	C	JM 10/1/86	
2WSS-V642	Steam Tracer to Skid 38 ST-2-19 Steam Supply and TRP09 Block Valve	O	O	JM 10/1/86	
22WSS-V409	Cold Flush Water Distribution (FSK31-3N) Block Valve From Condensate Makeup & Drawoff Supply to Flush Water Header	O	O	JM 10/1/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V610	PS388 Root Valve	O	O	JM 10/1/86	
2WSS-V414	Drain Valve From Condensate Makeup and Drawoff Supply Header	C	C	JM 10/1/86	
2WSS-V416	Drain Valve from Condensate Makeup and Drawoff Supply Header	C	C	JM 10/1/86	
2WSS-HV119	Block Valve From Condensate Makeup & Drawoff to Waste Sludge TK	C	C	JM 10/1/86	
2WSS-V515	Vent From HV119 to Waste Sludge TK Flush Water Line	C	C	JM 10/1/86	
2WSS-HV124	Block Valve From Condensate Makeup & Drawoff To Waste Sludge TK Flush Water	C	C	JM 10/1/86	
2WSS-V516	Vent From HV124 To Waste Sludge TK Flush Water Line	C	C	JM 10/1/86	
2WSS-HV127	Block Valve From Condensate Makeup and Drawoff To Waste Sludge TK Drain Line	C	C	JM 10/1/86	
2WSS-V517	Vent From HV127 To Waste Sludge TK Drain Line	C	C	JM 10/1/86	
2WSS-HV125	Block Valve From Condensate Makeup and Drawoff To Sldg. TK Decant. Line	C	C	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V518	Vent From HV125 To Waste Sludge TK Decant Line	C	C	10/1/86	
2WSS-HV360	Block Valve From Condensate Makeup and Drawoff To Sampling Station	C	C	10/1/86	
2WSS-V519	Vent From HV360 To Sampling Station Flush Water Line	C	C	10/1/86	
2WSS-HV13B	Block Valve From Condensate Makeup and Drawoff To Sldg. Metering Pump 12B Suction	C	C	10/1/86	
2WSS-V520	Vent From HV13B To Sldg. Metering Pump 12B Flush Water Line	C	C	10/1/86	
2WSS-HV2B	Block Valve From Condensate Makeup and Drawoff To Sludge Metering Pump 12B Discharge	C	C	10/1/86	
2WSS-V521	Vent From HV2B to Sludge Metering Pump 12B Discharge Flush Water Line	C	C	10/1/86	
2WSS-HV2A	Block Valve From Condensate Makeup and Drawoff To Sldg. Metering Pump 12A Discharge	C	C	10/1/86	
2WSS-V522	Vent From HV2A to Sludge Metering Pump 12A Discharge Flush Water Line	C	C	10/1/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-HV13A	Block Valve From Condensate Makeup and Drawoff To Sludge Metering Pump 12A Suction	C	C	JM 10/1/86	
2WSS-V523	Vent From HV13A To Sludge Metering Pump 12A Suction Flush Water Line	C	C	JM 10/1/86	
	Hot Flush Water Distribution to Waste Conc. Metering Pumps (FSK31-3P)				
2WSS-V421	Block Valve From Condensate Makeup and Drawoff to Metering Pump Flush Water Skid	O	O	JM 10/1/86	
2WSS-V426	Throttling Valve From Cond. Makeup and Drawoff to Metering Pump Flush Water Skid	V	V	JM 10/1/86	
2WSS-SOV304	Block Valve From Condensate Makeup and Drawoff Metering Pump Flush Water Skid	C	C	JM 10/1/86	
2WSS-PCV394	Pressure Control Valve From Aux. Steam To Waste Conc. Mtr. Pump Flush Wtr. Skid	V	V	JM 10/1/86	
2WSS-TCV395	Temp. Control Valve From Aux. Steam To Waste Conc. Mtr. Pump Flush Water Skid	V	V	JM 10/1/86	
2WSS-RV345	Waste Conc. Mtr. Pump Flush Water Thermal Relief Valve	NA	NOT GAGGED	JM 10/1/86	NOT GAGGED
2WSS-HV364	Waste Conc. Metering Pmp. Flush Water Block Valve To Sampling Station	C	C	JM 10/1/86	

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V538	Vent From Waste Conc. Mtr. Pmp. Flush Water Steam Ejector To Sampling Station	C	C	JM 10/1/86	
2WSS-HV14B	Flush Water to Waste Conc. Mtr. Pump 7B Suction Block Valve	C	C	JM 10/1/86	
2WSS-V537	Vent From HV14B To Waste Conc. Metering Pump P7B Suction Flush Water Line	C	C	JM 10/1/86	
2WSS-HV14A	Flush Water to Waste Conc. Mtr. Pmp. 7A Suction Flush Water Line	C	C	JM 10/1/86	
2WSS-V540	Vent From HV14A to Waste Conc. Mtr. Pmp. 7A Suction	C	C	JM 10/1/86	
2WSS-HV4B	Flush Water To Waste Conc. Mtr. Pump 7B Discharge Block Valve	C	C	JM 10/1/86	
2WSS-V536	Vent From HV4B to Waste Conc. Mtr. Pump 7B Discharge Flush Water Line Block Valve	C	C	JM 10/1/86	
2WSS-HV4A	Flush Water To Waste Conc. Mtr. Pump 7A Discharge Block Valve	C	C	JM 10/1/86	
2WSS-V539	Vent From HV4A to Waste Conc. Mtr. Pump 7A Discharge Flush Water Line Block Valve	C	C	JM 10/1/86	
2WSS-V430	Condensate Header Drain Valve To Radwaste Bldg.	C	C	JM 10/1/86	

Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V612	PS367 Root Valve	O	O	JM 10/1/86	
2WSS-V552	PS365 Root Valve	O	O	JM 10/1/86	
2WSS-V708	PCV394 Sensing Line Block Valve	O	O	JM 10/1/86	
	Hot Flush Water to Waste Conc. Recirc. Pump (FSK31-3Q)				
2WSS-V432	Cond . Makeup Throttling Valve To Waste Conc. Recirc. Piping Flush Water Skid	V	V	JM 10/1/86	
2WSS-SOV305	Cond. Makeup Block Valve To Waste Conc. Recirc. Piping Flush Water Skid	C	C	JM 10/1/86	
2WSS-V437	Cond. Makeup Check Valve To Flush Water Skid	C	C	JM 10/1/86	
2WSS-PCV396	Aux. Steam Supply PCV To Flush Water Steam Ejector	V	V	JM 10/1/86	
2WSS-TCV397	Flush Water TCV To Flush Water Steam Ejector	V	V	JM 10/1/86	
2WSS-RV349	Flush Water Steam Ejector Discharge Thermal Relief Valve	NA	NOT GAGGED	JM 10/1/86	NOT GAGGED
2WSS-V440	Flush Water Steam Ejector Discharge Drain Valve	C	C	JM 10/1/86	
2WSS-HV350	Flush Water Steam Ejector Discharge Block Valve	C	C	JM 10/1/86	
2WSS-V709	PCV396 Sensing Line Block Valve	O	O	JM 10/1/86	
2WSS-V614	PS311 Root Valve	O	O	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
0 = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-AOV354	WSS Sampling Station (FSK31-3R) 4-Way Diversion Valve	0 (to Recir. Loop)	O	JM 10/1/86	
2WSS-AOV356	4-Way Waste Conc. Sampling Valve	0 (to Sampling Loop)	O	JM 10/1/86	
2WSS-RV357	Waste Conc. Sample Loop Thermal Relief Valve	NA	NOT GAGGED	JM 10/1/86	NOT GAGGED
2WSS-RV355	Waste Conc. Sample Loop Thermal Relief Valve	NA	NOT GAGGED	JM 10/1/86	NOT GAGGED
2WSS-AOV358	Makeup Water to Waste Conc. Sample Valve	C	C	JM 10/1/86	
2WSS-V393	Air Conn. For Unplugging Waste Sludge Sampling Loop	C	C	JM 10/1/86	
2WSS-V390	Waste Sludge Recirculation Loop Vent Valve	C	C	JM 10/1/86	
2WSS-AOV351	Waste Sludge Recirculation Loop Diversion Valve	0 (to Recir. Loop)	O	JM 10/1/86	
2WSS-AOV352	4-Way Waste Sludge Sample Valve	0 (to Sampling Loop)	O	JM 10/1/86	
2WSS-AOV353	Makeup Water to Waste Sludge Sample Valve Block Valve	C	C	JM 10/1/86	
2WSS-V701	Makeup Water to Waste Conc. Sample Valve Throttling Valve	V	V	JM 10/1/86	
2WSS-V702	Makeup Water to Waste Sludge Sample Valve Throttling Valve	V	V	JM 10/1/86	

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Procedure Step 4.1.4.7

Position codes:
O = Open
C = Closed
V = Throttled (Variable)
L = Locked
T = Tagged (Danger)

VALVE LINE-UP SHEET

Valve No.	Description	Required Position	Actual Position	Initial & Date	Remarks
2WSS-V621	Makeup Water Supply Line Vent Valve	~~O~~ C	C	10/1/86	TS#2
	Radwaste Container Handling (FSK31-3S)				
2WSS-SOV195	Air Supply to Fill Station Intermittor	C	C	10/1/86	
2WSS-SOV196	Air Supply to Fill Station Slip Clutch	C	C	10/1/86	
2WSS-SOV198	Air Supply to Fill Station Drip Pan Mechanism	C	C	10/1/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
2WSS-B24(1)	Radwaste Aux. Boiler	2NJS-US-1	11A		C	C	JM 10/2/86	
2WSS-B24(2)	Control Panel Aux. Boiler	2SCA-PNL105	18		C	C	JM 10/2/86	
2WSS-CNV27	Drum Filling Turntable	2NHS-MCC001	8F		C	C	JM 10/2/86	
2WSS-CNV35	Swipe Turntable Motor	2NHS-MCC001	10E		C	C	JM 10/2/86	
2WSS-M25	Extruder-Evap. Drive Unit	2WSS-XD25 2NJS-US1	10D		C	C	JM 10/2/86	
2WSS-FN29	Extruder-Evap. Drive Blower	2WSS-PNL219	CB		C	C	JM 10/2/86	
2WSS-H34A & B	Lube Oil Sump Heater	2NHS-MCC001	11B		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

RECORD COPY

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
2WSS-MIX9	Waste Sludge Tank Agitator	2NHS-MCC001	11C		C	C	JM 10/2/86	
2WSS-P10	Waste Sludge Tank Decant Pump	2NHS-MCC001	11A		C	C	JM 10/2/86	
2WSS-P11	Waste Sludge Transfer Pump	2NHS-MCC001	10F		C	C	JM 10/2/86	
2WSS-P12A	Waste Sludge Metering Pump	WSS-PNL220	CB1		C	C	JM 10/2/86	
2WSS-P12B	Waste Sludge Metering Pump	WSS-PNL220	CB4		C	C	JM 10/2/86	
2WSS-P13A	Lube Oil Pump	2NHS-MCC001	4C		C	C	JM 10/2/86	
2WSS-P13B	Lube Oil Pump	2NHS-MCC001	16C		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

RECORD COPY

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
2WSS-P18A	Distillate Pump	2NHS-MCC001	4D		C	C	JM 10/2/86	
2WSS-P18B	Distillate Pump	2NHS-MCC001	16D		C	C	JM 10/2/86	
2WSS-P3A	Asphalt Recirculation Pump	2NHS-MCC001	3F		C	C	JM 10/2/86	
2WSS-P3B	Asphalt Recirculation Pump	2NHS-MCC001	17F		C	C	JM 10/2/86	
2WSS-P5A	Asphalt Metering Pump	WSS-PNL220	CB3		C	C	JM 10/2/86	
2WSS-P5B	Asphalt Metering Pump	WSS-PNL220	CB6		C	C	JM 10/2/86	
2WSS-P6	Waste Conc. Transfer Pump	2NHS-MCC001	10D		C	C	JM 10/2/86	
2WSS-P7A	Waste Conc. Meter Pump	WSS-PNL220	CB2		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

RECO

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
2WSS-P7B	Waste Conc. Meter Pump	WSS-PNL220	CB5		C	C	JM 10/2/86	
2WSS-WB85	Compactor Control Panel	2NJS-PNL101	8		C	C	JM 10/2/86	~~NOT INSTALLED~~ JM 10/1/86
2MHN-CRN1	Radwaste Crane	2MHN-SWS1	BKR7		C	C	JM 10/2/86	
2MHN-SWS1	Radwaste Crane Disconnect	2NJS-PNL101	7		C	C	JM 10/2/86	
2WSS-PNL220	Metering Pumps D.C. Drive Panel	2NHS-MCC001	12AL		C	C	JM 10/2/86	
2WSS-PNL220	Metering Pumps Statetrol Panel	2WSS-PNL220	CB		C	C	JM 10/2/86	
2WSS-PNL220	Door Fans Panel	2WSS-PNL220	CBL		C	C	JM 10/2/86	
2WSS-XD210	WSS Control Supply	2LAN-PNL900	25		C	C	JM 10/2/86	

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RECORD COPY

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply		Location	Required Position	Actual Position	Initials & Date	Remarks
		Bus Number	Cubicle/ Breaker					
2WSS-P43	Aux. Boiler Chem. Feed Pump	2WSS-B24(2)	Boiler Skid		C	C	JM 10/2/86	
2WSS-MIX49	Aux. Boiler Chem. Feed Agitator	2WSS-B24(2)	Boiler Skid		C	C	JM 10/2/86	
2WSS-PNL402	W. Sludge Sampling	2SCA-PNL105	12		C	C	JM 10/2/86	
2WSS-PNL403	W. Conc. Sampling	2SCA-PNL105	14		C	C	JM 10/2/86	
2WSS-PNL221	Cap & Swipe Station	2SCA-PNL105	17		C	C	JM 10/2/86	
2WSS-PNL233	Back-up Facility Valve	2SCA-PNL105	42		C	C	JM 10/2/86	
2WSS-SKD28	Capper 'Skid	2WSS-PNL221	CB		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply		Location	Required Position	Actual Position	Initials & Date	Remarks
		Bus Number	Cubicle/ Breaker					
PNL-HTS103	Solid Radwaste Heat Trace Panel	2NHS-MCC016	8AR		C	C	JM 10/2/86	
PNL-HTS103	Solid Radwaste Heat Trace Panel	2NHS-MCC001	12AR		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500-210-4		103-21		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750206-4/2WSS-001207-4		103-22		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750203-4/2WSS-001204-4		103-23		C	C	JM 10/2/86	

Procedure Step 4.1.4.8

RECORD

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply		Location	Required Position	Actual Position	Initials & Date	Remarks
		Bus Number	Cubicle/ Breaker					
NL-HTS103	Tracing for 2WSS-150202-4/2WSS-150288-4		103-24		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150200-4		103-25		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150200-4/ 2WSS-150201-4 2WSS-P6		103-26		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150201-4		103-27		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150201-4		103-28		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750212-4		103-29		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750222-4/2WSS-001223-4		103-30		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
PNL-HTS103	Tracing for 2WSS-750235-4/2WSS-001233-4		103-31		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500216-4/2WSS-500217-4 2WSS-P7B		103-32		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500281-4/2WSS-500280-4		103-33		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500274-4/2WSS-500275-4 2WSS-500272-4		103-34		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500217-4		103-35		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150201-4		103-36		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
PNL-HTS103	Tracing for 2WSS-500226-4		103-37		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150201-4		103-38		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150230-4		103-39		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750232-4/2WSS-001236-4		103-40		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500273-4/2WSS-500276-4 2WSS-500272-4		103-41		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500215-4/2WSS-500213-4 2WSS-P7A		103-42		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500215-4		103-43		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750220-4/2WSS-001221-4		103-44		C	C	JM 10/2/86	

Procedure Step 4.1.4.1.9

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply		Location	Required Position	Actual Position	Initials & Date	Remarks
		Bus Number	Cubicle/ Breaker					
PNL-HTS103	Tracing for 2WSS-500277-4/2WSS-500272-4		103-45		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500279-4/2WSS-500278-4 2WSS-500272-4		103-46		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-150201-4		103-47		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-500215-4		103-48		C	C	JM 10/2/86	
PNL-HTS103	Tracing for 2WSS-750224-4/2WSS-750225-4		103-49		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500210-4		107-21		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-750206-4/2WSS-001207-4		107-22		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply		Location	Required Position	Actual Position	Initials & Date	Remarks
		Bus Number	Cubicle/ Breaker					
PNL-HTS107	Tracing for 2WSS-750203-4/2WSS-001204-4		107-23		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150202-4/2WSS-150286-4		107-24		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150200-4		107-25		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150200-4/2WSS-150201-4 2WSS-P6		107-26		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150201-4		107-27		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150201-4		107-28		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-750212-4		107-29		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-750222-4/2WSS-001223-4		107-30		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
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R = Removed
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RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
PNL-HTS107	Tracing for 2WSS-750235-4/2WSS-001233-4		107-31		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500216-4/2WSS-500217-4 2WSS-P7B		107-32		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500281-4/2WSS-500280-4		107-33		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500274-4/2WSS-500275-4 2WSS-500272-4		107-34		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500217-4		107-35		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150201-4		107-36		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500226-4		107-37		C	C	JM 10/2/86	

[illegible]

Procedure Step 4.1.4.8

Position codes:
O = Open
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R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

omponent umber	Component Description	Power Supply Bus Number	Cubicle/ Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
PNL-HTS107	Tracing for 2WSS-150201-4		107-38		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-150230-4		107-39		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-750232-4/2WSS-001236-4		107-40		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500273-4/2WSS-500276-4/ 2WSS-500272-4		107-41		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500215-4/2WSS-500213-4/ 2WSS-P7A		107-42		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-500215-4		107-43		C	C	JM 10/2/86	
PNL-HTS107	Tracing for 2WSS-750220-4/2WSS-001221-4		107-44		C	C	JM 10/2/86	

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Procedure Step 4.1.4.8

Position codes:
O = Open
C = Closed
T = Tagged (Danger)
L = Locked
R = Removed
RO = Racked-Out
RI = Racked-In

ELECTRICAL LINE-UP SHEET

Component Number	Component Description	Power Supply Bus Number	Power Supply Cubicle/Breaker	Location	Required Position	Actual Position	Initials & Date	Remarks
PNL-HTS107	Tracing for 2WSS-500277-4/2WSS-500272-4		107-45		C	C	10/2/86	
PNL-HTS107	Tracing for 2WSS-500279-4/2WSS-500278-4		107-46		C	C	10/2/86	
PNL-HTS107	Tracing for 2WSS-150201-4		107-47		C	C	10/2/86	
PNL-HTS107	Tracing for 2WSS-500215-4		107-48		C	C	10/2/86	
PNL-HTS107	Tracing for 2WSS-750224-4/2WSS-750225-4		107-49		C	C	10/2/86	

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210101	Waste Sludge Tank Level High		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSSLC001	TK8 Level High	LS101	IL2WSS-054
210102	Transfer Pump P11 Low Suction		ED. GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10043 WSSFC001	P11 Suction Flow Low	FS107	IL2WSS-060
210103	Waste Sludge Feed pH HiHi/LoLo		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10076 WSS10077 WSS10110 WSSAC001	pH HIGH/LOW	AS105	IL2WSS-058
210104	Waste Conc. Recirc. Line Disc. Press Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00008	Press High	PS368	IL2WSS-018
210105	Waste Conc. Feed pH HiHi/LoLo		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSSAC002	pH High/Low	AS110	IL2WSS-062

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number

* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210106	Waste Sludge Tank Agitator Thermal Overload		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10071 WSSTC004	Thermal Overload	49X-2WSSN26	EE.GENE.006
210107	Sludge Transfer Pump		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10045 WSSPC002	Discharge Press. Low	PS108X	IL2WSS-043
210108	Sludge Transfer Pump Disch. Press. Hi		ED.GENE.007
Computer Point	Condition Alarm CRT Message	Actuating Device	
WSS10044 WSSPC003	Discharge Press. High	PS108Y	IL2WSS-045
210109	Sludge Metering Feed Flow Low/High		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00013 WSSFC004	Sludge metering pump feed flow High/Low	FS200	IL2WSS097
210110	Waste Concentrate Trans. Pump Suct. Flow Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10039 WSSFC005	Waste Conc. Transfer Pump P6 Flow Low	FS111	IL2WSS-023

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number

* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210111	Waste Conc. Feed Flow High/Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10103 WSS10104 WSSFC006	Waste Conc. Feed Flow High/Low	FS201	IL2WSS-098
210112	Waste Transfer Pump Thermal Overload		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
2WSS00016	Thermal Overload:		
2WSSTC003	Pump 2WSS-P6	49X-2WSS-N25	EE.GENE.006
2WSSTC006	Pump 2WSS-P11	49X-2WSS-N28	EE.GENE.006
2WSSTC017	Pump 2WSS-P7A	49X-2WSS-A30	EE.GENE.006
2WSSTC018	Pump 2WSS-P7B	49X-2WSS-B30	EE.GENE.006
2WSSTC019	Pump 2WSS-P12A	49X-2WSS-A31	EE.GENE.006
2WSSTC020	Pump 2WSS-P12B	49X-2WSS-B31	EE.GENE.006
210113	Waste Sludge Tk Level Hi-Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00017 WSSLC002	Waste Sludge TK8 Level High/High	LS102	IL2WSS-055

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number

* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210114	Waste Sludge Tran. Pump Seal Water Flow Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10806	Seal Wtr. Flow Low	2SWR-FS119	IL2SWR-017
210115	Waste Sludge Feed pH High/Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS02019 WSSAC001	High/Low pH	AS105	IL2WSS-058
210116	Waste Sludge Transfer Pump Seal Press. Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10301	Seal Water Press. Low	2SWR-PS106	IL2SWR-034
210117	Waste Conc. Feed pH High/Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00020 WSSAC002	pH High/Low	AS110	IL2WSS-062
210118	Waste Conc. Seal Water Pressure Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10300	Low Pressure	2SWR-PS106	IL2SWR-034

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number

* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210119	Decant. Pump P10 Flow Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10017 WSSFC007	Suct. Low Flow	FS106	IL2WSS-059
210120	Waste Sludge Metering Pump 12A/12B High RPM		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00024 WSSSC001	High RPM	2WSS-SSHP12A/B	EE.GENE.006 JM 9/30/86
210121	Waste Conc. 7A/7B Pump Hi RPM		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00025 WSSSC003	High RPM	2WSS-SSHP7A/B	EE.GENE.006 JM 9/30/86
210122	Pump 12B Seal Water Low Flow		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10308	Low Flow	2SWR-FS11B	IL2SWR-019
210123	PC Low Battery		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00027	PC Battery Low		EE.GENE.006

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number

* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description (Name)		Checkout Procedure (Note 1)
210124	PC Interface Communication Failure		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00028	P.C. Interface Communication Failure		EE.GENE.006
210201	Asphalt Tank 2 Temp. Hi/Lo		ED.GENE.007
Computer Point	Condition Alarm CRT Message	Actuating Device	
WSS00069	Tank Temp. Hi/Lo	TS114	IL2WSS-065
210202	Asphalt Recirc. Strainer Diff. Press Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10184	Recirc. Strainer Diff. Press Hi.	PDIS116	IL2WSS-067
210203	E/E System Malfunction		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00071			
WSSLC009	Lube oil pumps stopped	LS163, TS165	IL2WSS-086, 124
WSSFC008	Asphalt metering pumps stopped	FS202	IL2WSS-099
WSSTC022/023	Barrel Temp Hi/Lo	TS136-142	IL2WSS-069-074
WSSLC005/006/007	Hi Dome level	LS144,145,146	IL2WSS-076,077,078
WSSIC001/002	Hi torque	IS135	IL2WSS-068
WSSSC007	Hi R.P.M.	IR135	IL2WSS-068
WSS00091	Low Speed	EXSS135	IL2WSS-068
HVWFC001	Air flow abnormal	HVWFS145	IL2HVW-018
WSSRC001/002	High radiation	RE207/208	IL2WSS-135/136

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description	Checkout Procedure (Note 1)
210204	Asphalt Recirc. Line Thermal Relief	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00072	Hi Press Asphalt Recirc. Line	PS28 A/B	IL2WSS-003/004
		PS30 A/B	IL2WSS-005/006
		PS32 A/B	IL2WSS-007/008

Location/ Number	Description	Checkout Procedure (Note 1)
210205	E/E Barrel Temp. Hi	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10211	Barrel Section #1 Temp Hi	TS136	IL2WSS-069
WSS10213	Barrel Section #2 Temp Hi	TS137	IL2WSS-070
WSS10215	Barrel Section #3 Temp Hi	TS138	IL2WSS-071
WSS10217	Barrel Section #4 Temp Hi	TS139	IL2WSS-072
WSS10218	Barrel Section #6 Temp Hi	TS141	IL2WSS-073
WSS10220	Barrel Section #7 Temp Hi	TS142	IL2WSS-074
[WSSTC022 common for all barrels]			

Location/ Number	Description	Checkout Procedure (Note 1)
210206	Extruder Dome #3 Hi Level	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00074 WSSLC005	Dome #3 Hi Level	LS144	IL2WSS-076

Location/ Number	Description	Checkout Procedure (Note 1)
210207	Asphalt TK Level Hi/Lo	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00075 WSSLC008	Tk2 Hi/Low Level	LS115	IL2WSS-066

Location/ Number	Description	Checkout Procedure (Note 1)
210208	Asphalt Metering Pump 5A/B High/Low Flow	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS100182 WSS100183 WSSFC008	Asphalt Metering Pump Hi/Lo Flow	FS202	IL2WSS-099

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description	Checkout Procedure (Note 1)
210210 ED.GENE.007	E/E Drive Torque Greater Than 50% High	

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00078	E/E Drive Torque 50%	IS135	IL2WSS-068
WSSIC001			

Location/ Number	Description	Checkout Procedure (Note 1)
210211	E/E Barrel Temp. Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10210	Barrel Section #1 Temp Lo	TS136	IL2WSS-069
WSS10212	Barrel Section #2 Temp Lo	TS137	IL2WSS-070
WSS10214	Barrel Section #3 Temp Lo	TS138	IL2WSS-071
WSS10216	Barrel Section #4 Temp Lo	TS139	IL2WSS-072
WSS10218	Barrel Section #6 Temp Lo	TS141	IL2WSS-073
WSS10220	Barrel Section #7 Temp Lo	TS142	IL2WSS-074

[WSSTC023 common for all points]

Location/ Number	Description	Checkout Procedure (Note 1)
210212	Extruder Dome #4 High Level	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00080	Dome #4 Level High	LS145	IL2WSS-077
WSSLC006			

Location/ Number	Description	Checkout Procedure (Note 1)
210213	Asphalt Recirc..Pump 3A Suction/Discharge Press.	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00081	Suct. Press Low	PS19A	IL2WSS-047
WSSPC006	Discharge Press. High	PS3A	IL2WSS-047
WSSPC007			

Location/ Number	Description	Checkout Procedure (Note 1)
210214	Asphalt Recirc. Pump 3A/B Thermal Overload	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10171	P3A Thermal Overload	49X-2WSSA25	EE.GENE.006
WSSTC001	P3B Thermal Overload	49X-2WSSB25	EE.GENE.006
WSSTC002			

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description	Checkout Procedure (Note 1)
210215	Asphalt Metering Pump High RPM	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10181 WSSSC005	P5A/B HI RPM	2WSS-SSHP5A/B	EE.GENE.006 ~~IL2WSS-~~ JM 9/30/86

Location/ Number	Description	Checkout Procedure (Note 1)
210216	E/E Torque 105%	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00084 WSSIC002	E/E Torque 105%	IS135	IL2WSS-063 JM 9/29/86

Location/ Number	Description	Checkout Procedure (Note 1)
210218	Extruder Dome #6 High Level	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00086 WSSLC007	Dome #6 High Level	LS146	IL2WSS-078

Location/ Number	Description	Checkout Procedure (Note 1)
210219	Asphalt Recirc. Pump 3B Suction/Discharge Press.	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10173 WSS10172 WSSPC008 WSSPC009	Low Suction Press High Discharge Press	PS19B PS3B	IL2WSS-048

Location/ Number	Description	Checkout Procedure (Note 1)
210220	Steam Dome Steam Supply Press. Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10222	Steam Dome Steam Supply Press Low	PS143	IL2WSS-075

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

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Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210221	Asphalt Steam Inlet Press. Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10316	Steam Inlet Press Low	PS112	IL2WSS-064
210222	Extruder High RPM		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00090 WSSSC007	Ext. High RPM	SSHX135	IL2WSS-046 9/29/86
210223	Extruder Screw Speed Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00091	Screw Speed 40 RPM	SSLX135	IL2WSS-068 9/29/86
210224	E/E Motor 25 Thermal Overload		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00092 WSSTC021	Thermal Overload	49X2WSSB25	EE.GENE.006
210301	Ventflow Air Flow Abnormal		
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10277 HVWFC001	Vent Air flow Abnormal	HVW-FS145	IL2HVW-018
210302	Lube Oil Return Temperature Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10223	Lube oil return High temp.	TS162	IL2WSS-085

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210303	Lube Oil Pressure Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10235 WSSPC001	Low Lube oil pressure	PS168	IL2WSS-088
210304	Annunciator Ground Fault		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10292	Annunciator Ground Fault		EE.GENE.006
210305	Distillate Cooler Return Flow Lo		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10249 WSSFC010	Low Dist. Flow	FS180	IL2WSS-091
210306	Drum Level High		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10275 B WSS10273 A WSSLC011	Hi Drum Level Alarm After a 15 Sec. Time Delay	LS23A/B	IL2WSS-051/052
210308	Lube Oil Flow Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10236 WSSFC001	Lube Oil Flow Low	FS167	IL2WSS-087
210309	Lube Oil TK 14 Low Level		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10230 WSSLC009	TK 14 Low Level	LS163	IL2WSS-086

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210310	Dist. TK Hi/Lo Level		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10245			
WSS10247	Level Dist. TK High	LS179	IL2WSS-090
WSSLC010	Level Dist. TK Low	LS179	IL2WSS-092
210311	Dist. Cooler Return Temperature Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00203	Hi Temp Dist. cooler outlet	TS181	IL2WSS-092
210312	Drum Level Hi Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00204 WSSLC011	Drum Level High High	LS23A/B	IL2WSS-050/051
210314	Lube Oil Sheath Temperature		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00206	Oil Hi Temp.	TS22A/B	IL2WSS-049/050
210315	Lube Oil Temperature Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00207	Lube Oil Temp Hi	TS165	IL2WSS-124
210316	Dist. Pump Disch. Press Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00208 WSSPC004	Low Discharge press. on dist. pump	PS188	IL2WSS-094

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210317	Turntable Thermal Overload		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10253 WSSDC001	Turntable Thermal Overload	ZS198	IL2WSS-143 JM 9/30/86
210318	Drip Pan Jammed		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10259	Drip Pan Jammed	ZS192	IL2WSS-084 JM 9/30/86
210320	Lube Oil Filter Diff. Press. High		ED.GENE.007
Computer Point	Alarm CRT Message	Actuating Device	
WSS00212	Lube Oil Filter Differential Pressure High	PDS170	IL2WSS-089
210321	Auxiliary Boiler Malfunction		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00213	Aux. Boiler Lo-Lo Level	LS222	IL2WSS-100
WSSLC012	Aux. Boiler Lo-Level	LS220/235	IL2WSS- /138
WSSPC005	Aux. Boiler High Press.	PS223	IL2WSS-096
WSSPC005	Aux. Boiler High-High Press.	PS223	IL2WSS-096
WSSLC013	Condensate Low Level	LS231	IL2WSS-137
	Aux. Boiler High Water	LS235	IL2WSS-138
WSSPC005	Aux. Boiler Lo Press.	PS226	IL2WSS-125
	Chem. Feed Low Level	LS389	IL2WSS-140
210322	Polishing Filter Diff. Press. High		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00214	High Differential Pressure	PDS187	IL2WSS-093
210323	Boilout TK 47 Level High/Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00213	Boilout TK Level Low	LS213	IL2WSS-061

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description	Checkout Procedure (Note 1)
210324	-Distillate Pumps 18A/B Thermal Overload -Lube Oil Pumps 13A/B Thermal Overload	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00216	Thermal Overload		
WSSTC007	2WSS-P13A	49X-2WSSA26	EE.GENE.006
WSSTC008	2WSS-P13B	49X-2WSSB26	EE.GENE.006
WSSTC009	2WSS-P18A	49X-2WSSA27	EE.GENE.006
WSSTC010	2WSS-P18B	49X-2WSSB27	EE.GENE.006

210401	Pump 12A Low Seal Water Flow	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00225	Low Seal Water Flow	2SWR-FS11A	IL2SWR-018

210402	P 6, 7A/B, 12A/B Seal Water Press. Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00226	Low Seal Water Pressure	2SWR-PS106	IL2SWR-034

210403	Evap. Bottom TK 10 Drain High Temperature	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00227	High Drain Temperature	TS322	IL2WSS-026

210404	Waste conc. Metering P7B Seal Water Flow Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00228	Seal Water Low Flow	2SWR-FS10B	IL2SWR-022

210405	Waste Conc Metering Line Press. High	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10335	Thermal Relief Discharge	PS26A/B	IL2WSS-001/002
WSS10336	Pressure High	PS370	IL2WSS-019

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

RECORD COPY

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210406	Asphalt Thermal Relief Open		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10341	Inlet to Asphalt TK	PS28A/B	IL2WSS-003/004
	Disch. of Asphalt Recirc. Pump	PS30A/B	IL2WSS-005/006
	Disch. of Asphalt Recirc. Pump Strainer	PS32A/B	IL2WSS-007/008
	Asphalt Metering PUmp Discharge	PS51A/B	IL2WSS-009/010
210407	Container Radiation Level Hi		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10349 WSSRC001	Container Radiation Level High	RE207 RE208	IL2WSS-135/136
210408	Fill Station Malfunction		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00232	Pan in place	ZS191	EE.GENE.006
	Pan not jammed	ZS192	EE.GENE.006
	Container Available	ZS194	EE.GENE.006
	Arm Retracted	ZS189	EE.GENE.006
WSSLC011	Drum Level High	LSHH23A/B	IL2WSS-050/051
210409	DC Drive Malfunction		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00233 WSSBC022	Extruder DC Drive Malfunction	SLA1R	EE.GENE.006
210403	Auxiliary Boiler Steam Press Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00237 WSSPC005	Aux. Boiler Steam Pressure Low	PS307	IL2WSS-011

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description		Checkout Procedure (Note 1)
210414	Asphalt Heating Steam Press. Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00238	Asphalt Heating Steam Pressure Low	PS112	IS2WSS-064
210415	Inst. Air To Fill Station Press Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00239	Fill Station Instrument Air Pressure Low	IAS-PS245	IL2IAS-047
210416	Cooling Water Press. Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00240	Cooling Water Pressure Low	2CCS-PS171	IL2CCS-028
210417	Cond. Feed Flush Water System Press. Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00241	Press Low on Cond. feed to flush water system	PS311	IL2WSS-012
210418	Clean Cond. Makeup Feed Press Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00242	Clean Cond. Make-up Feed Pressure Low	PS318	IL2SSS-013
210419	Seal Water Header Press Low		ED.GENE.007
Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00243	Seal Water Return Header Pressure Low	2SWR-PS106	IL2SWR-034

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Procedure Step 4.1.4.4

ANNUNCIATOR LIST

Location/ Number	Description	Checkout Procedure (Note 1)
210420	Waste Conc. Thermal Relief Open	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10342	Thermal relief Discharge Pressure High	PS362	IL2WSS-014
		PS363	IL2WSS-015
		PS366	IL2WSS-016
		PS368	IL2WSS-018

Location/ Number	Description	Checkout Procedure (Note 1)
210421	Flush Water Conc. Dist. Steam Dome Press Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS00088	Flush Water to Distillate Skid and Steam Dome Boilout Tank Pressure low	PS365	IL2WSS-044

Location/ Number	Description	Checkout Procedure (Note 1)
210422	Hot Flush Water Waste Conc. P7A/B Malfunction	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10527	HS304 must be "ON"		
	Flush water temp low	TS304	IL2WSS-034
WSS10322	Flush water temp. high	TS304	
WSS10323	Flush water flow low	FS304	IL2WSS-033

Location/ Number	Description	Checkout Procedure (Note 1)
210423	Hot Flushwater To Waste Conc. Recirc. Loop Piping	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
	HS305 must be "ON"		
WSS10324	Flush water temp. Low	TS305	IL2WSS-036
WSS10325	Flush water temp Hi	TS305	
WSS10326	Flush water flow Low	FS305	IL2WSS-035

Location/ Number	Description	Checkout Procedure (Note 1)
210424	Waste Conc. P7A Sealwater Flow Low	ED.GENE.007

Computer Point	Condition/Alarm CRT Message	Actuating Device	
WSS10327	Seal water to P7A low flow	2SWR-FS10A	IL2SWR-021

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number
* Indicates those that are verified in this procedure and which have their checkout complete.

Attachment 9.5
Page 1 of 8

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSAC001	W. Sludge Feed pH 2WSS-AIT105	IL2WSS-058
WSSAC002	W. Conc. Feed pH 2WSS-AIT110	IL2WSS-062
WSSBC001	Asphalt Recirc. P3A Status 42-2WSSA25	EE.GENE.006
WSSBC002	Asphalt Recirc. P3B Status 42-2WSSB25	EE.GENE.006
WSSBC003	W. Conc. Xfer Pmp. P6 Status 42-2WSSN25	EE.GENE.006
WSSBC004	W. Sludge TK Mx. 9 Status 42-2WSSN26	EE.GENE.006
WSSBC005	W. Sludge TK Dcnt. Pmp. 10 Status 42-2WSSN27	EE.GENE.006
WSSBC006	W. Sludge TK Xfer P11 Status 42-2WSSN28	EE.GENE.006
WSSBC007	Lube Oil Pmp. P13A Status W2-2WSSA26	EE.GENE.006
WSSBC008	Lube Oil Pmp. P13B Status 42-2WSSB26	EE.GENE.006
WSSBC009	Dist. Pump P18A Status 42-2WSSA27	EE.GENE.006

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the Computer Acceptance Test.

Attachment 9.5
Page 2 of 8

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSBC010	Dist. Pump P18B Status 42-2WSSB27	EE.GENE.006
WSSBC011	Turntable Motor CNV27 Status 42-2WSSN30	EE.GENE.006
WSSBC014	Cap & Swipe Motor CNV35 Status 42-2WSSN32	EE.GENE.006
WSSBC015	Asphalt Metering Pump P5A Status 72-2WSSA29	EE.GENE.006
WSSBC016	Asphalt Metering Pump P5B Status 72-2WSSB29	EE.GENE.006
WSSBC017	W. Conc. Metering Pump 7A Status 72-2WSSA30	EE.GENE.006
WSSBC018	W. Conc. Metering Pump P7B Status 72-2WSSB30	EE.GENE.006
WSSBC019	W. Sludge Metering Pump P12A Status 72-2WSSA31	EE.GENE.006
WSSBC020	W. Sludge Metering Pump P12B Status 72-2WSSB31	EE.GENE.006
WSSBC021	Extruder-Evaporator Motor EV25 Status 72-2WSSN31	EE.GENE.006
WSSBC022	Extruder-Evaporator DC Drive System SLA-1R	EE.GENE.006

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description (Name)	Calibration/Checkout Procedure (Note 1)
WSSDC001	Turntable Weight Overload 2WSS-ZS198	EE.GENE.006
WSSFC001	Waste Sludge Pump P11 Suction Flow 2WSS-FS107	IL2WSS-060
WSSFC004	Waste Sludge Pump P12A/B Disc. Flow 2WSS-FS200	IL2WSS-097
WSSFC005	Waste Conc. Xfer Pump 6 Suct. Flow 2WSS-FS111	IL2WSS-023
WSSFC006	Waste Conc. Xfer Pump P7A/B Disc. Flow 2WSS-FS201	IL2WSS-098
WSSFC007	Decant Pump P10 Suction Flow 2WSS-FS106	IL2WSS-059
WSSFC008	Asphalt Metering Pump P5A/5B Flow 2WSS-FS202	IL2WSS-099
WSSFC010	Extruder/Evap. Distillate Flow 2WSS-FS180	IL2WSS-091
WSSFC011	Extruder/Evap. Lube Oil Flow 2WSS-FS167	IL2WSS-087
WSSIC001	Extruder/Evap. Torque 2WSS-IS135	IL2WSS- 063 9/30/86

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Attachment 9.5
Page 4 of 8

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSIC002	Extruder/Evap. Torque 2WSS-IS135	IL2WSS-063 JM 9/30/86
WSSLC001	Waste Sludge TK 8 Level High 2WSS-LS101	IL2WSS-054
WSSLC002	Waste Sludge TK 8 Level High/High 2WSS-LS102	IL2WSS-055
WSSLC003	Waste Sludge TK 8 Level High 2WSS-LS101	IL2WSS-054
WSSLC005	Extruder/Evap. Dome #3 Level High 2WSS-LS144	IL2WSS-076
WSSLC006	Extruder/Evap. Dome #4 Level High 2WSS-LS145	IL2WSS-077
WSSLC007	Extruder/Evap. Dome #6 Level High 2WSS-LS146	IL2WSS-078
WSSLC008	Asphalt TK 2 Level Low 2WSS-LS115	IL2WSS-066
WSSLC009	Extruder/Evap. Lube Oil TK 14 Lvl. Low 2WSS-LS163	IL2WSS-086
WSSLC010	Extruder/Evap. Dist. TK 17 Lvl. Low 2WSS-LS181	IL2WSS-092
WSSLC011	Drum/Liner Level High 2WSS-LS23A/B	IL2WSS-051/052

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Attachment 9.5
Page 5 of 8

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSLC012	Aux. Boiler B24 Water Level Low CR2/CR3	EE.GENE.006
WSSLC013	Aux. Boiler Makeup TK 22 Lvl. Low CR5	EE.GENE.006
WSSPC001	Extruder/Evap. Lube Oil Press 2WSS-PS168	IL2WSS-088
WSSPC002	Waste Sludge Pump 11 Disch. Press Low 2WSS-PSX108	IL2WSS-043
WSSPC003	Waste Sludge Pump 11 Disch. Press High 2WSS-PSY108	IL2WSS-045
WSSPC004	Distillate Pump P18A/B Disch. Press Low 2WSS-PS188	IL2WSS-094
WSSPC005	Aux. Boiler B24 Press Low CR5	EE.GENE.006
~~WSSPC006~~	~~Asphalt Pump P3A Suction Press Low~~ ~~2WSS-PS19A~~ DELETED FRF N2-POT-41-1-1 9/11/86	~~IL2WSS-047~~
WSSPC007	Asphalt Pump P3A Disch. Press High 2WSS-PS3A	IL2WSS-047
~~WSSPC008~~	~~Asphalt Pump P3B Suction Press Low~~ ~~2WSS-P19B~~ DELETED FRF N2-POT-41-1-1 9/11/86	~~IL2WSS-048~~

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSPC009	Asphalt Pump P3B Disch. Press High 2WSS-PS3B	IL2WSS-048
WSSRC001	Extruder/Evap. Waste Sludge Feed Radiation High 2WSS-RE207	IL2WSS-135
WSSRC002	Extruder/Evaporator Waste Concentrate Feed Radiation High 2WSS-RE208	IL2WSS-136
WSSSC001	Waste Sludge Pump P12A/B RPM High 2WSS-SSHP12A/B	~~IL2WSS-~~ EE.GENE.006 9/30/86
WSSSC003	W. Conc. Pump P7A/B RPM High 2WSS-SSHP7A/B	~~IL2WSS-~~ EE.GENE.006 9/30/86
WSSSC005	Asphalt Pump P5A/B RPM High 2WSS-SSHP5A/B	~~IL2WSS-~~ EE.GENE.006 9/30/86
WSSSC007	EXTD/EVAP M25 RPM 2WSS-SS135	IL2WSS-068
WSSSC008	EXTD/EVAP M25 RPM 2WSS-SS135	IL2WSS-068
WSSTC001	Asphalt Recirc Pump 3A Overload 49X-2WSSA25	EE.GENE.006
WSSTC002	Asphalt Recirc. Pump 3B Overload 49X-2WSSB25	EE.GENE.006

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSTC003	Waste Conc. Xfer Pump. P6 Overload 49X-2WSSN25	EE.GENE.006
WSSTC004	Waste Sludge TK Mix 9 Motor Overload 49X-2WSSN26	EE.GENE.006
WSSTC005	Waste Sludge TK Decant Pump P10 Overload 49X-2WSSN27	EE.GENE.006
WSSTC006	Waste Sludge Xfer Pump 11 Overload 49X-2WSSN28	EE.GENE.006
WSSTC007	Lube Oil Pump P13A Overload 49X-2WSSA26	EE.GENE.006
WSSTC008	Lube Oil Pump 13B Overload 49X-2WSSB26	EE.GENE.006
WSSTC009	Distillate Pump P18A Overload 49X-2WSSA27	EE.GENE.006
WSSTC010	Distillate Pump P18B Overload 49X-2WSSB27	EE.GENE.006
WSSTC011	Container Turntable Motor CNV27 Overload 49X-2WSSN30	EE.GENE.006
WSSTC014	Cap & Swipe Motor CNV35 Overload 49X-2WSSN32	EE.GENE.006
WSSTC015	Asphalt Metering Pump P5A Overload 49X-2WSSA29	EE.GENE.006

NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

Attachment 9.5
Page 8 of 8

Procedure Step 4.1.4.5

COMPUTER POINT LIST

CP Ident. Number	Description	Calibration/Checkout Procedure (Note 1)
WSSTC016	Asphalt Metering Pump P5B Overload 49X-2WSSB29	EE.GENE.006
WSSTC017	Waste Conc. Metering Pump P7A Overload 49X-2WSSA30	EE.GENE.006
WSSTC018	Waste Conc. Metering Pump P7B Overload 49X-2WSSB30	EE.GENE.006
WSSTC019	Waste Sludge Metering Pump P12A Overload 49X-2WSSA31	EE.GENE.006
WSSTC020	Waste Sludge Metering Pump P12B Overload 49X-2WSSB31	EE.GENE.006
WSSTC021	Extruder/Evap. EV25 Motor Overload 49X-2WSSN31	EE.GENE.006
WSSTC022	Extruder/Evap. Barrel Temp. High 2WSS-TS136-142	IL2WSS-146
WSSTC023	Extruder/Evap. Barrel Temp. Low 2WSS-TS136-142	IL2WSS-146
WSSZC001	Air Operated valve, 2WSS-HV117, Closed 33-Ltr.	IL2WSS-127
WSSZC003	Air Operated Valve, 2WSS-HV118, Closed 33-Ltr.	IL2WSS-128
RMSRC079	Process Liquid Radiation Monitor Activated 2WSS-RE207/208	ILWSS-135/136

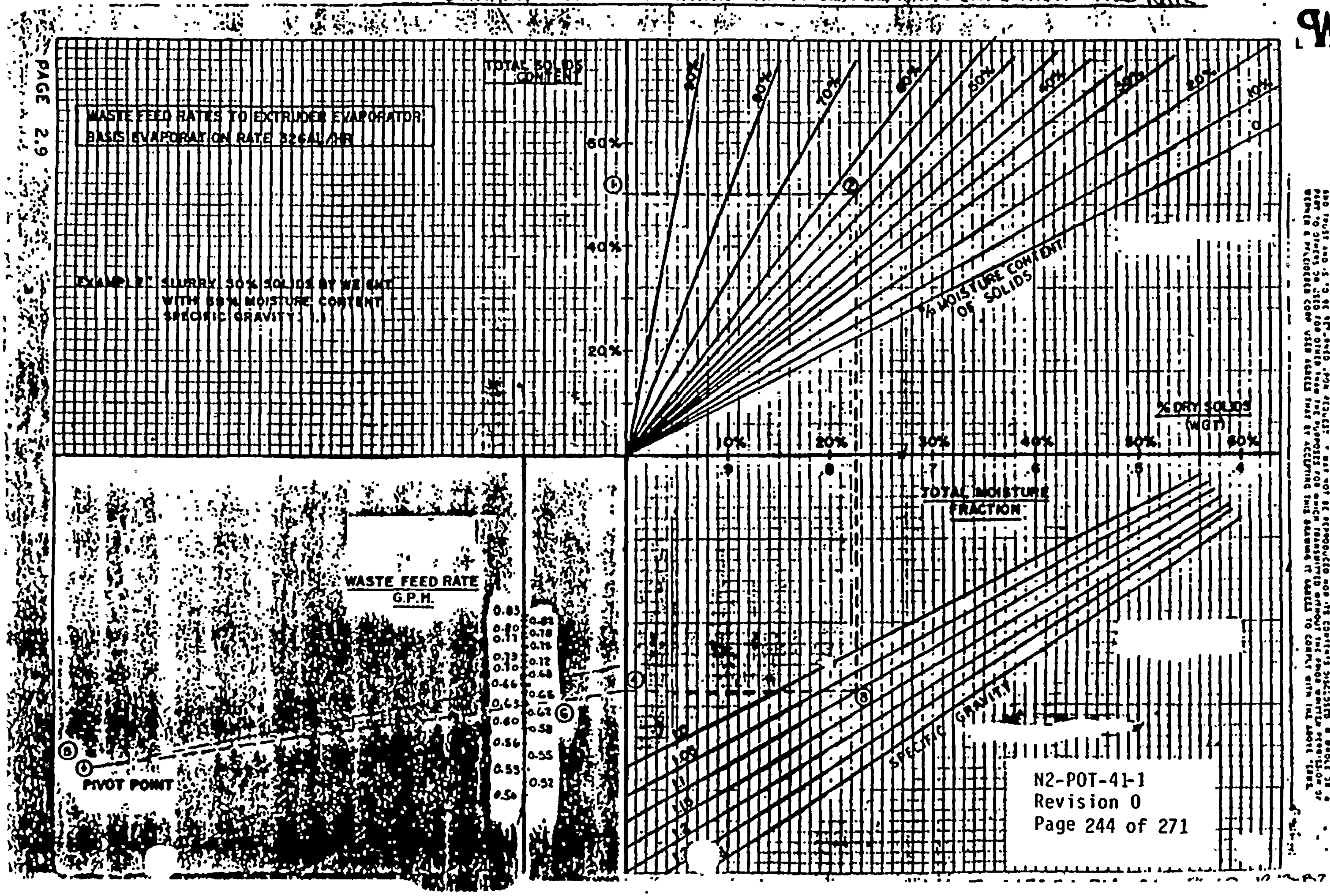
NOTE: 1 Record Generic Procedure or Loop Calibration Report Number.

* Indicates those points which are verified in this procedure and which must have their cal/checkout complete.

2 All computer points are tested by IE.GENE.031 and the computer acceptance test.

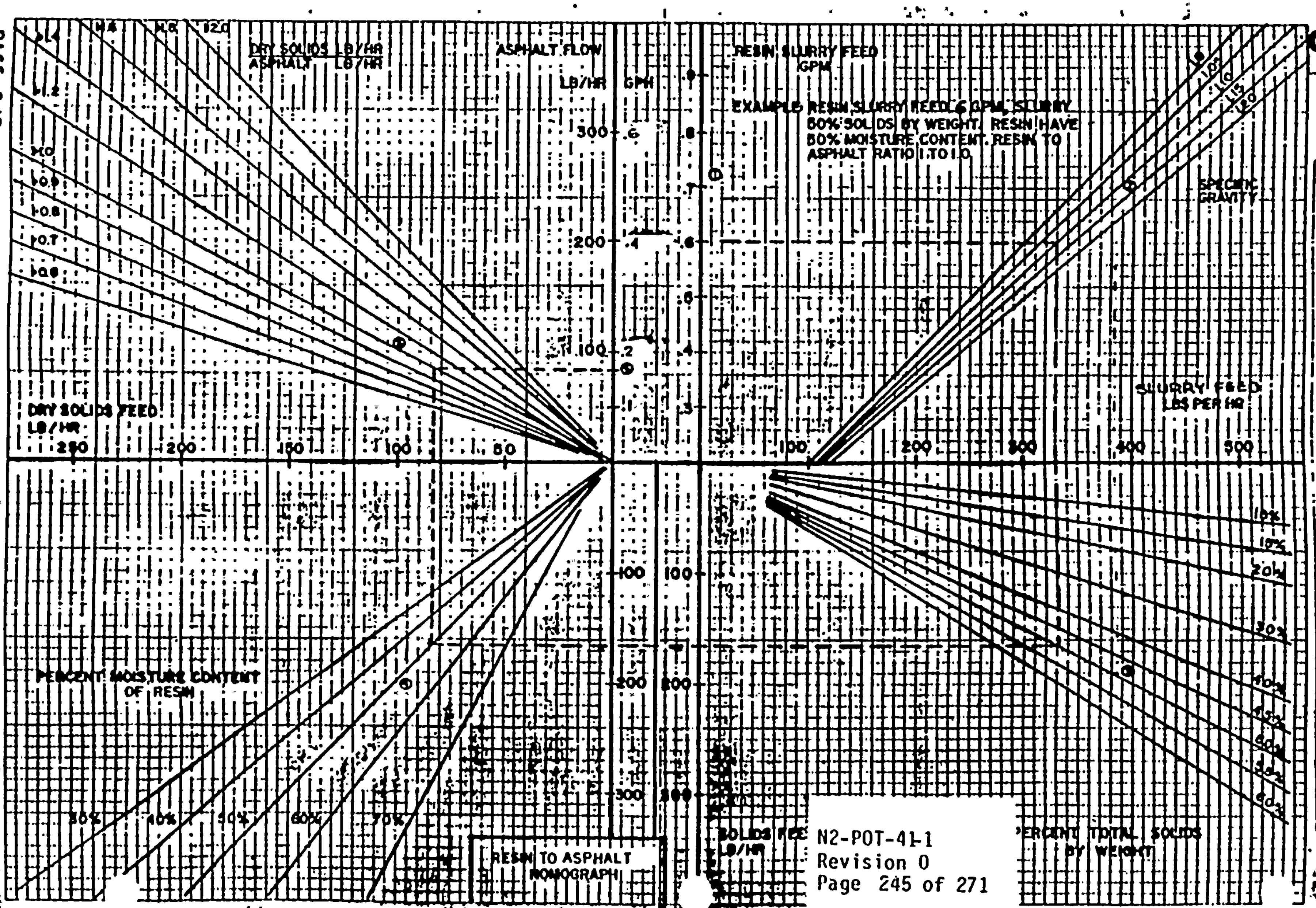
ATTACHMENT 9.6
PAGE 1 OF 3
PROCEDURE STEP 4.11.3 & 4.11.4

NOMOGRAPH FOR DETERMINING WASTE SLUDGE/WASTE CONCENTRATE FEED RATE



ATTACHMENT 9.6
PAGE 2 OF 3
PROCEDURE STEP 4.11.4

NOMOGRAPH FOR DETERMINING ASPHALT FLOW TO SOLIDIFY WASTE SLUDGE



EXAMPLE RESIN SLURRY FEED 6 GPM, SLURRY 50% SOLIDS BY WEIGHT. RESIN HAVE 50% MOISTURE CONTENT. RESIN TO ASPHALT RATIO 1.TO 1.0

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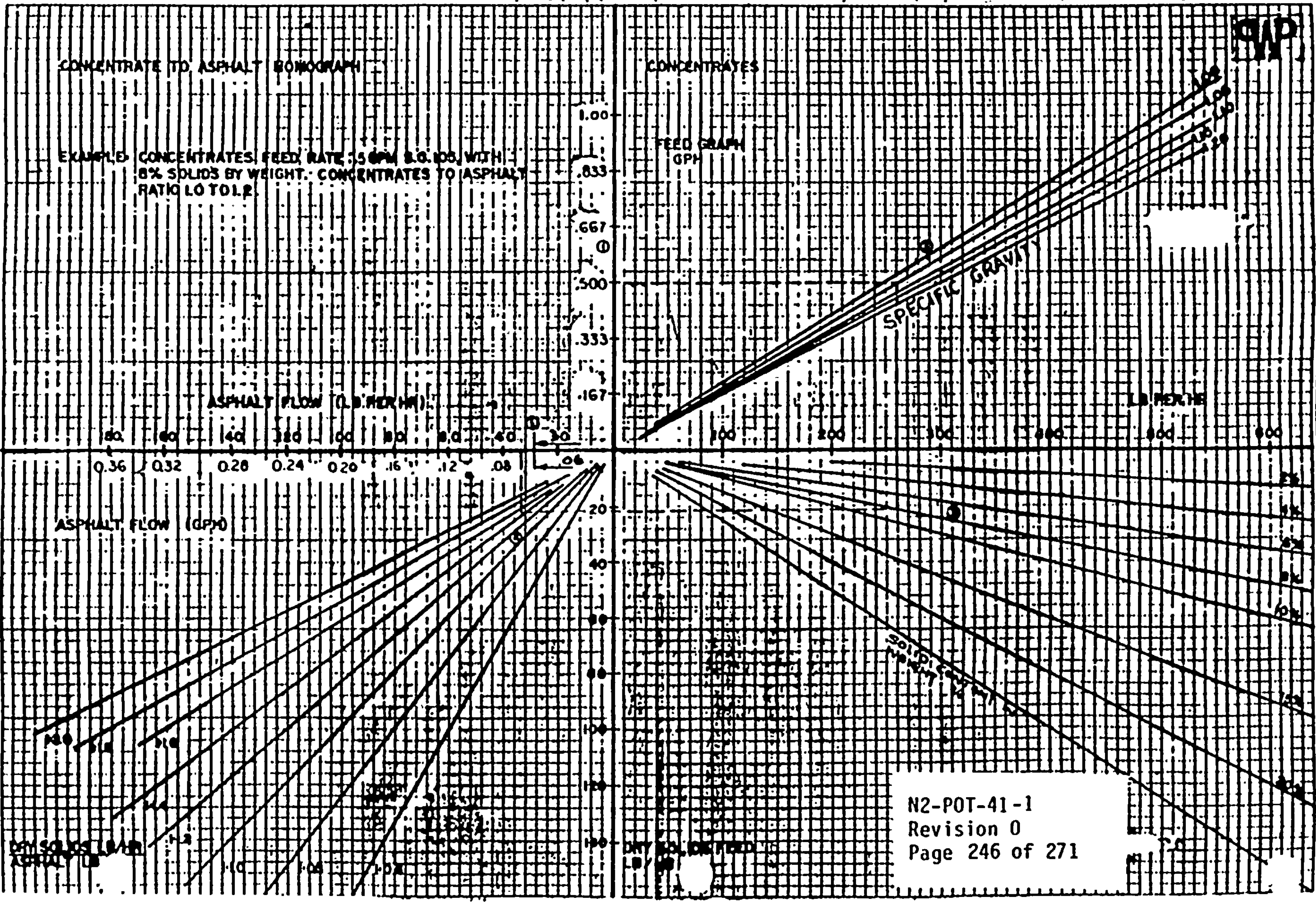
D-[illegible]-914-10A REV 0 12-13-82

ATTACHMENT 1.6
PAGE 3 OF 3
PROCEDURE STEP 4.11.4

NOMOGRAPH FOR DETERMINING ASPHALT FLOW TO SOLIDIFY WASTE CONCENTRATE

PAGE 2.11



EXAMPLE: CONCENTRATES FEED RATE .5 GPM S.G. 1.05, WITH 8% SOLIDS BY WEIGHT. CONCENTRATES TO ASPHALT RATIO 1.0 TO 1.2.

PROPRIETARY NOTICE
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Attachment 9.7

Page 1 of

TEMPORARY MODIFICATIONS

Procedure Step	Instr. No.	Instructions	Initial/Date
	NONE		

Attachment 9.8

Page 1 of ____

SIGNATURE/INITIALS SHEET

PRINTED NAME	SIGNATURE	INITIALS
HERB D. MOTTER		
James G. Poindexter		JGP
Bradley A. Woodland		BAW
WILLIAM A. SCHOLTENS	William A. Scholten	WAS
Lewis C. Biehle	Lewis C Biehle	LCB
MARK F. REINDERS		
DAle A. McCullough	Dal A. McCllf	DAM

Attachment 9.9
Page 1 of 3

SYSTEM DEFICIENCY LIST

SEE ATTACHED PRINTOUT 10/6/86

System BIP . . 041.001
Test Folder No. C41 C01 T

SYSTEM TEST MATRIX

Prepared By: HERB D. MCTEZ
Approved By: 4-30-86

(WASTE SOLIDIFICATION) System
MECHANICAL

Page 1 of 2

TEST PROCEDURE TITLE/NO.		N2 GEN. 01A CENTRIFUGAL PUMPS	N2. GEN. 01B POSITIVE DISPLACEMENT PUMPS	N2. C41 002 FLUSH	N2. 0G40.001 TANK VOLUMES																		
EQUIPMENT NAME	EQUIPMENT MARK NO.																						
ASPHALT RECIRC PUMP	2WS5-P3A		O																				
ASPHALT RECIRC PUMP	2WS5-P3B		O																				
ASPHALT METERING PUMP	2WS5-P5A		O																				
ASPHALT METERING PUMP	2WS5 P5B		O																				
WASTE CONCENTRATES TRANSFER PUMP	2WS5-P6	O																					
WASTE CONCENTRATES METERING PUMP	2WS5 P7A		O																				
WASTE CONCENTRATES METERING PUMP	2WS5-P7B		O																				
WASTE SLUDGE DECANT PUMP	2WS5-P10		O																				
WASTE SLUDGE TRANSFER PUMP	2WS5-P11		O																				
WASTE SLUDGE METERING PUMP	2WS5-P12A		O																				
WASTE SLUDGE METERING PUMP	2WS5-P12B		O																				
LUBE OIL PUMP	2WS5-P13A		O																				
LUBE OIL PUMP	2WS5 P13B		O																				
DISTILLATE PUMP	2WS5-P15A	O																					

System BIP # 041.001
Test Folder No. 041 001 T

SYSTEM TEST MATRIX

Prepared By: Hugh D. Mctter
Approved By: 4-30-86

WASTE SOLIDIFICATION System
MECHANICAL

Page 2 of 2

TEST PROCEDURE TITLE/NO.																					
EQUIPMENT NAME	EQUIPMENT MARK NO.	MD GENE. 019 CENTRIFUGAL PUMPS	MD GENE. 018 POSITIVE DISPLACEMENT PUMPS	MP 0041.002 FLUSH	MD 0041.001 TANK VOLUMES																
BOILER FEED PUMP	2WSS-P23A	O																			
CHEMICAL FEED PUMP	2WSS-P43		O																		
WSS PIPING SYSTEM	41.001			O																	
WASTE SLUDGE TANK	2WSS TK5				O																
EVAPORATOR BOTTOMS TANK	2LWS TK10				O																

Attachment 9.10

Syst. SP No. 041.001

Test Folder 041.0016

Page 1-7

SYSTEM NO. TITLE

SOLID RADWASTE

Prepared By:

Approved By:

Test Procedure Title/No. LOOP CALIBRATION REPORT N2 -	IE GENE 002 Gen Loop/Instr	IE GENE 004 Analyzers	IE GENE 005 Controllers	IE GENE 006 Converters	IE GENE 007 Elements	IE GENE 008 Indicators	IE GENE 010 Recorders	IE GENE 013 Switches	IE GENE 015 Totalizers	IE GENE 016 Transmitters	IE GENE 017 Valves	IE GENE 030 Program Cntrlr	IX GENE 040 Computer Data Base	IE GENE 101 Rosemount Xmtrs	IE GENE 149 United Elec T/S	IE GENE 151 Ashcroft PS	IE GENE 153 Magnetrol LS							Loop Cal Date	Duration (Month)
WSS-001 (PS26A)	0											0				0									
WSS-002 (PS26B)	0											0				0									
WSS-003 (PS28A)	0											0				0									
WSS-004 (PS28B)	0											0				0									
WSS-005 (PS30A)	0											0				0									
WSS-006 (PS30B)	0											0				0									
WSS-007 (PS32A)	0											0				0									
WSS-008 (PS32B)	0											0				0									
WSS-009 (PS51A)	0											0				0									
WSS-010 (PS51B)	0											0				0									
WSS-011 (PS307)	0											0				0									
WSS-012 (PS311)	0											0				0									
WSS-013 (PS318)	0											0				0									
WSS-014 (PS362)	0											0				0									
WSS-015 (PS363)	0											0				0									
WSS-016 (PS366)	0											0				0									
WSS-017 (PS367)	0											0				0									
WSS-018 (PS368)	0											0				0									
WSS-019 (PS370)	0											0				0									
WSS-020 (PS388)	0											0				0									
WSS-021 (HV2A)	0										0	0													

[0] REQUIRED

⊠ COMPLETED

System No. 041-001

Test Folder No. 041-0016

Page 2 -

SYSTEM TEST MATRIX

SOLID RADWASTE

Approved By: 11/25/83

Test Procedure Title/No. LOOP CALIBRATION REPORT ILZ -	IE GENE 002 Gen Loop Instr	IE GENE 004 Analyzers	IE GENE 005 Controllers	IE GENE 006 Converters	IE GENE 007 Elements	IE GENE 008 Indicators	IE GENE 010 Recorders	IE GENE 013 Switches	IE GENE 015 Totalizers	IE GENE 016 Transmitters	IE GENE 017 Valves	IE GENE 030 Program Cntrl	IX GENE 040 Computer Data Base	IE GENE 121 Rosemount Xmtrs	IE GENE 144 United Elec TIS	IE GENE 151 Ashcroft PS	IE GENE 153 Magnetrol LS							Loop Cal Date	Duration (Months)
WSS-022 (HV28)	0										0	0													
WSS-023 (FS111)	0							0				0													
WSS-024 (PT303)	0					0								0											
WSS-025 (PT323)	0												0	0											
WSS-026 (TIS322)	0											0			0										
WSS-030 (HV350)	0										0	0													
WSS-031 (HV360)	0										0	0													
WSS-032 (HV364)	0										0	0													
WSS-033 (FS304)	0							0				0													
WSS-034 (TIS304)	0											0			0										
WSS-035 (FS305)	0							0				0													
WSS-036 (TIS305)	0											0			0										
WSS-037 (AOV351)	0										0	0													
WSS-038 (AOV352)	0										0	0													
WSS-039 (AOV353)	0										0	0													
WSS-040 (AOV354)	0										0	0													
WSS-041 (AOV356)	0										0	0													
WSS-042 (AOV358)	0										0	0													
WSS-043 (PSX108)	0											0	0			0									
WSS-044 (PS365)	0											0				0									
WSS-045 (PSY108)	0											0	0			0									

[0] REQUIRED   [☒] COMPLETED

Attachment 9.10

System No. 041-001

Test Folder No. 041.0016

Page 3 —

SYSTEM TEST MATRIX

SOLID RADWASTE

Prepared By:

Approved By:

PS19A/PS19B DELETED BY FRF N2-POT-41-1-1 9/11/86

Test Procedure Title/No. LOOP CALIBRATION REPORT ILZ -	IE GENE 002 Gen Loop Instr	IE GENE 004 Analyzers	IE GENE 005 Controllers	IE GENE 006 Converters	IE GENE 007 Elements	IE GENE 008 Indicators	IE GENE 010 Recorders	IE GENE 013 Switches	IE GENE 015 Totalizers	IE GENE 016 Transmitters	IE GENE 017 Valves	IE GENE 030 Program Cntrlr	IX GENE 040 Computer Data Base	IE GENE 101 Rosemount Xmtrs	IE GENE 149 United Elec TIS	IE GENE 151 Ashcroft PS	IE GENE 153 Magnetrol LS							Loop Cal Date	Duration (Hrs/Mins)
WSS-046 (SSLY 135)	O							O				O													
WSS-047 (PS3A/~~4A~~)	O											O	O			O									
WSS-048 (PS3B/~~4B~~)	O											O	O			O									
WSS-049 (TSH 22A)	O				O			O				O													
WSS-050 (TSH 22B)	O				O			O				O													
WSS-051 (LT 23A)	O					O		O		O		O	O												
WSS-052 (LT 23B)	O					O		O		O		O	O												
WSS-053 (FIT 100)	O							O	O	O		O	O												
WSS-054 (LT 101)	O					O		O		O		O	O												
WSS-055 (LSH 102)	O							O				O	O												
WSS-056 (FIT 103)	O									O		O	O												
WSS-057 (FT 104)	O							O		O		O													
WSS-058 (AIT 105)	O	O					O	O				O	O												
WSS-059 (FSL 106)	O							O				O	O												
WSS-060 (FSL 107)	O							O				O	O												
WSS-061 (LSX/Y 213)	O							O				O													
WSS-062 (AIT 110)	O	O					O	O				O	O												
WSS-063 (IT 135)	O			O			O					O	O												
WSS-064 (PSL 112)	O											O				O									
WSS-065 (TE 114)	O				O	O		O				O													
WSS-066 (LT 115)	O					O		O		O		O	O												

[0] REQUIRED ☒ COMPLETED

Attachment 9.10

System BIP 041-001

Test Folder No. 041-0016

Page 4 -

SYSTEM TEST MATRIX

SOLID RADWASTE

Prepared By: H Bess... 1-2?-85

Approved By: [illegible] 10/?/85

Test Procedure Title/No. LOOP CALIBRATION REPORT ILZ -	IE GENE 002 GEN LOOP INSTR	IE GENE 004 ANALYZERS	IE GENE 005 CONTROLLERS	IE GENE 006 CONVERTERS	IE GENE 007 ELEMENTS	IE GENE 008 INDICATORS	IE GENE 010 RECORDERS	IE GENE 013 SWITCHES	IE GENE 015 TOTALIZERS	IE GENE 016 TRANSMITTERS	IE GENE 017 VALVES	IE GENE 030 PROGRAM CNTRLR	IX GENE 040 COMPUTER DATA BASE	IE GENE 101 ROSEMOUNT XMTRS	IE GENE 149 UNITED ELEC TIS	IE GENE 151 ASHCROFT PS	IE GENE 153 MAINETROL LS							LOOP CAL DATE	DURATION (MONTHS)
WSS-067 (PDIS 116)	O							O				O													
WSS-068 (SC 135)	O			O			O	O				O	O												
WSS-069 (TIC 136)	O			O	O	O		O		O	O	O	O												
WSS-070 (TIC 137)	O		O	O	O			O		O	O	O	O												
WSS-071 (TIC 138)	O		O	O	O			O		O	O	O	O												
WSS-072 (TIC 139)	O		O	O	O			O		O	O	O	O												
WSS-073 (TIC 141)	O		O	O	O			O		O	O	O	O												
WSS-074 (TIC 142)	O			O	O	O		O		O	O	O	O												
WSS-075 (PSL 143)	O							O				O													
WSS-076 (LSH 144)	O							O				O	O												
WSS-077 (LSH 145)	O							O				O	O												
WSS-078 (LSH 146)	O							O				O	O												
WSS-079 (AOV 153)	O										O														
WSS-080 (AOV 154)	O										O														
WSS-081 (HV 4A)	O										O	O													
WSS-082 (HV 4B)	O										O	O													
WSS-083 (HV 203)	O										O	O													
WSS-084 (SOV 196)	O											O													
WSS-085 (TSH 162)	O				O			O				O													
WSS-086 (LSL 163)	O							O				O	O												
WSS-087 (FSL 167)	O							O				O	O												

[O] REQUIRED ☒ COMPLETED

Attachment 9.10

System BIP # 041-001
Test Folder No. 041-0016
Page 5-

SYSTEM TEST MATRIX

SOLID RADWASTE

Prepared By: U. Bue - 11/
Approved By: 11/28/85

Test Procedure Title/No. LOOP CALIBRATION REPORT ILZ -	IE GENE 002 Gen Loop Instr	IE GENE 004 Analyzers	IE GENE 005 Controllers	IE GENE 006 Converters	IE GENE 007 Elements	IE GENE 008 Indicators	IE GENE 010 Recorders	IE GENE 013 Switches	IE GENE 015 Totalizers	IE GENE 016 Transmitters	IE GENE 017 Valves	IE GENE 030 Program Cntlr	IX GENE 040 Computer Data Base	IE GENE 101 Rosemount Xmtrs	IE GENE 149 United Elec T/S	IE GENE 151 Ashcroft PS	IE GENE 153 Magnetrol LS							Loop Cal Date	Duration (Mintr)
WSS-088 (PSL 168)	0							0				0	0												
WSS-089 (PDIS 170)	0							0				0													
WSS-090 (LT 174)	0		0	0				0		0	0	0	0												
WSS-091 (FIC 180)	0		0	0				0			0	0	0												
WSS-092 (TSH 181)	0							0				0													
WSS-093 (PDHS 187)	0							0				0													
WSS-094 (PSL 188)	0											0	0			0									
WSS-096 (PS223)	0							0				0	0												
WSS-097 (FT200)	0						0	0		0		0	0												
WSS-098 (FT201)	0						0	0		0		0	0												
WSS-099 (FT202)	0		0				0	0		0		0	0												
WSS-100 (LS222)	0							0				0	0												
WSS-101 (TIC 174)	0		0	0							0														
WSS-102 (HV 177)	0										0	0													
WSS-103 (SOV 128 X/Y)	0										0	0													
WSS-104 (HV 8A)	0										0	0													
WSS-105 (HV 8B)	0										0	0													
WSS-106 (HV 9A)	0										0	0													
WSS-107 (HV 9B)	0										0	0													
WSS-108 (HV 10A)	0										0	0													
WSS-109 (HV 10B)	0										0	0													

[0] REQUIRED ☒ COMPLETED

Attachment 9.10

System BIP # 041-001
Test Folder No. 041-0016
Page 6-

SYSTEM TEST MATRIX

SOLID RADWASTE

Prepared By: H. [illegible] 11/2?/82
Approved By: [illegible] 11/20/82

Test Procedure Title/No. LOOP CALIBRATION REPORT IL2 -	IE GENE 002 GEN LOOP INSTR	IE GENE 004 ANALYZERS	IE GENE 005 CONTROLLERS	IE GENE 006 CONVERTERS	IE GENE 007 ELEMENTS	IE GENE 008 INDICATORS	IE GENE 010 RECORDERS	IE GENE 013 SWITCHES	IE GENE 015 TOTALIZERS	IE GENE 016 TRANSMITTERS	IE GENE 017 VALVES	IE GENE 030 PROGRAM CNTRLR	IX GENE 040 COMPUTER DATA BASE	IE GENE 101 RECESMOUNT XMTRS	IE GENE 144 UNITED ELEC TSS	IE GENE 151 ASHCROFT PS	IE GENE 153 MAGNETROL LS							LOOP CAL DATE	DURATION (MINUTES)
WSS-110 (HV11A)	O										O	O													
WSS-111 (HV11B)	O										O	O													
WSS-112 (HV12A)	O										O	O													
WSS-113 (HV12B)	O										O	O													
WSS-114 (HV13A)	O										O	O													
WSS-115 (HV13B)	O										O	O													
WSS-116 (HV14A)	O										O	O													
WSS-117 (HV14B)	O										O	O													
WSS-118 (HV129)	O										O	O													
WSS-119 (HV130)	O										O	O													
WSS-120 (HV131)	O										O	O													
WSS-121 (HV204)	O										O	O													
WSS-122 (HV217)	O										O	O													
WSS-123 (HV218)	O										O	O													
WSS-124 (TE165)	O				O			O				O													
WSS-125 (PS226)	O							O				O													
WSS-126 (PS228)	O							O																	
WSS-127 (HV117)	O										O	O	O												
WSS-128 (HV118)	O										O	O	O												
WSS-129 (HV119)	O										O	O													
WSS-130 (HV124)	O										O	O													

[O] REQUIRED ☒ COMPLETED

Attachment 9.10

System No. 041.001

Test Folder No. 041.0016

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SYSTEM TEST MATRIX

SOLID RADWASTE

Prepared By:

Approved By: 1/18/85

Test Procedure Title/No. LOOP CALIBRATION REPORT IL2 -	IE GENE 002 Gen Loop Instr	IE GENE 004 Analyzers	IE GENE 005 Controllers	IE GENE 006 Converters	IE GENE 007 Elements	IE GENE 008 Indicators	IE GENE 010 Recorders	IE GENE 013 Switches	IE GENE 015 Totalizers	IE GENE 016 Transmitters	IE GENE 017 Valves	IE GENE 030 Program Cntrlr	IX GENE 040 Computer Data Base	IE GENE 101 Rosemount Xmtrs	IE GENE 144 United Elec TIS	IE GENE 151 Ashcroft PS	IE GENE 153 Magnetrol LS						Loop Cal Date	Duration (Months)
WSS- 131 (HV 125)	0										0	0												
WSS- 132 (HV 127)	0										0	0												
WSS- 133 (HV 121)	0										0	0												
WSS- 134 (HV 126)	0										0	0												
WSS- 137 (LS 231)	0							0				0	0											
WSS- 138 (LC 235)	0											0	0				0							
WSS- 139 (PC 225)	0		0																					
WSS- 140 (LS 389)	0							0				0												
WSS- 141 (TS 343)	0							0																
WSS- 143 (SOV 195)	0												0											
WSS- 146 TEY 136	0				0		0																	
WSS- 147 TEY 137	0				0		0																	
WSS- 148 TEY 138	0				0		0																	
WSS- 149 TEY 139	0				0		0																	
WSS- 150 TEY 140	0				0		0																	
WSS- 151 TEY 141	0				0		0																	
WSS- 152 TEY 142	0				0		0																	
WSS- 900A PI																								
WSS- 902A TI																								
WSS-																								
WSS-																								

COPY

[0] REQUIRED

☒ COMPLETED

achment 9.10

BIP No. 41.001

Folder No. 41.001 I

RECORD COPY

SYSTEM TEST MATRIX

PREPARED BY: Louis C Burlia

APPROVED BY: L.T. Hicks 2-17-

Test Procedure Title/No.		EE-GENE-006 Control Circuit Checkout													
Equipment Name	Equipment Mark No.														
Waste Sludge Control Valve Circuit	2WSSN37	0													
Waste Sludge Control Valve Circuit	2WSSN38	0													

BIP No. 41001

Folder No. ______

RECORD COPY

SYSTEM TEST MATRIX

PREPARED BY LEW- BIEHL

APPROVED BY E.T. Hicks 3-10-6

ADDITION TO 41.001 XO NT
ETH

Test Procedure Title/No.		CONTROL CIRCUIT TEST PROCEDURE EE-GEN-006	AC-DC MOTOR TEST PROCEDURE (ED.GEN-005)												
Equipment Name	**Equipment Mark No.**														
CAP/SWIPE STATION CONTROL CIRCUIT	2WSSN34	0													
WASTE SLUDGE METERING PUMP	2WSSP12A	0	0												
WASTE SLUDGE METERING PUMP	2WSS-P12B	0	0												
WASTE CONCENTRATE METERING PUMP	2WSS-P7A	0	0												
WASTE CONCENTRATE METERING PUMP	2WSS-P7B	0	0												
ASPHALT METERING PUMP	2WSS-P5A	0	0												
ASPHALT METERING PUMP	2WSS-P5B	0	0												

Attachment 9.10

PAGE 1

SYSTEM TEST MATRIX

[illegible] No. 41,000
Folder No. 41,001

PREPARED BY WAYNE [illegible]
APPROVED BY

RECORD COPY

Test Procedure TITLE/No.		EP, GENE.005 MOTORS AC & DC	EP, GENE.006 CONTROL CIRCUITS CHECKOUT												
Equipment Name	Equipment Mark No:														
ASPHALT RECIRC PUMP CONTROL CKT 2WSSA25	2WSS-P3A		O												
ASPHALT RECIRC PUMP MOTOR	2WSS-P3A	O													
ASPHALT RECIRC PUMP CONTROL CKT 2WSSB25	2WSS-P3B		O												
ASPHALT RECIRC PUMP MOTOR	2WSS-P3B	O													
WASTE CONCENTRATE TRANSFER PUMP CONTROL CKT 2WSSN25	2WSS-P6		O												
WASTE CONCENTRATE TRANSFER PUMP MOTOR	2WSS-P6	O													
WASTE SLUDGE TANK AGITATOR PUMP CONTROL 2WSSN26	2WSS-MIX9		O												
WASTE SLUDGE TANK AGITATOR [illegible] MOTOR	2WSS-MIX9	O													

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PAGE 2

SYSTEM TEST MATRIX

PREPARED BY WAYNE

APPROVED BY

stem BIP No. 41.000

t Folder No. 41.001

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Test Procedure Title/No.		ED. GENE. 005 MOTORS AC & DC	EE. GENE. 004 CONTROL CIRCUIT CHECKOUT												
Equipment Name	Equipment Mark No.														
WASTE SLUDGE DECANT PUMP CONTROL CKT 2WSSN27	2WSS-P10		0												
WASTE SLUDGE DECANT PUMP MOTOR	2WSS-P10	0													
WASTE SLUDGE TRANSFER PUMP CONTROL CKT 2WSSN28	2WSS-P11		0												
WASTE SLUDGE TRANSFER PUMP MOTOR	2WSS-P11	0													
LUBE OIL PUMP CONTROL CKT 2WSSA26	2WSS-P13A		0												
LUBE OIL PUMP MOTOR	2WSS-P13A	0													
LUBE OIL PUMP CONTROL CKT 2WSSB26	2WSS-P13B		0												
LUBE OIL PUMP MOTOR	2WSS-P13B	0													

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SYSTEM TEST MATRIX

System BIP No. 41.000

Test Folder No. 41.001

Date

RECORD COPY

PREPARED BY WAYNE SON

APPROVED BY

Test Procedure Title/No.		ED. GENE.005 MOTORS AC & DC	EE. GENE.006 CONTACT CIRCUIT CHECKOUT	EG. GENE.030 MEGGERING & WINDING [illegible]	FOR ELECTRIC HEATERS										
Equipment Name	Equipment Mark No.														
Lube oil Heaters control CKT 2WSSN24	2WSS-H34A AND 2WSS-H34B		O												
Lube oil Heaters	2WSS-H34A AND 2WSS-H34B			O											
[illegible]															
Distillate pump control CKT 2WSSA27	2WSS-P18A		O												
Distillate pump Motor	2WSS-P18A	O													
Distillate pump control CKT 2WSSB27	2WSS-P18B		O												
Distillate pump Motor	2WSS-P18B	O													

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SYSTEM TEST MATRIX

RECORD COPY

tem BIP No. .41.000

t Folder No. 41.00

ge

PREPARED BY Wayne Wil.

APPROVED BY

Test Procedure Title/No.		ED GENE.009 Molded Case Ckt Bkrs and Cont	ED.. GENE.005 MOTORS AC & DC	EE. GENE.006 CONTROL CIRCUIT CHECKOUT											
Equipment Name	Equipment Mark No:														
~~TURNABLE MOTOR TOWER~~															
TURNABLE MOTOR POWER SUPPLY 2NHS-MCC001 STACK 8F	2WSS-CNV27	O													
TURNABLE MOTOR	2WSS-CNV27		O												
TURNABLE MOTOR CONTROL CKT 2WSSN30	2WSS-CNV27			O											
CAP & SWIPE STATION TURNABLE CONTROL CKT 2WSSN32	2WSS-CNV 35			O											
CAP & SWIPE STATION TURNABLE MOTOR	2WSS-CNV35		O												
WASTE SLUDGE SAMPLING VALVE CONTROL CKT	2WSSN35			O											
WASTE CONCENTRATE SAMPLING VALVE CONTROL CKT	2WSSN36			O											

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WATTREL ...

System OIP No. 41,000

Test Folder No. 41.00

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SYSTEM TEST MATRIX

PREPARED BY

APPROVED BY

ge

Test Procedure Title/No.

Equipment Name	Equipment Mark No.	EE.GENE.025 Low-Voltage ACBC with Solid-State Trip Devices	ED.GEME.010 Electrical Heat Tracing	ED.GEME.004 Molded Case Circuit Breakers and Contactor Starters	EE.GSME.010 Power Transformers										
Power Feed XFMR to Extended Generator Panel	2WSS-XD25				O										
2WSS PNL 219															
Power Feed XFMR to Heat Trace Panel 2HTS PNL107	2HTS-XD107				O										
Heat Trace Panel for [illegible]	2HTS PNL107		O												
Power Feed for 2WSS-PNL219	2NHS MCC001 Stack 12AL			O											
Power Feed [illegible] for 2WSS XD25 2NJS-US1 Cubicle 10D	2WSS-XD25	O													
Power Feed Supply for Heat Trace at 2NHS MCC001 12AR	~~2HTS PNL107~~ 2HTS PNL107			O											

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System OIP No. 41.000

Test Folder No 41.001

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SYSTEM TEST MATRIX

PREPARED BY WAYNE WILSOr

APPROVED BY

Test Procedure Title/No.		EE. GENE.005 LOW VOLTAGE ACBS WITH SOLID STATE TRIP DEVICES,	EE. GENE.010 POWER TRANSFORMERS	EE. GENE.009 MOLDED CASE CIRCUIT BREAKERS AND CONTACTOR STARTERS	ED. GENE.006 CONTROL CIRCUIT CHECKOUT										
Equipment Name	Equipment Mark No.														
[illegible] Feed Breaker [illegible] 2WSS MCY PT 2NJS-US1 CUBICLE 11A	2WSS-B24	0													
[illegible] Feed Breaker [illegible] Panel 2WSS-PNL210	2LAN-PNL 900 Breaker 25-27			0											
Main Feed XFMR or 2WSS-XD210	2WSS-XD21C		0												
Valve Indication Control Scheme CKT 2WSSN06	2WSS-IPNL210				0										
Valve Indication Control Scheme CKT 2WSSN07	2WSS-IPNL210				0										

Attac'ment 9.10

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SYSTEM TEST MATRIX

[illegible] BIP No. 41,000

[illegible] Folder No. 41,00

RECORD COPY

WAYNE WILSON
PREPARED BY ________ ________

APPROVED BY ________ ____/____

Test Procedure TITLE/No.		SE, GENE ,006 CONTROL CIRCUIT (CHECKOUT)													
Equipment Name	Equipment Mark No.														
LVE INDICATION ONTROL SCHEME CKT 2WSSN08	2WSSIPNL 21	0													
ALVE INDICATI ONTROL SCHEME CKT 2WSSN10	2WSSIPNL210	0													
ALVE CONTROL AT SCHEME CKT 2WSSN13	2WSSIPNL210	0													
VALVE CONTROL KT SCHEME KT 2WSSN14	2WSSIPNL 210	0													
ALVE CONTROL KT SCHEME KT 2WSSN15	2WSSIPNL210	0													

At hment 9.10

TP No. 41.002
Doc No. 41.001

SYSTEM TEST MATRIX

PREPARED BY Wayne Wilson
APPROVED BY

Procedure TITLE/NO.		(ED. FUNC.009) MOLDED CASE CKT BREAKERS AND CONTACTOR STARTERS															
ipment No	Equipment Mark No.																
ALT RECIRC P SMCC001 #3F	2WSS-P3A	0															
ALT Recirc P SMCC001 #17F	2WSS-P3B	0															
TR CONCENTRATE NSFER PUMP SMCC001 #10D	2WSS-P6	0															
R SLUDGE X AGITATOR SMCC001 #NC	2WSS-MIX9	0															
R SLUDGE ANT PUMP SMCC001 #UA	2WSS-P10	0															
R SLUDGE SFER PUMP SMCC001 #10F	2WSS-P11	0															
oil pump SMCC001 #YC	2WSS-P13A	0															
oil pump NSMCC001 #16C	2WSS-P13B	0															
oil Heaters NSMCC001 #11B	2WSS-H3YA& H3YB	0															

Atta nent 9.10

IP No. 41.000
Ice No. 41.001

RECORD COPY
stem TEST MATRIX

PREPARED BY Wayne Wilson
APPROVED BY

Procedure Title/No.		(ED. FENE.000) MOLOCD CASE CKT BREAKERS AND CONTACTOR STARTERS												
ipment No	Equipment Mark No.													
T.IL ATE ~P MILOOI #YD	Z.WSS-P18A	0												
TIL ATE MILOOI D 16D	-ZWSS-P18B	0												
SWIPE on TUBAND 15 MILOOI #1RE	ZIWSS-CNUSS	0												

NO DO

Att ment 9.10

File No.: 41.000

Rev No. 41.001

RECORD COPY

SYSTEM TEST MATRIX

PREPARED BY Wayne Wilson

APPROVED BY

Procedure TITLE/NO.		(ED. GENE.008) MOLDED CASE CKT BREAKERS AND CONTACTOR STARTERS														
Equipment No.	Equipment Mark No.															
T.ILATE ~P SMILOOI #4D	Z.WSS-P18A	0														
.TILLATE pump .MILOOI #16D	2WSS-P18B	0														
ESWIPE [illegible] TURBINE 45 MILCOOI #1DC	ZWSS-CVUSS	0														

```
SEL: TEST  ......... 041.001  TO                                  TESTABLE I   LIST                                          NAME:    MTSTMRP  1
     TEST  ..E....... CAL INS                                     **********  ******                                         DATE:      10/0   5
SEQ: TEST BIP........ 1                                                                                                      TIME:     15:27.03
     TEST ITEM 1..... 2                                                                                                      PAGE:            1
     TEST ITEM 2..... 3
     TEST ITEM 3 .... 4
--------------------------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE            TEST      SYS   TEST-PROCEDURE          TYPE   TESTABLE ITEM          SCH-STRACT-CPLT    JOB-BOOK MS CAL FRQ  MODE
--------------------------------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-16-41-1        WSS  IE.GENE.016             LCR    IL2LWS-200            10/25/87  4/25/86              18 MO
                                                             INS    2LWS-LE161

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2LWS-200            10/25/87  4/25/86              18 MO
                                                             INS    2LWS-LIT161

041.001  CAL  IE-16-41-1        WSS  IE.GENE.016             LCR    IL2LWS-200            10/25/87  4/25/86              18 MO
                                                             INS    2LWS-LIT161

041.001  INS  IX-40-41-1        WSS  IX.GENE.040             LCR    IL2LWS-200                      4/25/86
                                                             INS    2LWS-LIT161
                                                                    LWSLA003

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2LWS-200            10/25/87  4/25/86              18 MO
                                                             INS    2LWS-LI161

041.001  CAL  IE-08-41-1        WSS  IE.GENE.008             LCR    IL2LWS-200            10/23/87  4/23/86              18 MO
                                                             INS    2LWS-LI161

041.001  INS  IX-40-41-1        WSS  IX.GENE.040             LCR    IL2LWS-215                      2/26/86
                                                             INS    2LSW-TE181
                                                                    LWSTA008

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2LWS-215             8/28/87  2/26/86              18 MO
                                                             INS    2LWS-TE181

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007             LCR    IL2LWS-215             9/26/87  3/27/86              18 MO
                                                             INS    2LWS-TE181

041.001  INS  IX-40-41-1        WSS  IX.GENE.040             LCR    IL2LWS-319                      2/26/86
                                                             INS    2LSW-TE317
                                                                    LWSTA009

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2LWS-319             8/29/87  2/27/86              18 MO
                                                             INS    2LWS-TE317

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007             LCR    IL2LWS-319             9/26/87  3/27/86              18 MO
                                                             INS    2LWS-TE317

041.001  INS  IX-40-41-1        WSS  IX.GENE.040             LCR    IL2LWS-320                      2/26/86
                                                             INS    2LSW-TE318
                                                                    LWSTA010

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2LWS-320             8/29/87  2/27/86              18 MO
                                                             INS    2LWS-TE318

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007             LCR    IL2LWS-320             9/26/87  3/27/86              18 MO
                                                             INS    2LWS-TE318

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002             LCR    IL2WSS-001                      5/15/86
                                                             INS    2WSS-FE264
```

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SEL: TEST  P........ 041.001  TO                              TESTABLE    M LIST                                     NAME:     MTSTMP  11
     TEST  PE....... CAL INS                                  *********  .******                                     DATE:       10/   6
SEQ: TEST BIP........ 1                                                                                              TIME:     15:27:03
     TEST ITEM 1..... 2                                                                                              PAGE:            2
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
------------------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST      SYS  TEST-PROCEDURE        TYPE  TESTABLE ITEM       SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
------------------------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-001               5/15/86
                                                            INS   2WSS-PS26A

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-002               5/15/86
                                                            INS   2WSS-PS26B

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-002               5/15/86
                                                            INS   2WSS-PS26B

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-003               5/26/86
                                                            INS   2WSS-PS28A

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-003               5/26/86
                                                            INS   2WSS-PS28A

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-004               6/14/86
                                                            INS   2WSS-PS28B

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-004               6/14/86
                                                            INS   2WSS-PS28B

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-005               6/14/86
                                                            INS   2WSS-PS30A

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-005               6/13/86
                                                            INS   2WSS-PS30A

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-006               5/25/86
                                                            INS   2WSS-PS30B

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-006               5/25/86
                                                            INS   2WSS-PS30B

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-007               5/26/86
                                                            INS   2WSS-PS32A

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-007               5/26/86
                                                            INS   2WSS-PS32A

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-008               5/25/86
                                                            INS   2WSS-PS32B

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-008               5/25/86
                                                            INS   2WSS-PS32B

041.001  CAL  IE-02-41-1         WSS  IE.GENE.002           LCR   IL2WSS-009               5/24/86
                                                            INS   2WSS-PS51A

041.001  CAL  IE-13-41-1         WSS  IE.GENE.013           LCR   IL2WSS-009               5/24/86
                                                            INS   2WSS-PS51A
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SEL: TEST   ᵖ........ 041.001  TO                    TESTABLE    4 LIST                               NAME:    MTSTMF  '1
     TEST ..PE....... CAL INS                        **********..*******                              DATE:      10/6  36
SEQ: TEST BIP........ 1                                                                               TIME:    . 15:27:03
     TEST ITEM 1..... 2                                                                               PAGE:             3
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST      SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-010
                                                           INS    2WSS-PS518                 5/24/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-010
                                                           INS    2WSS-PS518                 5/24/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-011
                                                           INS    2WSS-PS307                  8/28/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-011
                                                           INS    2WSS-PS307                 8/28/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-012
                                                           INS    2WSS-PS311                 5/16/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-012
                                                           INS    2WSS-PS311                 5/16/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-013
                                                           INS    2WSS-PS318                 3/20/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-013
                                                           INS    2WSS-PS318                 3/20/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-014
                                                           INS    2WSS-PS362                 5/20/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-014
                                                           INS    2WSS-PS362                 5/20/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-015
                                                           INS    2WSS-PS363                 5/20/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-015
                                                           INS    2WSS-PS363                 5/20/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-016
                                                           INS    2WSS-PS366                 4/21/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-016
                                                           INS    2WSS-PS366                 4/21/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-017
                                                           INS    2WSS-PS367                 5/16/86

041.001   CAL   IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-017
                                                           INS    2WSS-PS367                 5/16/86

041.001   CAL   IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-018
                                                           INS    2WSS-PS368                 7/3/86
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BIP# 041.001                SELECTED ITEMS BY - BIP # 001.000 THROUGH 109.000   TEST ENG WEEKLY             ATTACHMENT 9.9
                                                                                                                   PAGE 3 [illegible] 3
                                                    LAST       P.O.        RESTRAINT      PRI  SEC   RESP     SRI S-T-A[illegible]
SRINO   C[illegible]PE/NUMBER      DOCUMENT ID     SUB/CYC ACTV   [illegible]UMBER     MATERIAL       RESP RESP  INDIV    TYP CS PH [illegible]AI

                                   CREATED  EST COMP                                                 REST      REST REST    MLS PLC
PRIORITY SUBCOMPONENT               DATE.    DATE           DESCRIPTION                              ECD       ORG  IND

                REFTYPE  REFDOC                         REMARKS                                          RESTRAINTS
------------------------------------------------------------------------------------------------------------------------------------

                  REM                                VENDOR TO ADVISE IF IMPROVEMENT CAN BE
                  REM                                DONE ORDER REC'D IN PLANT 8/7/86

BZ4905  INST 2WSS-PSX108            DR  17448         00 .   082786  2  F26881     86-07872     AOD                   ~~H 1~~  D
  HU                               04/21/86         REPLACE CAPILLARY TUBING .                                          S C       TR
                  REF      PRF 2819  CLOSED 10/6/86.

CB6563  INST 2WSS-PSX108            PR  05827         00     100386  2                            AOD         WOODLAND  S ~~2~~  D
  HU                               09/21/86 09/30/86  APPROVE AS-BUILT CONDITIONS                                  NME       C       TR
                  REM                                ANS: 9/30/86
                  SRI      CB6565
                  E        C54005   CLOSED  10/6/86

CB6565  INST 2WSS-PSY108            PR  05827         00     100386  2                            AOD.        WOODLAND  S ~~2~~  D       R
  HU                               09/21/86 09/30/86  APPROVE AS-BUILT CONDITIONS                                  NME       C       TR
                  REM                                ANS: 9/30/86
                  SRI      CB6565
                  E        C54005   CLOSED  10/6/86

CB6705  EQP  2WSS-P10               PR  05845         00     092486  2                            SEG         BIEHLE    S      I
  FX                               09/23/86          PROVIDE TRIP FOR 2WSS-P10

CB6970  EQP  2WSS-P11               PR  05864         00     092786  2                            SEG         MOTTER    S      I
  CO                               09/25/86          INSTALL LOW DISCHARGE PRESSURE TRIP BYPASS SWITCH                         TR

CB7480  VLV  2WSS-TCV397            DR  23811         00     100486  2  AOD 5997                  AOD         WOODLAND  H 1    I
  HU                               10/02/86 10/30/86  REPLACE CRACKED YOKE AOD 5997 INITIATED

CB7144  EQP  2WSS-TK2               PR  05884         00     092786  2                            SEG         YU        S      I
  FX                               09/27/86          INSTALL ELECTRIC HEATERS ON LOWER SHELL OF ASPHALT
                  REM                                TANK

CB5488  INST 2WSS-TT142             DR  23331         00     090986  2                            AOD         WOODLAND  H 1    D
  HU                               09/05/86 09/30/86  REPLACE FAILED CONTROLLER
T5*7              REF      AOD 5771

BY3186  VLV  2WSS-TVY136            DR  14486         00     092486  2                            AOD         MOTTER    H 1    D
  FX                               03/02/86 07/15/86  REPLACE TVY136 BODY-TO-BONNET GASKETS                                   TR

CB7259  CKT  2WSSN15                DR  23744         00     100486  2                            AOD         BIEHLE    H 1    D
  HU                               09/30/86 11/01/86  CONTROLL CIRCUIT N15 NOT COMPLETE
                  PR       05845

                                                                                              VERIFIED  10/6/86

           RECORDS PROCESSED -       21
```

ATTACHMENT 9.9
PAGE 2 of 3

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BIP# 041.001                  SELECTED ITEMS BY - BIP # 001.000 THROUGH 109.000   TEST ENG WEEKLY

                                                              LAST    G[redacted]D.       RESTRAINT      PRI  SEC   RESP     SRI S-T-A-T[redacted]
SRINO   CO[redacted]/NUMBER            DOCUMENT ID      SUB/CYC ACTV   [redacted]MBER      MATERIAL       RESP RESP  INDIV    TYP CS PH

                                CREATED   EST COMP                                                    REST       REST REST      MLS PLC
PRIORITY SUBCOMPONENT            DATE      DATE           DESCRIPTION                                 ECD        ORG  IND

             REFTYPE   REFDOC                       REMARKS                                                   RESTRAINTS
-----------------------------------------------------------------------------------------------------------------------------------------

BY9666  SYS  041.001             WCR 013325        00     100286  2                                   AQ       HOLLAND   H 2   D
  HU      GENERIC               04/01/86 10/08/86 5 INSULATE BIP 41.001                                          ADD             TR

CB5763  SYS  041.001             WCR 016684        00     100186  2                                   SWW      MOTTER    H 1   D
  CO      W-9294-C              09/09/86 09/12/86   CORE BORE REQUIRED

CB3637  SYS  041.001             DR  2294[illegible]          00     100186  2                                   ADD      GIBBS     H 1   D
  FX      2WSS-SKD42            08/15/86 08/20/86   REPLACE BROKEN DOOR LATCH                                                    NI

CB6333  SYS  041.001             DR  23524         00     100186  2                                   ADD      BIEHLE    H 1   D
  CO      2WSS-ZS194            09/18/86 11/15/86   REPLACE SWITCH
             PR        05568
             E         C53998

CB6843  INST 2WSS-FQI202         DR  23704         00     100186  2                                   ADD      WOODLAND  H 1   D
  HU                            09/24/86 10/15/86   REPLACE FLOW TOTALIZER EDCR C54001;PR 5711, PART                     TR
TS#7         REM                                  REQADD5928
             E         C54001,
             PR        05711

CB6971  EQP  2WSS-H34A           PR  05865         00     092986  2                                   SEG      MOTTER    S 4   I
  HU                            09/25/86 10/10/86   HEATER DESIGN INADEQUATE                                                     TR
             SRI       CB6972

CB6972  EQP  2WSS-H34B           PR  05865         00     092986  2                                   SEG      MOTTER    S 4   I     R
  HU                            09/25/86 10/10/86   HEATER DESIGN INADEQUATE                                                     TR
             SRI       CB6971

CB5784  INST 2WSS-LC235          DR  23391         00     100186  2  ADD 5795                         ADD      WOODLAND  H 1   D
  FX                            09/09/86 10/09/86 . STEAM LEAK/ REPLACE GASKETS ON MAGNETROL SWITCH

CB4385  INST 2WSS-LT23A          PR  05584         00     100186  2                                   SEG      WOODLAND  S 4   I
  CO                            08/22/86            LEVEL PROBES                                                                 TR
TS#7
CB4386  INST 2WSS-LT23B          PR  05584         00     100186  2                                   SEG      WOODLAND  S 4   I
  CO                            08/22/86            LEVEL PROBES                                                                 TR
TS#7
CA6411  INST 2WSS-PI330          DR  20907         00     100286  2   F27324     86-08880             ADD               ~~H 3~~   D
  CO                            06/26/86 07/15/86   2WSS-PI330 BROKEN                                     ~~092986    PRX~~  S C
             REF       FPR 537756
             REF       ADD 5101
             REM                                  HELICOID (KAR)
             REM                                  TE ADVISES C/O PRIORITY (KAR)
```

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SEL: TEST   ?........ 041.001  TO 041.001               TESTABLE     1 LIST                                  NAME:      NTSTHR   1
     TEST   PE....... ELE                               **********:  ******                                  DATE:       10/C    6
SEQ: TEST BIP........ 1                                                                                      TIME:        8:12:14
     TEST ITEM 1....  2                                                                                      PAGE:              1
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE           TEST     SYS   TEST-PROCEDURE      TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    AUX CONT CKT                  9/16/86
                                                           CKT    2WSSN06

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    CONTROL CKT                   9/05/86
                                                           CKT    2WSSN08

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    CONTROL CKT                   7/18/86
                                                           CKT    2WSSN34

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    CONTROL CKT                   5/20/86
                                                           CKT    2WSSN35

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    CONTROL CKT                   5/20/86
                                                           CKT    2WSSN36

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    DOME LIGHTING                 8/24/86
                                                           CKT    2WSSN37

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    EXTRUDER LIGHTING             8/24/86
                                                           CKT    2WSSN11

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    INST PWR SUPPLY               9/05/86
                                                           CKT    2WSSN10

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    INST. PWR SUPPLY              8/24/86
                                                           CKT    2WSSN09

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2NHN-CHGR01                   8/11/86
                                                           EQP    2NWS-MCC001
                                                           BKR    12BL

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2WSS-AOV401                   3/20/86
                                                           CKT    2WSSN37

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2WSS-AOV402                   3/20/86
                                                           CKT    2WSSN37

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2WSS-AOV403                   3/20/86
                                                           CKT    2WSSN38

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2WSS-AOV404                   3/20/86
                                                           CKT    2WSSN38

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006         EQP    2WSS-AOV405                   3/20/86
                                                           CKT    2WSSN38

041.001  ELE  EE-25-41-1         WSS   EE.GENE.025         EQP    2WSS-B24                      3/04/86
                                                           EQP    2NJS-US1
                                                           BKR    11A
```

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SEL: TEST   P........ 041.001  TO 041 001                 TESTABLE    M LIST                                                       NAME:    MTSTM   11
     TEST  ,PE....... ELE                                 *********...*******                                                  DATE:     10/.  86
SEQ: TEST BIP........ 1                                                                                                        TIME:      6:12:14
     TEST ITEM 1..... 2                                                                                                        PAGE:            2
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
-------------------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE         TEST    SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM           SCH-STRACT-CPLT    JOB-BOOK MS CAL FRQ  NODE
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041.001  ELE  ES-1-41-1        WSS  ES.GENE.001          EQP    2WSS-B24                        10/18/84
                                                         EQP    2NJS-US1
                                                         BKR    11A

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-B24                         7/26/86
                                                         CKT    2WSSN30

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-B24                         7/26/86
                                                         CKT    2WSSN30
                                                         ALM    DC001

041.001  ELE  ED-5-41-1        WSS  ED.GENE.005          EQP    2WSS-B40                         4/12/86
                                                                COUPLED

041.001  ELE  ED-5-41-1        WSS  ED.GENE.005          EQP    2WSS-CNV27                       5/06/86

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-CNV27                       4/22/86
                                                         CKT    2WSSN30

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-CNV27                       4/22/86
                                                         CKT    2WSSN30
                                                                TC11, BC11

041.001  ELE  ED-5-41-1        WSS  ED.GENE.005          EQP    2WSS-CNV35                       7/18/86
                                                                COUPLED

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-CNV35                       8/05/86
                                                         CKT    2WSSN32

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-EV25                        8/05/86
                                                         CKT    CONT CKT

041.001  ELE  ED-5-41-1        WSS  ED.GENE.005          EQP    2WSS-EV25                        4/11/86
                                                                UNCOUPLED

041.001  ELE  EE-25-41-1       WSS  EE.GENE.025          EQP    2WSS-EV25                        7/25/83
                                                         EQP    2NJS-US1
                                                         BKR    10D

041.001  ELE  EG-30-41-1       WSS  EG.GENE.030          EQP    2WSS-H34A                        4/11/86

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-H34A                        4/12/86
                                                         CKT    2WSSN29

041.001  ELE  EG-30-41-1       WSS  EG.GENE.030          EQP    2WSS-H34B                        4/12/86

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-H34B                        4/12/86
                                                         CKT    2WSSN29

041.001  ELE  EE-6-41-1        WSS  EE.GENE.006          EQP    2WSS-IFNL210                     5/14/86
                                                         CKT    2WSSN06
```

```
SEL: TEST BIP........ 041.001  TO 041 001             TESTABLE ITEM LIST                                 NAME:    MTSTMF  '1
     TEST TYPE....... ELE                             ******************                                  DATE:      10/0  /86
SEQ: TEST BIP........ 1                                                                                   TIME:      8:12:14
     TEST ITEM 1..... 2                                                                                   PAGE:            3
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST    SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  MODE
------------------------------------------------------------------------------------------------------------------------------

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-IPNL210                   5/13/86
                                                          CKT    2WSSN07

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-IPNL210                   5/22/86
                                                          CKT    2WSSN13

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-IPNL210                   5/22/86
                                                          CKT    2WSSN13
                                                          ALM    ZC003,ZC001

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-IPNL210                   9/07/86
                                                          CKT    2WSSN14

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-IPNL210                            | E7
                                                          CKT    2WSSN15

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-MIX9                      3/31/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-MIX9                      3/31/86
                                                                 UNCOUPLED

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-MIX9                      2/17/86
                                                          CKT    2WSSN26

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-MIX9                      2/17/86
                                                          CKT    2WSSN26
                                                          ALM    210106,EC004,TC004

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-M23                       7/26/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P10                       4/12/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P10                       4/12/86
                                                                 UNCOUPLED

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P10                       3/10/86
                                                          CKT    2WSSN27

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P10                       3/10/86
                                                          CKT    2WSSN27
                                                          ALM    210112,EC05,TC05

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P11                       3/31/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P11                       3/31/86
                                                                 UNCOUPLED
```

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SEL: TEST   P........ 041.001  TO 041.001          TESTABLE   M LIST                              NAME:     MTSTMP[illegible]11
     TEST   PE....... ELE                          *********  .******                             DATE:      10/[illegible]6
SEQ: TEST BIP........ 1                                                                           TIME:      8:12.14
     TEST ITEM 1..... 2                                                                           PAGE:            4
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST      SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P11                         2/17/86
                                                            CKT    2WSSN28

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P11                         2/17/86
                                                            CKT    2WSSN28
                                                            ALM    210112,BC006,TC006

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P12A                        7/11/86
                                                            ALM    BC019,210112,TC019

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P12A                        7/17/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P12A                        7/11/86
                                                                   METERING PUMP

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P12A                        7/11/86
                                                            ALM    SC001,210120

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P12A                        7/17/86
                                                                   UNCOUPLED

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P12B                        7/17/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P12B                        7/11/86
                                                                   METERING PUMP

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P12B                        7/11/86
                                                            ALM    TC020,210112,BC020

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P12B                        7/17/86
                                                                   UNCOUPLED

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P13A                        4/12/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P13A                        3/14/86
                                                            CKT    2WSSA26

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P13A                        3/14/86
                                                            CKT    2WSSA26
                                                            ALM    210324,BC07,TC07

041.001  ELE  ED-5-41-1          WSS   ED.GENE.005          EQP    2WSS-P13B                        4/11/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS   EE.GENE.006          EQP    2WSS-P13B                        3/14/86
                                                            CKT    2WSSB26
```

```
SEL: TEST   P........ 041.001  TO 041.001          TESTABLE   ITEM LIST                      NAME:    MTSTMF  :1
     TEST TYPE....... ELE                          ******************                         DATE:     10/[illegible] 86
SEQ: TEST EIP........ 1                                                                       TIME:      8:12:14
     TEST ITEM 1..... 2                                                                       PAGE:            5
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST EIP-TYPE          TEST   SYS  TEST-PROCEDURE    TYPE   TESTABLE ITEM       SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  MODE
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041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P18B                3/14/86
                                                     CKT    2WSSB26
                                                     ALM    210324,EC08.TC08

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P18A                4/12/86
                                                            COUPLED

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P18A                3/14/86
                                                     CKT    2WSSA27

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P18A                3/14/86
                                                     CKT    2WSSA27
                                                     ALM    210324,EC09,TC09

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P18B                4/12/86
                                                            COUPLED

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P18B                3/14/86
                                                     CKT    2WSSB27

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P18B                3/14/86
                                                     CKT    2WSSB27
                                                     ALM    210324,EC010,TC010

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P3A                 6/28/86
                                                            COUPLED

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P3A                 6/28/86
                                                            UNCOUPLED

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P3A                 3/10/86
                                                     CKT    2WSSA25

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P3A                 3/10/86
                                                     CKT    2WSSA25
                                                     ALM    210214,TC01,EC01

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P3B                 6/28/86
                                                            COUPLED

041.001  ELE  ED-5-41-1       WSS  ED.GENE.005       EQP    2WSS-P3B                 6/28/86
                                                            UNCOUPLED

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P3B                 3/10/86
                                                     CKT    2WSSB25

041.001  ELE  EE-6-41-1       WSS  EE.GENE.006       EQP    2WSS-P3B                 3/10/86
                                                     CKT    2WSSB25
                                                     ALM    210214,EC02.TC02
```

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SEL: TEST  ?........ 041.001  TO 041 001             TESTABLE    [illegible] LIST                                              NAME:    MTSTMP [illegible]
     TEST ..PE....... ELE                            *********..******                                                 DATE:      10/[illegible]
SEQ: TEST BIP........ 1                                                                                               TIME:       9:12.14
     TEST ITEM 1..... 2                                                                                               PAGE:             6
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE           TEST     SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P43                       4/11/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P5A                       7/08/86
                                                                 COUPLED

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5A                       7/08/86
                                                                 METERING PUMP

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5A                       7/08/86
                                                                 METERING PUMP
                                                          ALM    BC015,

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5A                       7/08/86
                                                                 METERING PUMP
                                                          ALM    210214,TC015

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5A                       7/08/86
                                                                 METERING PUMP
                                                          ALM    210215,SC005

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P5A                       7/08/86
                                                                 UNCOUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P5B                       7/08/86
                                                                 COUPLED

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5B                       7/08/86
                                                                 METERING PUMP

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5B                       7/08/86
                                                                 METERING PUMP
                                                          ALM    BC016

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P5B                       7/08/86
                                                                 METERING PUMP
                                                          ALM    210214,TC016

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P5B                       7/08/86
                                                                 UNCOUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P6                        4/24/86
                                                                 COUPLED

041.001  ELE  ED-5-41-1        WSS   ED.GENE.005          EQP    2WSS-P6                        4/24/86
                                                                 UNCOUPLED

041.001  ELE  EE-6-41-1        WSS   EE.GENE.006          EQP    2WSS-P6                        3/10/86
                                                          CKT    2WSSN25
```

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SEL: TEST  #........ 041.001  TO 041,001           TESTABLE  ITEM LIST                                    NAME:    MTSTMF    1
     TEST TYPE....... ELE                          ******************                                     DATE:       10/06/86
SEQ: TEST BIP........ 1                                                                                   TIME:        8:12:14
     TEST ITEM 1..... 2                                                                                   PAGE:              7
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE             TEST     SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  MODE
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041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P6                       3/10/86
                                                            CKT    2WSSN25
                                                            ALM    210112,TC03,BC03

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P7A                      7/11/86
                                                            ALM    BC017,210112,TC017

041.001  ELE  ED-5-41-1          WSS  ED.GENE.005           EQP    2WSS-P7A                      7/11/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P7A                      7/11/86
                                                                   METERING PUMP

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P7A                      7/11/86
                                                            ALM    SC003,210121

041.001  ELE  ED-5-41-1          WSS  ED.GENE.005           EQP    2WSS-P7A                      7/11/86
                                                                   UNCOUPLED

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P7B                      7/11/86
                                                            ALM    BC018,210112,TC018

041.001  ELE  ED-5-41-1          WSS  ED.GENE.005           EQP    2WSS-P7B                      7/11/86
                                                                   COUPLED

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-P7B                      7/11/86
                                                                   METERING PUMP

041.001  ELE  ED-5-41-1          WSS  ED.GENE.005           EQP    2WSS-P7B                      7/11/86
                                                                   UNCOUPLED

041.001  ELE  EG-30-41-1         WSS  EG.GENE.030           EQP    2WSS-SKD42                    4/12/86

041.001  ELE  EE-6-41-1          WSS  EE.GENE.006           EQP    2WSS-SKD42                    4/11/86
                                                            CKT    2WSSN38/2WSSN15

041.001  ELE  EE-10-41-1         WSS  EE.GENE.010           EQP    2WSS-XD210                    8/02/86

041.001  ELE  EE-10-41-1         WSS  EE.GENE.010           EQP    2WSS-XD25                     8/02/86

041.001  ELE  ES-1-41-1          WSS  ES.GENE.001           EQP    2WSS-XD25                    10/16/84
                                                            EQP    2NJS-US1
                                                            BKR    10D
```

```
SEL: TEST   P........ 041.001  TO 041.001              TESTABLE    M LIST                              NAME:     MTSTMF  11
     TEST ..PE....... MEC                              *********.. ..******                            DATE:       10/   86
SEQ: TEST BIP.......: 1                                                                                TIME:       8:03:29
     TEST ITEM 1..... 2                                                                                PAGE:             1
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE              TEST     SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  MEC  MF-41.2-41-1      WSS  MF.0041.002           EQP    041.001                      5/06/86
                                                            SUB    SYSTEM PIPING

041.001  MEC  MP-1-41-1         WSS  MP.GENE.001           EQP    041.001                     10/01/86
                                                            SUB    SYSTEM PIPING

041.001  MEC  MW-1-41-1         WSS  MW.GENE.001           EQP    2WSS-EV25                    4/11/86
                                                                   UNCOUPLED

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P10                     4/15/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P11                     4/10/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P12A                    8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P12B                    8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P13A                    4/09/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P13B                    4/09/86

041.001  MEC  MD-1A-41-1        WSS  MD.GENE.01A           EQP    2WSS-P18A                    4/10/86

041.001  MEC  MD-1A-41-1        WSS  MD.GENE.01A           EQP    2WSS-P18B                    4/09/86

041.001  MEC  MD-1A-41-1        WSS  MD.GENE.01A           EQP    2WSS-P23A
                                                                   WHSE SPARE

041.001  MEC  MD-1A-41-1        WSS  MD.GENE.01A           EQP    2WSS-P23B                    4/10/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P3A                     8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P3B                     8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P43                     4/09/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P5A                     8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P5B                     8/05/86

041.001  MEC  MD-1A-41-1        WSS  MD.GENE.01A           EQP    2WSS-P6                      8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P7A                     8/05/86

041.001  MEC  MD-1B-41-1        WSS  MD.GENE.01B           EQP    2WSS-P7B                     8/05/86

041.001  MEC  MF-1-41-1         WSS  MF.GENE.001           EQP    2WSS-SU241                  10/01/86

041.001  MEC  MD-40.1-41-1      WSS  MD.0040.001           EQP    2WSS-TK10                    8/03/86
```

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SEL: TEST BIP........ 041.001  TO 041.001              TESTABLE ITEM LIST                                          NAME:    MTSTM    11
     TEST TYPE....... MEC                               ******************                                          DATE:     10/[illegible].86
SEQ: TEST BIP........ 1                                                                                             TIME:      8:03:29
     TEST ITEM 1..... 2                                                                                             PAGE:            2
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST    SYS  TEST-PROCEDURE     TYPE  TESTABLE ITEM      SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  NODE
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041.001  MEC  MF-1-41-1        WSS  MF.GENE.001        EQP   2WSS-TK46                 10/01/86

041.001  MEC  MD-40.1-41-1     WSS  MD.0040.001        EQP   2WSS-TK8                   4/09/86
```

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SEL: TEST   ?........ 041.001  TO                        TESTABLE '   ! LIST                               NAME:     NTSTNR' '1
     TEST  .PE....... CAL INS                            *********. ..******                              DATE:       10/C  .6
SEQ: TEST BIP........ 1                                                                                   TIME:       15:27:03
     TEST ITEM 1..... 2                                                                                   PAGE:              4
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST    SYS   TEST-PROCEDURE      TYPE   TESTABLE ITEM        SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL   IE-13-41-1      WSS   IE.GENE.013         LCR    IL2WSS-018              7/3/86
                                                         INS    2WSS-PS368

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-019              5/15/86
                                                         INS    2WSS-PS370

041.001  CAL   IE-13-41-1      WSS   IE.GENE.013         LCR    IL2WSS-019              5/15/86
                                                         INS    2WSS-PS370

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-020              5/19/86
                                                         INS    2WSS-PS388

041.001  CAL   IE-13-41-1      WSS   IE.GENE.013         LCR    IL2WSS-020              5/19/86
                                                         INS    2WSS-PS388

041.001  CAL   IE-17-41-1      WSS   IE.GENE.017         LCR    IL2WSS-021              3/7/86
                                                         INS    2WSS-HV2A

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-021              3/7/86
                                                         INS    2WSS-SOV2A

041.001  CAL   IE-17-41-1      WSS   IE.GENE.017         LCR    IL2WSS-022              3/7/86
                                                         INS    2WSS-HV2B

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-022              3/7/86
                                                         INS    2WSS-SOV2B

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-023              9/17/86
                                                         INS    2WSS-FS111

041.001  CAL   IE-13-41-1      WSS   IE.GENE.013         LCR    IL2WSS-023              9/17/86
                                                         INS    2WSS-FS111

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-024              4/10/86
                                                         INS    2WSS-PI303

041.001  CAL   IE-08-41-1      WSS   IE.GENE.008         LCR    IL2WSS-024              4/10/86
                                                         INS    2WSS-PI303

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-024              4/10/86
                                                         INS    2WSS-PT303

041.001  CAL   IE-101-41-1     WSS   IE.GENE.101         LCR    IL2WSS-024              4/10/86
                                                         INS    2WSS-FT303

041.001  CAL   IE-02-41-1      WSS   IE.GENE.002         LCR    IL2WSS-025              7/3/86
                                                         INS    2WSS-FT323

041.001  CAL   IE-16-41-1      WSS   IE.GENE.016         LCR    IL2WSS-025              7/3/86
                                                         INS    2WSS-FT323
```

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SEL: TEST   ........ 041.001  TO                          TESTABLE I    LIST                                  NAME:    NTSTNRF' 1
     TEST TYPE ...... CAL INS                             ***********..******                               DATE:       10/0    3
SEQ: TEST BIP........ 1                                                                                     TIME:       15:27:03
     TEST ITEM 1..... 2                                                                                     PAGE:              5
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE             TEST     SYS  TEST-PROCEDURE         TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-026                4/17/86
                                                               INS    2WSS-TIS322

041.001  CAL  IE-13-41-1           WSS  IE.GENE.013            LCR    IL2WSS-026
                                                               INS    2WSS-TIS322                4/17/86

041.001  CAL  IE-17-41-1           WSS  IE.GENE.017            LCR    IL2WSS-030                 3/7/86
                                                               INS    2WSS-HV350

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-030                  3/7/86
                                                               INS    2WSS-SOV350

041.001  CAL  IE-17-41-1           WSS  IE.GENE.017            LCR    IL2WSS-031                 3/8/86
                                                               INS    2WSS-HV360

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-031                  4/17/86
                                                               INS    2WSS-SOV360

041.001  CAL  IE-17-41-1           WSS  IE.GENE.017            LCR    IL2WSS-032                 3/8/86
                                                               INS    2WSS-HV364

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-032                  4/18/86
                                                               INS    2WSS-SOV364

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-033                  5/14/86
                                                               INS    2WSS-FS304

041.001  CAL  IE-13-41-1           WSS  IE.GENE.013            LCR    IL2WSS-033                  5/14/86
                                                               INS    2WSS-FS304

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-034                  5/21/86
                                                               INS    2WSS-SOV304

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-034                  5/31/86
                                                               INS    2WSS-TIS304

041.001  CAL  IE-13-41-1           WSS  IE.GENE.013            LCR    IL2WSS-034                 5/21/86
                                                               INS    2WSS-TIS304

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-035                  4/12/86
                                                               INS    2WSS-FS305

041.001  CAL  IE-13-41-1           WSS  IE.GENE.013            LCR    IL2WSS-035                   8/22/86
                                                               INS    2WSS-FS305

041.001  CAL  IE-02-41-1           WSS  IE.GENE.002            LCR    IL2WSS-036                   7/3/86
                                                               INS    2WSS-SOV305

041.001  CAL  IE-02-41-1           WSS  IE GENE.002            LCR    IL2WSS-036                   7/8/86
                                                               INS    2WSS-TIS305
```

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SEL: TEST   ......... 041.001  TO                        TESTABLE I[illegible] LIST                              NAME:     MTSTMRPF(1
     TEST   .E....... CAL INS                            **********  ******                                  DATE:       10/0   5
SEQ: TEST BIP...... .. 1                                                                                         TIME:       15:2,  3
     TEST ITEM 1..... 2                                                                                          PAGE:              6
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST     SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-13-41-1    WSS   IE.GENE.013          LCR    IL2WSS-036                 7/3/86
                                                       INS    2WSS-TIS305

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-037                 3/3/86
                                                       INS    2WSS-AOV351

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-037                 3/3/86
                                                       INS    2WSS-SOV351

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-038                 3/3/86
                                                       INS    2WSS-AOV352

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-038                 3/3/86
                                                       INS    2WSS-SOV352

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-039                 3/3/86
                                                       INS    2WSS-AOV353

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-039                 3/3/86
                                                       INS    2WSS-SOV353

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-040                 3/3/86
                                                       INS    2WSS-AOV354

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-040                 3/3/86
                                                       INS    2WSS-SOV354

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-041                 3/3/86
                                                       INS    2WSS-AOV356

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-041                 3/3/86
                                                       INS    2WSS-SOV356

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-042                 3/3/86
                                                       INS    2WSS-AOV358

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-042                 3/3/86
                                                       INS    2WSS-SOV358

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-043                 9/16/86
                                                       INS    2WSS-PSX102

041.001  CAL  IE-13-41-1    WSS   IE.GENE.013          LCR    IL2WSS-043                 9/16/86
                                                       INS    2WSS-PSX103

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-044                 5/16/86
                                                       INS    2WSS-PS365

041.001  CAL  IE-13-41-1    WSS   IE.GENE.013          LCR    IL2WSS-044                 5/16/86
                                                       INS    2WSS-PS365
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SEL: TEST     ........ 041.001  TO                    TESTABLE 1    : LIST                                     NAME:     MTSTMR     1
     TEST TYPE....... CAL INS                         *****************                                        DATE:     10/0[illegible]/86
SEQ: TEST BIP........ 1                                                                                        TIME:     15:27:03
     TEST ITEM 1..... 2                                                                                        PAGE:            7
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST       SYS   TEST-PROCEDURE       TYPE    TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ   NODE
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041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-045                  7/16/86
                                                           INS     2WSS-PSY108

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013          LCR     IL2WSS-045
                                                           INS     2WSS-PSY108                 7/16/86

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-046                             |
                                                           INS     2WSS-SSLY135                           |
                                                                                                          |  E1
041.001  CAL  IE-04-41-1        WSS   IE.GENE.004          LCR     IL2WSS-046                             |
                                                           INS     2WSS-SSLY135                           |

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-047
                                                           INS     2WSS-PS3A                   6/18/86

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013          LCR     IL2WSS-047                  6/18/86
                                                           INS     2WSS-PS3A

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-048                  6/8/86
                                                           INS     2WSS-PS3B

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013          LCR     IL2WSS-048                  6/13/86
                                                           INS     2WSS-PS3B

041.001  CAL  IE-07-41-1        WSS   IE.GENE.007          LCR     IL2WSS-049                  7/25/86
                                                           INS     2WSS-TE22A

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-049                  7/28/86
                                                           INS     2WSS-TSH22A

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013          LCR     IL2WSS-049                  7/25/86
                                                           INS     2WSS-TSH22A

041.001  CAL  IE-07-41-1        WSS   IE.GENE.007          LCR     IL2WSS-050                  7/25/86
                                                           INS     2WSS-TE22B

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-050                  7/28/86
                                                           INS     2WSS-TSH22B

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013          LCR     IL2WSS-050                  7/25/86
                                                           INS     2WSS-TSH22B

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-051                             |
                                                           INS     2WSS-LI23A                             |
                                                                                                          |
041.001  CAL  IE-08-41-1        WSS   IE.GENE.008          LCR     IL2WSS-051                             |
                                                           INS     2WSS-LI23A                             |  E2
                                                                                                          |
041.001  CAL  IE-02-41-1        WSS   IE.GENE.002          LCR     IL2WSS-051                             |
                                                           INS     2WSS-LSHH23A                           |
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SEL: TEST  ......... 041.001  TO                                      TESTABLE I   LIST                                   NAME:    MTSTMRPF 1
     TEST    E....... CAL INS                                         **********  .*****                                  DATE:      10/0
SEQ: TEST BIP........ 1                                                                                                   TIME:     15:27.03
     TEST ITEM 1..... 2                                                                                                   PAGE:            8
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE              TEST     SYS   TEST-PROCEDURE          TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-13-41-1         WSS   IE.GENE.013             LCR    IL2WSS-051
                                                               INS    2WSS-LSHH23A

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-051
                                                               INS    2WSS-LSH23A

041.001  CAL  IE-13-41-1         WSS   IE.GENE.013             LCR    IL2WSS-051
                                                               INS    2WSS-LSH23A

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-051
                                                               INS    2WSS-LT23A

041.001  CAL  IE-16-41-1         WSS   IE.GENE.016             LCR    IL2WSS-051
                                                               INS    2WSS-LT23A

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-052
                                                               INS    2WSS-LI23B

041.001  CAL  IE-08-41-1         WSS   IE.GENE.008             LCR    IL2WSS-052                                E2
                                                               INS    2WSS-LI23B

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-052
                                                               INS    2WSS-LSHH23B

041.001  CAL  IE-13-41-1         WSS   IE.GENE.013             LCR    IL2WSS-052
                                                               INS    2WSS-LSHH23B

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-052
                                                               INS    2WSS-LSH23B

041.001  CAL  IE-13-41-1         WSS   IE.GENE.013             LCR    IL2WSS-052
                                                               INS    2WSS-LSH23B

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-052
                                                               INS    2WSS-LT23B

041.001  CAL  IE-16-41-1         WSS   IE.GENE.016             LCR    IL2WSS-052
                                                               INS    2WSS-LT23B

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-053              8/12/86
                                                               INS    2WSS-FIT100

041.001  CAL  IE-16-41-1         WSS   IE.GENE.016             LCR    IL2WSS-053              8/11/86
                                                               INS    2WSS-FIT100

041.001  CAL  IE-02-41-1         WSS   IE.GENE.002             LCR    IL2WSS-053              8/12/86
                                                               INS    2WSS-FQIS100

041.001  CAL  IE-13-41-1         WSS   IE.GENE.013             LCR    IL2WSS-053              8/11/86
                                                               INS    2WSS-FQIS100
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SEL: TEST     ........ 041.001  TO                        TESTABLE I    LIST                                 NAME:    MTSTMRF  1
     TEST TYPE....... CAL INS                             ***********.******                                DATE:      10/0.  5
SEQ: TEST BIP........ 1                                                                                      TIME:     15:27:03
     TEST ITEM 1..... 2                                                                                      PAGE:            9
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST     SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM        SCH-STRACT-CPLT.  JOB-BOOK MS CAL FRQ  NODE
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041.001  INS  IE-15-41-1       WSS  IE.GENE.015          LCR    IL2WSS-053                 4/30/86
                                                         INS    2WSS-FY100

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-054                 8/28/86
                                                         INS    2WSS-LI101

041.001  CAL  IE-08-41-1       WSS  IE.GENE.008          LCR    IL2WSS-054                 4/7/86
                                                         INS    2WSS-LI101

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-054
                                                         INS    2WSS-LSH101                8/20/86

041.001  CAL  IE-13-41-1       WSS  IE.GENE.013          LCR    IL2WSS-054                 8/26/86
                                                         INS    2WSS-LSH101

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-054                 8/25/86
                                                         INS    2WSS-LT101

041.001  CAL  IE-16-41-1       WSS  IE.GENE.016          LCR    IL2WSS-054                 8/27/86
                                                         INS    2WSS-LT101

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-055                 7/9/86
                                                         INS    2WSS-LSH102

041.001  CAL  IE-13-41-1       WSS  IE.GENE.013          LCR    IL2WSS-055                 7/9/86
                                                         INS    2WSS-LSH102

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-056                 9/11/86
                                                         INS    2WSS-FIT103

041.001  CAL  IE-16-41-1       WSS  IE.GENE.016          LCR    IL2WSS-056                 9/11/86
                                                         INS    2WSS-FIT103

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-057                 8/4/86
                                                         INS    2WSS-FQIS104

041.001  CAL  IE-13-41-1       WSS  IE.GENE.013          LCR    IL2WSS-057                 8/4/86
                                                         INS    2WSS-FQIS104

041.001  INS  IE-15-41-1       WSS  IE.GENE.015          LCR    IL2WSS-057                 8/4/86
                                                         INS    2WSS-FQIS104

041.001  CAL  IE-02-41-1       WSS  IE.GENE.002          LCR    IL2WSS-057                 8/4/86
                                                         INS    2WSS-FQIT104

041.001  CAL  IE-08-41-1       WSS  IE.GENE.008          LCR    IL2WSS-057                 8/4/86
                                                         INS    2WSS-FQIT104

041.001  INS  IE-15-41-1       WSS  IE.GENE.015          LCR    IL2WSS-057
                                                         INS    2WSS-FQIT104               8/4/86
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SEL: TEST   ?........ 041.001  TO                       TESTABLE     I LIST                    NAME:    MTSTMR' '1
     TEST ..PE....... CAL INS                           **********..******                    DATE:      10/0   6
SEQ: TEST BIP........ 1                                                                       TIME:      15:27:03
     TEST ITEM 1..... 2                                                                       PAGE:            10
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE		TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK MS CAL FRQ	NODE
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-057 2WSS-FQIT104	8/4/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-058 2WSS-AIT105	5/8/86		
041.001	CAL	IE-04-41-1	WSS	IE.GENE.004	LCR INS	IL2WSS-058 2WSS-AIT105	5/8/86		
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-058 2WSS-AIT105	5/8/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-058 2WSS-AR105	5/8/86		
041.001	CAL	IE-10-41-1	WSS	IE.GENE.010	LCR INS	IL2WSS-058 2WSS-AR105	5/6/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-058 2WSS-ASH/ASL105	5/8/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-058 2WSS-ASH/ASL105	5/5/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-058 2WSS-ASHH/LL105	5/8/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-058 2WSS-ASHH/LL105	5/6/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-059 2WSS-FS106	5/16/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-059 2WSS-FS106	5/15/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-060 2WSS-FS107	4/30/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-060 2WSS-FS107	4/30/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-061 2WSS-LSX/LSY213	8/25/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-061 2WSS-LSX/LSY213	8/25/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-062 2WSS-AIT110	5/7/86		

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SEL: TEST BIP........ 041.001  TO                    TESTABLE ITEM LIST                                   NAME:    MTSTHR  1
     TEST TYPE....... CAL INS                        ******************                                   DATE:       10/0  6
SEQ: TEST BIP........ 1                                                                                   TIME:      15:27:03
     TEST ITEM 1..... 2                                                                                   PAGE:            11
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
-------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST     SYS   TEST-PROCEDURE      TYPE   TESTABLE ITEM         SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-04-41-1     WSS   IE.GENE.004         LCR    IL2WSS-062                  5/7/86
                                                      INS    2WSS-AIT110

041.001  CAL  IE-16-41-1     WSS   IE.GENE.016         LCR    IL2WSS-062                  5/7/86
                                                      INS    2WSS-AIT110

041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-062                  5/7/86
                                                      INS    2WSS-AR105

041.001  CAL  IE-10-41-1     WSS   IE.GENE.010         LCR    IL2WSS-062                  5/5/86
                                                      INS    2WSS-AR105

041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-062.                 5/7/86
                                                      INS    2WSS-ASH/ASL110

041.001  CAL  IE-13-41-1     WSS   IE.GENE.013         LCR    IL2WSS-062                  5/5/86
                                                      INS    2WSS-ASH/ASL110

041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-062                  5/7/86
                                                      INS    2WSS-ASHH/LL110

041.001  CAL  IE-13-41-1     WSS   IE.GENE.013         LCR    IL2WSS-062                  5/2/86
                                                      INS    2WSS-ASHH/LL110

041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-063                          |
                                                      INS    2WSS-IR135                          |
                                                                                                  |
041.001  CAL  IE-10-41-1     WSS   IE.GENE.010         LCR    IL2WSS-063                          |
                                                      INS    2WSS-IR135                          |
                                                                                                  |
041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-063                          |
                                                      INS    2WSS-ISH/ISHH135                    |  E1
                                                                                                  |
041.001  CAL  IE-13-41-1     WSS   IE.GENE.013         LCR    IL2WSS-063                          |
                                                      INS    2WSS-ISH/ISHH135                    |
                                                                                                  |
041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-063                          |
                                                      INS    2WSS-IT135                          |
                                                                                                  |
041.001  CAL  IE-06-41-1     WSS   IE.GENE.006         LCR    IL2WSS-063                          |
                                                      INS    2WSS-IT135                          |

041.001  CAL  IE-02-41-1     WSS   IE.GENE.002         LCR    IL2WSS-064                  6/23/86
                                                      INS    2WSS-PS112

041.001  CAL  IE-13-41-1     WSS   IE.GENE.013         LCR    IL2WSS-064                  6/23/86
                                                      INS    2WSS-PS112

041.001  CAL  IE-07-41-1     WSS   IE.GENE.007         LCR    IL2WSS-065                  6/10/86
                                                      INS    2WSS-TE114
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SEL: TEST °........ 041.001 TO
TEST ?E....... CAL INS
SEQ: TEST BIP........ 1
TEST ITEM 1..... 2
TEST ITEM 2..... 3
TEST ITEM 3..... 4

TESTABLE ˙ M LIST
*********: ******

NAME: MTSTNRP°11
DATE: 10/(6
TIME: 15:2/.03
PAGE: 12

TEST	BIP-TYPE	TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK	MS	CAL FRQ	NODE
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-065 2WSS-TI114	8/26/86				
041.001	CAL	IE-08-41-1	WSS	IE.GENE.008	LCR INS	IL2WSS-065 2WSS-TI114	8/26/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-065 2WSS-TSH/TSL114	8/26/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-065 2WSS-TSH/TSL114	8/26/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-066 2WSS-LIX115	6/2/86				
041.001	CAL	IE-08-41-1	WSS	IE.GENE.008	LCR INS	IL2WSS-066 2WSS-LIX115	5/30/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-066 2WSS-LIY115	6/2/86				
041.001	CAL	IE-08-41-1	WSS	IE.GENE.008	LCR INS	IL2WSS-066 2WSS-LIY115	5/30/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-066 2WSS-LSH/LSL115	6/3/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-066 2WSS-LSH/LSL115	6/2/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-066 2WSS-LT115	6/2/86				
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-066 2WSS-LT115	5/30/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-067 2WSS-PDIS116	6/18/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-067 2WSS-PDIS116	6/13/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-068 2WSS-SR135					
041.001	CAL	IE-10-41-1	WSS	IE.GENE.010	LCR INS	IL2WSS-068 2WSS-SR135					
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-068 2WSS-SELR135					

E 1

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SEL: TEST   ?........ 041.001  TO                    TESTABLE   1 LIST                    NAME:    MTSTMRP'11
     TEST   ?E....... CAL INS                        **********  ******                   DATE:      10/C   6
SEQ: TEST BIP........ 1                                                                   TIME:      15:2.  03
     TEST ITEM 1..... 2                                                                   PAGE:            13
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
```

TEST BIP-TYPE		TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK MS CAL FRQ	MODE
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-068 2WSS-SSLX135		E1	
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-068 2WSS-ST135			
041.001	CAL	IE-06-41-1	WSS	IE.GENE.006	LCR INS	IL2WSS-068 2WSS-ST135			
041.001	CAL	IE-06-41-1	WSS	IE.GENE.006	LCR INS	IL2WSS-069 2WSS-E/PX136	5/26/86		
041.001	CAL	IE-06-41-1	WSS	IE.GENE.006	LCR INS	IL2WSS-069. 2WSS-E/PY136	5/24/86		
041.001	CAL	IE-07-41-1	WSS	IE.GENE.007	LCR INS	IL2WSS-069 2WSS-TEX136	6/10/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-069 2WSS-TIC136	6/8/86		
041.001	CAL	IE-08-41-1	WSS	IE.GENE.008	LCR INS	IL2WSS-069 2WSS-TIC136	5/24/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-069 2WSS-TSH136	6/8/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-069 2WSS-TSH136	5/24/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-069 2WSS-TSL136	6/8/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-069 2WSS-TSL136	5/24/86		
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-069 2WSS-TT136	6/8/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-069 2WSS-TVX136	6/8/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-069 2WSS-TVX136	5/26/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-069 2WSS-TVY136	6/8/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-069 2WSS-TVY136	5/29/86		

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SEL: TEST [illegible]........ 041.001  TO             TESTABLE ITEM LIST                          NAME:   MTSTHR[illegible]1
     TEST ..PE....... CAL INS                         ********** ******                           DATE:     10/0[illegible]6
SEQ: TEST BIP........ 1                                                                           TIME:     15:27.03
     TEST ITEM 1..... 2                                                                           PAGE:           14
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
---------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST     SYS   TEST-PROCEDURE      TYPE   TESTABLE ITEM       SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
---------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-06-41-1     WSS  IE.GENE.006         LCR    IL2WSS-070                5/25/86
                                                      INS    2WSS-E/P137

041.001  CAL  IE-07-41-1     WSS  IE.GENE.007         LCR    IL2WSS-070                6/10/86
                                                      INS    2WSS-TEX137

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-070                6/8/86
                                                      INS    2WSS-TIC137

041.001  CAL  IE-05-41-1     WSS  IE.GENE.005         LCR    IL2WSS-070                6/2/86
                                                      INS    2WSS-TIC137

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-070                6/8/86
                                                      INS    2WSS-TSH137

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013         LCR    IL2WSS-070                6/2/86
                                                      INS    2WSS-TSH137

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-070                6/8/86
                                                      INS    2WSS-TSL137

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013         LCR    IL2WSS-070                6/2/86
                                                      INS    2WSS-TSL137

041.001  CAL  IE-16-41-1     WSS  IE.GENE.016         LCR    IL2WSS-070                6/8/86
                                                      INS    2WSS-TT137

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-070                6/8/86
                                                      INS    2WSS-TV137

041.001  CAL  IE-17-41-1     WSS  IE.GENE.017         LCR    IL2WSS-070                5/27/86
                                                      INS    2WSS-TV137

041.001  CAL  IE-06-41-1     WSS  IE.GENE.006         LCR    IL2WSS-071                5/26/86
                                                      INS    2WSS-E/P138

041.001  CAL  IE-07-41-1     WSS  IE.GENE.007         LCR    IL2WSS-071                6/10/86
                                                      INS    2WSS-TEX138

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-071                6/8/86
                                                      INS    2WSS-TIC138

041.001  CAL  IE-05-41-1     WSS  IE.GENE.005         LCR    IL2WSS-071                6/2/86
                                                      INS    2WSS-TIC138

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002         LCR    IL2WSS-071                6/8/86
                                                      INS    2WSS-TSH138

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013         LCR    IL2WSS-071                6/3/86
                                                      INS    2WSS-TSH138
```

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SEL: TEST   '........ 041.001  TO                   TESTABLE :   1 LIST                           NAME:      MTSTMR[illegible]1
     TEST ..PE....... CAL INS                       **********..******                         DATE:        10/0   6
SEQ: TEST BIP........ 1                                                                        TIME:        15:27:03
     TEST ITEM 1..... 2                                                                        PAGE:              15
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
-----------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE            TEST     SYS   TEST-PROCEDURE           TYPE   TESTABLE ITEM       SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
-----------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-071                6/8/86
                                                               INS    2WSS-TSL138

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013              LCR    IL2WSS-071                6/3/86
                                                               INS    2WSS-TSL138

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-071                6/8/86
                                                               INS    2WSS-TT138

041.001  CAL  IE-16-41-1        WSS   IE.GENE.016              LCR    IL2WSS-071                6/8/86
                                                               INS    2WSS-TT138

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-071                6/6/86
                                                               INS    2WSS-TV138

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017              LCR    IL2WSS-071                5/26/86
                                                               INS    2WSS-TV138

041.001  CAL  IE-06-41-1        WSS   IE.GENE.006              LCR    IL2WSS-072                4/28/86
                                                               INS    2WSS-E/P139

041.001  CAL  IE-07-41-1        WSS   IE.GENE.007              LCR    IL2WSS-072                6/12/86
                                                               INS    2WSS-TEX139

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TIC139

041.001  CAL  IE-05-41-1        WSS   IE.GENE.005              LCR    IL2WSS-072                6/4/86
                                                               INS    2WSS-TIC139

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TSH139

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013              LCR    IL2WSS-072                6/4/86
                                                               INS    2WSS-TSH139

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TSL139

041.001  CAL  IE-13-41-1        WSS   IE.GENE.013              LCR    IL2WSS-072                6/4/86
                                                               INS    2WSS-TSL139

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TT139

041.001  CAL  IE-16-41-1        WSS   IE.GENE.016              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TT139

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002              LCR    IL2WSS-072                6/9/86
                                                               INS    2WSS-TV139
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SEL: TEST   P........ 041.001  TO                    TESTABLE [illegible]M LIST                     NAME:   MTSTHRP[illegible]11
     TEST   PE....... CAL INS                        *********  ******                              DATE:     10/[illegible] 6
SEQ: TEST BIP........ 1                                                                             TIME:     15:2[illegible].03
     TEST ITEM 1..... 2                                                                             PAGE:          16
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST    SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM       SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  MODE
--------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017          LCR    IL2WSS-072               5/29/86
                                                         INS    2WSS-TV139

041.001  CAL  IE-06-41-1      WSS   IE.GENE.006          LCR    IL2WSS-073               4/28/86
                                                         INS    2WSS-E/P141

041.001  CAL  IE-07-41-1      WSS   IE.GENE.007          LCR    IL2WSS-073               6/12/86
                                                         INS    2WSS-TEX141

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-073               9/5/86
                                                         INS    2WSS-TIC141

041.001  CAL  IE-05-41-1      WSS   IE.GENE.005          LCR    IL2WSS-073               7/17/86
                                                         INS    2WSS-TIC141

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-073               9/5/86
                                                         INS    2WSS-TSH141

041.001  CAL  IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-073               9/4/86
                                                         INS    2WSS-TSH141

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-073               9/5/86
                                                         INS    2WSS-TSL141

041.001  CAL  IE-13-41-1      WSS   IE.GENE.013          LCR    IL2WSS-073               9/4/86
                                                         INS    2WSS-TSL141

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-073               9/5/86
                                                         INS    2WSS-TT141

041.001  CAL  IE-16-41-1      WSS   IE.GENE.016          LCR    IL2WSS-073               6/9/86
                                                         INS    2WSS-TT141

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-073               9/5/86
                                                         INS    2WSS-TV141

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017          LCR    IL2WSS-073               9/2/86
                                                         INS    2WSS-TV141

041.001  CAL  IE-06-41-1      WSS   IE.GENE.006          LCR    IL2WSS-074               9/3/86
                                                         INS    2WSS-E/PX142

041.001  CAL  IE-06-41-1      WSS   IE.GENE.006          LCR    IL2WSS-074               7/15/86
                                                         INS    2WSS-E/PY142

041.001  CAL  IE-07-41-1      WSS   IE.GENE.007          LCR    IL2WSS-074               6k/86
                                                         INS    2WSS-TEX142

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002          LCR    IL2WSS-074
                                                         INS    2WSS-TIC142
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E3

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SEL: TEST   ʾ........ 041.001  TO                TESTABLE .   1 LIST               NAME:     MTSTMR    1
     TEST TYPE....... CAL INS                    *****************                DATE:      10/0  .6
SEQ: TEST BIP........ 1                                                           TIME:      15:27:03
     TEST ITEM 1..... 2                                                           PAGE:            17
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
```

TEST	BIP-TYPE	TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK MS CAL FRQ	NODE
041.001	CAL	IE-05-41-1	WSS	IE.GENE.005	LCR INS	IL2WSS-074 2WSS-TIC142	7/17/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-074 2WSS-TSH142		E3	
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-074 2WSS-TSH142	8/28/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-074 2WSS-TSL142		E3	
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-074 2WSS-TSL142	8/28/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-074 2WSS-TT142		E3	
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-074 2WSS-TT142			
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-074 2WSS-TVX142			
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-074 2WSS-TVX142	9/3/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-074 2WSS-TVY142		E3	
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-074 2WSS-TVY142	9/3/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-075 2WSS-PS143	6/15/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-075 2WSS-PS143	6/15/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-076 2WSS-LS144	8/11/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-076 2WSS-LS144	8/11/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-077 2WSS-LS145	8/14/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-077 2WSS-LS145	8/14/86		

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SEL: TEST   ›........ 041.001  TO                        TESTABLE ˇ  1 LIST                              NAME:    MTSTMR⁻⁻‘1
     TEST ;.PE....... CAL INS                            **********.-******                              DATE:      10/C   6
SEQ: TEST BIP........ 1                                                                                  TIME:      15:27:03
     TEST ITEM 1..... 2                                                                                  PAGE:            18
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
-------------------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE          TEST    SYS   TEST-PROCEDURE       TYPE   TESTABLE ITEM      SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
-------------------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-078              8/11/86
                                                       INS    2WSS-LS146

041.001  CAL  IE-13-41-1    WSS   IE.GENE.013          LCR    IL2WSS-078              8/11/86
                                                       INS    2WSS-LS146

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-079              5/7/86
                                                       INS    2WSS-AOV153

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-079              5/7/86
                                                       INS    2WSS-SOV153

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-080              5/7/86
                                                       INS    2WSS-AOV154

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-080              5/7/86
                                                       INS    2WSS-SOV154

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-081              3/7/86
                                                       INS    2WSS-HV4A

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-081              3/7/86
                                                       INS    2WSS-SOV4A

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-082              3/7/86
                                                       INS    2WSS-HV4B

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-082              3/7/86
                                                       INS    2WSS-SOV4B

041.001  CAL  IE-17-41-1    WSS   IE.GENE.017          LCR    IL2WSS-083              5/9/86
                                                       INS    2WSS-HV203

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-083              5/9/86
                                                       INS    2WSS-SOV203

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-084              8/8/86
                                                       INS    2WSS-SOV196

041.001  CAL  IE-07-41-1    WSS   IE.GENE.007          LCR    IL2WSS-085              8/26/86
                                                       INS    2WSS-TE162

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-085              8/26/86
                                                       INS    2WSS-TSH162

041.001  CAL  IE-13-41-1    WSS   IE.GENE.013          LCR    IL2WSS-085              8/26/86
                                                       INS    2WSS-TSH162

041.001  CAL  IE-02-41-1    WSS   IE.GENE.002          LCR    IL2WSS-086              8/9/86
                                                       INS    2WSS-LS163
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SEL: TEST     ......... 041.001  TO                 TESTABLE ;   I LIST                         NAME:     MTSTMR    1
     TEST TYPE....... CAL INS                       ******************                         DATE:       10/0. .6
SEQ: TEST BIP........ 1                                                                        TIME:       15:27:03
     TEST ITEM 1..... 2                                                                        PAGE:             19
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
----------------------------------------------------------------------------------------------------------------------
TEST BIP-TYPE        TEST      SYS   TEST-PROCEDURE    TYPE   TESTABLE ITEM        SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  NODE
----------------------------------------------------------------------------------------------------------------------

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013        LCR   IL2WSS-086                8/8/86
                                                     INS   2WSS-LS163

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-087                6/16/86
                                                     INS   2WSS-FSL167

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013        LCR   IL2WSS-087                6/16/86
                                                     INS   2WSS-FSL167

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-088                7/25/86
                                                     INS   2WSS-PSL168

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013        LCR   IL2WSS-088                8/25/86
                                                     INS   2WSS-PSL168

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-089                7/30/86
                                                     INS   2WSS-PDIS170

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013        LCR   IL2WSS-089                7/30/86
                                                     INS   2WSS-PDIS170

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-090                8/21/86
                                                     INS   2WSS-LIC179

041.001  CAL  IE-05-41-1     WSS  IE.GENE.005        LCR   IL2WSS-090                8/6/86
                                                     INS   2WSS-LIC179

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-090                8/21/86
                                                     INS   2WSS-LSH/LSL179

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013        LCR   IL2WSS-090                8/7/86
                                                     INS   2WSS-LSH/LSL179

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-090                8/21/86
                                                     INS   2WSS-LT179

041.001  CAL  IE-16-41-1     WSS  IE.GENE.016        LCR   IL2WSS-090                7/30/86
                                                     INS   2WSS-LT179

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-090                8/21/86
                                                     INS   2WSS-LV179

041.001  CAL  IE-17-41-1     WSS  IE.GENE.017        LCR   IL2WSS-090                8/8/86
                                                     INS   2WSS-LV179

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002        LCR   IL2WSS-090                8/21/86
                                                     INS   2WSS-LY179

041.001  CAL  IE-06-41-1     WSS  IE.GENE.006        LCR   IL2WSS-090                8/1/86
                                                     INS   2WSS-LY179
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SEL: TEST [illegible]........ 041.001 TO
TEST [illegible]E....... CAL INS
SEQ: TEST BIP........ 1
TEST ITEM 1..... 2
TEST ITEM 2..... 3
TEST ITEM 3..... 4

TESTABLE [illegible] [illegible]M LIST
**********[illegible] ******

NAME: MTSTMRP[illegible]1
DATE: 10/[illegible] 6
TIME: 15:2[illegible].03
PAGE: 20

TEST BIP-TYPE		TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK	MS	CAL FRQ	NODE
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-090 2WSS-SOV179	8/21/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-091 2WSS-FIC180	8/13/86				
041.001	CAL	IE-05-41-1	WSS	IE.GENE.005	LCR INS	IL2WSS-091 2WSS-FIC180	8/13/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-091 2WSS-FSL180	8/13/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-091 2WSS-FSL180	8/6/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-091 2WSS-FV180	8/13/86				
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-091 2WSS-FY180	8/12/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-091 2WSS-FY180	8/13/86				
041.001	CAL	IE-06-41-1	WSS	IE.GENE.006	LCR INS	IL2WSS-091 2WSS-FY180	8/12/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-092 2WSS-TS181	5/21/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-092 2WSS-TS181	5/20/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-093 2WSS-PDIS187	8/1/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-093 2WSS-PDIS187	8/1/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-094 2WSS-PS188	6/6/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-094 2WSS-PS188	6/6/86				
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-096 2WSS-PS223	4/9/86				
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-096 2WSS-PS223	4/9/86				

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SEL: TEST   '........ 041.001  TO                          TESTABLE !   I LIST                                  NAME:      MTSTMRF-'1
     TEST ..PE....... CAL INS                               **********. .******                                  DATE:        10/0    6
SEQ: TEST BIP........ 1                                                                                          TIME:        15:27:03
     TEST ITEM 1..... 2                                                                                          PAGE:              21
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE          TEST      SYS  TEST-PROCEDURE       TYPE  TESTABLE ITEM        SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-097               7/24/86
                                                       INS   2WSS-FR200

041.001  CAL  IE-10-41-1     WSS  IE.GENE.010          LCR   IL2WSS-097               7/28/86
                                                       INS   2WSS-FR200

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-097               8/20/86
                                                       INS   2WSS-FSH/FSL200

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013          LCR   IL2WSS-097               8/19/86
                                                       INS   2WSS-FSH/FSL200

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-097               7/29/86
                                                       INS   2WSS-FT/FQI200

041.001  CAL  IE-16-41-1     WSS  IE.GENE.016          LCR   IL2WSS-097               7/24/86
                                                       INS   2WSS-FT/FQI200

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-098               7/29/86
                                                       INS   2WSS-FR201

041.001  CAL  IE-10-41-1     WSS  IE.GENE.010          LCR   IL2WSS-098               7/24/86
                                                       INS   2WSS-FR201

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-098               7/31/86
                                                       INS   2WSS-FSH/FSL201

041.001  CAL  IE-13-41-1     WSS  IE.GENE.013          LCR   IL2WSS-098               7/30/86
                                                       INS   2WSS-FSH/FSL201

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-098               7/24/86
                                                       INS   2WSS-FT/FQI201

041.001  CAL  IE-16-41-1     WSS  IE.GENE.016          LCR   IL2WSS-098               7/29/86
                                                       INS   2WSS-FT/FQI201

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-099
                                                       INS   2WSS-FIC202

041.001  CAL  IE-05-41-1     WSS  IE.GENE.005          LCR   IL2WSS-099
                                                       INS   2WSS-FIC202

041.001  INS  IE-15-41-1     WSS  IE.GENE.015          LCR   IL2WSS-099                                  E 4
                                                       INS   2WSS-FQI202

041.001  CAL  IE-02-41-1     WSS  IE.GENE.002          LCR   IL2WSS-099
                                                       INS   2WSS-FR202

041.001  CAL  IE-10-41-1     WSS  IE.GENE.010          LCR   IL2WSS-099
                                                       INS   2WSS-FR202
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SEL: TEST  P........ 041.001  TO                  TESTABLE '  M LIST                  NAME:    MTSTMR  11
     TEST  PE....... CAL INS                      *********:  ******                  DATE:      10/C   6
SEQ: TEST BIP........ 1                                                               TIME:      15:27.03
     TEST ITEM 1..... 2                                                               PAGE:            22
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
```

TEST	BIP-TYPE	TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK MS CAL FRQ	NODE
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-099 2WSS-FSH/FSL202			
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-099 2WSS-FSH/FSL202			
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-099 2WSS-FT202		E4	
041.001	CAL	IE-16-41-1	WSS	IE.GENE.016	LCR INS	IL2WSS-099 2WSS-FT202			
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-099 2WSS-PSA/PSB			
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-100 2WSS-LS222	4/14/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-100 2WSS-LS222	4/14/86		
041.001	CAL	IE-05-41-1	WSS	IE.GENE.005	LCR INS	IL2WSS-101 2WSS-TIC174	8/8/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-101 2WSS-TV174	8/9/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-101 2WSS-TV174	7/24/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-101 2WSS-TY174	8/9/86		
041.001	CAL	IE-06-41-1	WSS	IE.GENE.006	LCR INS	IL2WSS-101 2WSS-TY174	7/21/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-102 2WSS-HV177	5/20/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-102 2WSS-SOV177	5/20/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-103 2WSS-HV128	4/17/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-103 2WSS-SOVX128	4/17/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-103 2WSS-SOVY128	4/17/86		

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SEL: TEST  #........ 041.001  TO                         TESTABLE ITEM LIST                              NAME:    MTSTMP  '1
     TEST TYPE....... CAL INS                            ******************                              DATE:      10/0  86
SEQ: TEST BIP........ 1                                                                                  TIME:      15:27:03
     TEST ITEM 1..... 2                                                                                  PAGE:            23
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST      SYS   TEST-PROCEDURE      TYPE  TESTABLE ITEM      SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-104                  3/6/86
                                                         INS   2WSS-HV8A

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-104                  3/6/86
                                                         INS   2WSS-SOV8A

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-105                  3/6/86
                                                         INS   2WSS-HV8B

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-105                  3/6/86
                                                         INS   2WSS-SOV8B

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-106                  3/6/86
                                                         INS   2WSS-HV9A

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-106                  3/6/86
                                                         INS   2WSS-SOV9A

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-107                  3/6/86
                                                         INS   2WSS-HV9B

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-107                  3/6/86
                                                         INS   2WSS-SOV9B

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-108                  3/7/86
                                                         INS   2WSS-HV10A

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-108                  3/7/86
                                                         INS   2WSS-SOV10A

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-109                  3/7/86
                                                         INS   2WSS-HV10B

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-109                  3/7/86
                                                         INS   2WSS-SOV10B

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-110                  4/2/86
                                                         INS   2WSS-HV11A

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-110                  4/2/86
                                                         INS   2WSS-SOV11A

041.001  CAL  IE-17-41-1      WSS   IE.GENE.017         LCR   IL2WSS-111                  3/7/86
                                                         INS   2WSS-HV11B

041.001  CAL  IE-02-41-1      WSS   IE.GENE.002         LCR   IL2WSS-111                  3/7/86
                                                         INS   2WSS-SOV11B

     01  CAL  IE-17-41-1      WSS   IE.GENE.017         LC    IL2WSS-112                  7/22/81
                                                         I     2WSS-HV12A
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SEL: TEST     ........ 041.001  TO                 TESTABLE I    LIST                              NAME:     MTSTMRF  1
     TEST ..PE....... CAL INS                      **********..******                            DATE:       10/0   5
SEQ: TEST BIP........ 1                                                                          TIME:       15:27:03
     TEST ITEM 1..... 2                                                                          PAGE:             24
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE              TEST     SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM        SCH-STRACT-CPLT  JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-112            7/12/86
                                                            INS    2WSS-SOV12A

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-113            7/12/86
                                                            INS    2WSS-HV12B

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-113            7/12/86
                                                            INS    2WSS-SOV12B

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-114            3/6/86
                                                            INS    2WSS-HV13A

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-114            3/6/86
                                                            INS    2WSS-SOV13A

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-115            3/6/86
                                                            INS    2WSS-HV13B

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-115            3/6/86
                                                            INS    2WSS-SOV13B

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-116            3/6/86
                                                            INS    2WSS-HV14A

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-116            3/6/86
                                                            INS    2WSS-SOV14A

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-117            3/6/86
                                                            INS    2WSS-HV14B

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-117            3/6/86
                                                            INS    2WSS-SOV14B

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-118            4/17/86
                                                            INS    2WSS-HV129

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-118            4/17/86
                                                            INS    2WSS-SOV129

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-119            4/21/86
                                                            INS    2WSS-HV130

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002           LCR    IL2WSS-119            4/21/86
                                                            INS    2WSS-SOV130

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017           LCR    IL2WSS-120            4/25/86
                                                            INS    2WSS-HV131

     01  CAL  IE-02-41-1        WSS   IE.GENE.002           LC     IL2WSS-120            4/25/86
                                                            I      2WSS-SOV131
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SEL: TEST   ......... 041.001  TO          TESTABLE    1 LIST                 NAME:    MTSTMP   1
     TEST TYPE....... CAL INS              ******************                 DATE:      10/0  .6
SEQ: TEST BIP........ 1                                                       TIME:      15.27.03
     TEST ITEM 1..... 2                                                       PAGE:            25
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
```

TEST	BIP-TYPE	TEST	SYS	TEST-PROCEDURE	TYPE	TESTABLE ITEM	SCH-STRACT-CPLT	JOB-BOOK MS CAL FRQ	NODE
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-121 2WSS-HV204	5/9/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-121 2WSS-SOV204	5/9/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-122 2WSS-HV217	5/8/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-122 2WSS-SOV217	5/8/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-123 2WSS-HV218	5/8/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-123 2WSS-SOV218	5/8/86		
041.001	CAL	IE-07-41-1	WSS	IE.GENE.007	LCR INS	IL2WSS-124 2WSS-TE165		E5	
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-124 2WSS-TSH/TSL165			
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-124 2WSS-TSH/TSL165			
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-125 2WSS-PS226	4/9/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-125 2WSS-PS226	4/9/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-126 2WSS-TS228	4/15/86		
041.001	CAL	IE-13-41-1	WSS	IE.GENE.013	LCR INS	IL2WSS-126 2WSS-TS228	4/15/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-127 2WSS-HV117	5/9/86		
041.001	CAL	IE-02-41-1	WSS	IE.GENE.002	LCR INS	IL2WSS-127 2WSS-SOV117	5/9/86		
041.001	CAL	IE-17-41-1	WSS	IE.GENE.017	LCR INS	IL2WSS-128 2WSS-HV118	5/8/86		
[illegible]01	CAL	IE-02-41-1	WSS	IE.GENE.002	LC[illegible] I[illegible]	IL2WSS-128 2WSS-SOV118	5/8/86		

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SEL: TEST   ?........ 041.001   TO                    TESTABLE '   M LIST                                     NAME:     MTSTMR^^11
     TEST   .PE....... CAL INS                        *********.  ******                                      DATE:       10/(    6
SEQ: TEST BIP........ 1                                                                                       TIME.      15.2/.03
     TEST ITEM 1..... 2                                                                                       PAGE:            26
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST     SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-129                   3/19/86
                                                            INS    2WSS-HV119

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-129                   3/19/86
                                                            INS    2WSS-SOV119

041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-130                   2/7/86
                                                            INS    2WSS-HV124

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-130                   2/7/86
                                                            INS    2WSS-SOV124

041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-131                   3/19/86
                                                            INS    2WSS-HV125

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-131                   3/19/86
                                                            INS    2WSS-SOV125

041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-132                   4/17/86
                                                            INS    2WSS-HV127

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-132                   4/17/86
                                                            INS    2WSS-SOV127

041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-133                   3/19/86
                                                            INS    2WSS-HV121

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-133                   3/19/86
                                                            INS    2WSS-SOV121

041.001  CAL   IE-17-41-1       WSS   IE.GENE.017           LCR    IL2WSS-134                   3/19/86
                                                            INS    2WSS-HV126

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-134                   3/19/86
                                                            INS    2WSS-SOV126

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-137                   4/12/86
                                                            INS    2WSS-LS231

041.001  CAL   IE-13-41-1       WSS   IE.GENE.013           LCR    IL2WSS-137                   4/12/86
                                                            INS    2WSS-LS231

041.001  CAL   IE-02-41-1       WSS   IE.GENE.002           LCR    IL2WSS-138                   4/14/86
                                                            INS    2WSS-LC/LSH/L235

041.001  CAL   IE-13-41-1       WSS   IE.GENE.013           LCR    IL2WSS-138                   4/14/86
                                                            INS    2WSS-LC/LSH/L235

     01  CAL   IE-02-41-1       WSS   IE.GENE.002           L      IL2WSS-139                   7/22/86
                                                            I      2WSS-PC225
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SEL: TEST   P........ 041.001  TO                              TESTABLE    M LIST                                      NAME:    MTSTM   11
     TEST TYPE....... CAL INS                                  ******************                                      DATE:      10/0. 86
SEQ: TEST BIP........ 1                                                                                                TIME:      15:27:03
     TEST ITEM 1..... 2                                                                                                PAGE:            27
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST      SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-05-41-1        WSS  IE.GENE.005           LCR    IL2WSS-139
                                                           INS    2WSS-PC225              7/22/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-140
                                                           INS    2WSS-LS389              4/9/86

041.001  CAL  IE-13-41-1        WSS  IE.GENE.013           LCR    IL2WSS-140
                                                           INS    2WSS-LS389              4/9/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-141
                                                           INS    2WSS-TS393              5/31/86

041.001  CAL  IE-13-41-1        WSS  IE.GENE.013           LCR    IL2WSS-141
                                                           INS    2WSS-TS393              5/31/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-143
                                                           INS    2WSS-SOV195             6/6/86

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007           LCR    IL2WSS-146
                                                           INS    2WSS-TEY136             6/10/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-146
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-10-41-1        WSS  IE.GENE.010           LCR    IL2WSS-146
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007           LCR    IL2WSS-147
                                                           INS    2WSS-TEY137             6/10/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-147
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-10-41-1        WSS  IE.GENE.010           LCR    IL2WSS-147
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007           LCR    IL2WSS-148
                                                           INS    2WSS-TEY138             6/10/86

041.001  CAL  IE-02-41-1        WSS  IE.GENE.002           LCR    IL2WSS-148
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-10-41-1        WSS  IE.GENE.010           LCR    IL2WSS-148
                                                           INS    2WSS-TJR155             6/14/86

041.001  CAL  IE-07-41-1        WSS  IE.GENE.007           LCR    IL2WSS-149
                                                           INS    2WSS-TEY139             6/12/86

0     1  CAL  IE-02-41-1        WSS  IE.GENE.002           LC      L2WSS-149
                                                           IN      WSS-TJR155             6/14/86
```

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SEL: TEST   P........ 041.001  TO                    TESTABLE   M LIST                              NAME:    MTSTMRP[illegible]11
     TEST   PE....... CAL INS                        *********:  ******                             DATE:      10/[illegible]6
SEQ: TEST BIP........ 1                                                                             TIME:     15:2[illegible].03
     TEST ITEM 1..... 2                                                                             PAGE:           28
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST     SYS   TEST-PROCEDURE         TYPE   TESTABLE ITEM        SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001   CAL   IE-10-41-1     WSS   IE.GENE.010            LCR    IL2WSS-149              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-07-41-1     WSS   IE.GENE.007            LCR    IL2WSS-150              6/12/86
                                                            INS    2WSS-TEY140

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-150              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-10-41-1     WSS   IE.GENE.010            LCR    IL2WSS-150              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-07-41-1     WSS   IE.GENE.007            LCR    IL2WSS-151              6/12/86
                                                            INS    2WSS-TEY141

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-151              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-10-41-1     WSS   IE.GENE.010            LCR    IL2WSS-151              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-07-41-1     WSS   IE.GENE.007            LCR    IL2WSS-152              6/13/86
                                                            INS    2WSS-TEY142

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-152              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-10-41-1     WSS   IE.GENE.010            LCR    IL2WSS-152              6/14/86
                                                            INS    2WSS-TJR155

041.001   CAL   IE-17-41-1     WSS   IE.GENE.017            LCR    IL2WSS-153              3/19/86
                                                            INS    2WSS-AOV401

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-153              3/19/86
                                                            INS    2WSS-SOV401

041.001   CAL   IE-17-41-1     WSS   IE.GENE.017            LCR    IL2WSS-154              3/19/86
                                                            INS    2WSS-AOV402

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-154              3/19/86
                                                            INS    2WSS-SOV402

041.001   CAL   IE-17-41-1     WSS   IE.GENE.017            LCR    IL2WSS-155              3/19/86
                                                            INS    2WSS-AOV403

041.001   CAL   IE-02-41-1     WSS   IE.GENE.002            LCR    IL2WSS-155              3/19/86
                                                            INS    2WSS-SOV403

0[illegible]001   CAL   IE-17-41-1     WSS   IE.GENE.017    LC[illegible]  IL2WSS-156              3/19/86
                                                            I[illegible]   2WSS-AOV404
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SEL: TEST  [illegible]P........ 041.001  TO                          TESTABLE [illegible] LIST                                  NAME:    MTSTMF [illegible]1
     TEST [illegible]YPE....... CAL INS                              ##########.#######                                        DATE:      10/[illegible]86
SEQ: TEST BIP........ 1                                                                                                        TIME:      15:27:03
     TEST ITEM 1..... 2                                                                                                        PAGE:            29
     TEST ITEM 2..... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE            TEST      SYS   TEST-PROCEDURE          TYPE   TESTABLE ITEM          SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-02-41-1        WSS   IE.GENE.002             LCR    IL2WSS-156
                                                               INS    2WSS-SOV404                3/19/86

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017             LCR    IL2WSS-157
                                                               INS    2WSS-AOV405                3/19/86

041.001  CAL  IE-02-41-1        WSS   IE.GENE.002             LCR    IL2WSS-157                 3/19/86
                                                               INS    2WSS-SOV405

041.001  CAL  IE-17-41-1        WSS   IE.GENE.017             LCR    IL2WSS-158
                                                               INS    2WSS-HV122                            |
                                                                                                            | E6
041.001  CAL  IE-02-41-1        WSS   IE.GENE.002             LCR    IL2WSS-158                             |
                                                               INS    2WSS-SOV122                           |

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A                6/22/86
                                                               INS    2WSS-PI112

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI113                 6/9/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI143                 4/14/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI157                 6/15/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI168                 4/24/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI171                 7/14/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI182                 4/14/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI188                 4/14/86
                                                                                                                    10-5-86
041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI19A                 ~~4/14/86~~ 6/4/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI19B                 6/5/86

041.001  CAL  IE-08-41-1        WSS   IE.GENE.008             LCR    IL2WSS-900A
                                                               INS    2WSS-PI224                 3/27/86

[illegible]01  CAL  IE-08-41-1    WSS   IE.GENE.008             LC[illegible] IL2WSS-900A
                                                               I[illegible]  2WSS-PI229           3/26/86
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SEL: TEST   ?........ 041.001  TO                        TESTABLE    I LIST                                      NAME:     MTSTMP  '1
     TEST ..PE....... CAL INS                            **********..*******                                     DATE:       10/(  .6
SEQ: TEST BIP........ 1                                                                                          TIME:       15:27:03
     TEST ITEM 1..... 2                                                                                          PAGE:             30
     TEST ITEM 2:.... 3
     TEST ITEM 3..... 4
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TEST BIP-TYPE              TEST     SYS   TEST-PROCEDURE        TYPE   TESTABLE ITEM        SCH-STRACT-CPLT   JOB-BOOK MS CAL FRQ  NODE
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041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-900A                6/11/86
                                                              INS    2WSS-PI3A

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-900A                6/10/86
                                                              INS    2WSS-PI3B

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-900A                9/22/86
                                                              INS    2WSS-PI330

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902A                5/21/86
                                                              INS    2WSS-TI183

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902A                5/21/86
                                                              INS    2WSS-TI184

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902A                5/21/86
                                                              INS    2WSS-TI211

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902A                5/22/86
                                                              INS    2WSS-TI227

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902A                5/22/86
                                                              INS    2WSS-TI232

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902B                5/21/86
                                                              INS    2WSS-TI173

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902B                5/21/86
                                                              INS    2WSS-TI185

041.001  CAL  IE-08-41-1          WSS   IE.GENE.008           LCR    IL2WSS-902B                5/21/86
                                                              INS    2WSS-TI186
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NIAGARA MOHAWK POWER CORP.

TEST SUMMARY

Waste Solidification System
N2-POT-41-1

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REMARKS

TS#1 9/11/86 INCORPORATED FRF N2-POT-41-1-1 INTO PROCEDURE, SEE COPY ATTACHED. 9/11/86

TS#2 10/5/86 COMPLETED INITIAL VALVE LINEUP (STEP 4.1.4.7, ATTACHMENT 9.2) WITH THE FOLLOWING DISCREPANCIES:

1) CHANGED THE REQUIRED POSITION OF 2WSS-HV9A, HV8A, AND HV203 FROM OPEN TO CLOSE TO AGREE WITH THE SHUTDOWN CONDITION OF THE SYSTEM. 2WWS-HV8A DOES NOT EXIST. REFER TO PAGE 164 OF 271.

2) CHANGED THE REQUIRED POSITION OF 2WSS-HV131 AND 2WSS-HV130 FROM OPEN TO CLOSE TO AGREE WITH THE SHUTDOWN CONDITION OF THE SYSTEM. REFER TO PAGE 165 OF 271.

3) CHANGED THE REQUIRED POSITION OF 2WSS-HV11A (PAGE 166 OF 271), 2WSS-HV10A, AND 2WSS-HV204 (PAGE 167 OF 271) TO AGREE WITH THE SHUTDOWN CONDITION OF THE SYSTEM.

4) CHANGED THE REQUIRED POSITION OF 2WSS-V379 FROM CLOSE TO OPEN. ASPHALT SYSTEM IS OPERATING. (PAGE 169 OF 271).

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REMARKS

TS #2 (CONT.)

5) CHANGED THE REQUIRED POSITION OF 2WSS-V11 TO OPEN. VALVE IS A MANUAL PUMP SUCTION AND SHOULD BE OPEN. 2WSS-HV12A IS A REMOTE OPERATED VALVE THAT WILL BE OPEN ONLY WHEN RUNNING THE METERING PUMP. VALVES 2WSS-V381 AND V382 ARE NOT INSTALLED (WERE TEMPORARY SUCTION STRAINER DRAIN VALVES). 2WSS-V386 WAS CHANGED TO 2WSS-V749 BY ECN WSS-018. 2WSS-V475 WAS CHANGED TO 2WSS-V748 BY ECN WSS-018. REFER TO PAGES 170 OF 271, 171 OF 271.

6) CHANGED THE REQUIRED POSITION OF 2WSS-AOV154 AND AOV153 TO CLOSE. THESE VALVES WILL BE OPEN ONLY DURING OPERATION OF EXTRUDER/EVAPORATOR. REFER TO PAGE 172 OF 271.

7) 2WSS-V38 REQUIRED POSITION SHOULD BE OPEN. VALVE IS A MAINTENANCE ISOLATION ONLY. REFER TO PAGE 173 OF 271.

RECORD COPY

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REMARKS

TS#2 (CONT.)

8) CHANGED THE POSITION OF 2WSS-V149, V150, AND V151 TO CLOSE TO AGREE WITH FSK-31-3H. VALVES SHOULD BE CLOSED EXCEPT DURING STEAM DOME MAINTENANCE (PAGE 177 OF 271).

9) 2WSS-V134 WAS CHANGED TO 2WSS-V730 AND 2WSS-V135 WAS CHANGED TO 2WSS-V731 BY ECN WSS-016. (PAGE 178 OF 271).

10) CHANGED THE REQUIRED POSITION OF 2WSS-V706 TO CLOSE DUE TO TESTING OF UTILITY MANIFOLD VALVES AND INSULATION WORK. 2WSS-V450 WAS DELETED BY ECN WSS-010. 2WSS-V705 WAS CHANGED TO 2WSS-V750 BY ECN WSS-607. (PAGE 186 OF 271).

11) CORRECTED VALVE NUMBER TYPO'S (PAGE 187 OF 271).

12) CHANGED REQUIRED POSITION OF 2WSS-V486 TO CLOSE. 2WSS-PI276 WAS DELETED BY ECN WSS-601. (PAGE 189 OF 271).

13) 2WSS-V20 WAS DELETED BY ECN WSS-013. (PAGE 194 OF 271).

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REMARKS

TS#2 (CONT.)

14) 2WSS-V621 IS A VENT VALVE, SHOULD BE CLOSED (REQUIRE POSITION CHANGED, PAGE 204 OF 271).

10/5/86

TS#3 10/5/86 COMPLETE INITIAL ELECTRICAL LINEUP (STEP 4.1.4.8, ATTACHMENT 9.3). NO DISCREPANCIES

10/5/86

TS#4 10/6/86 THE FOLLOWING DEVICES ON THE INSTALLED INSTRUMENT CALIBRATION LIST (ATTACHMENT 9.1) DO NOT REQUIRE CALIBRATION: 2WSS-LCV237, 2WSS-FG164, 2WSS-FI21A/B, 2WSS-FI175, 2WSS-LG221, AND 2WSS-LG230.

10/6/86

TS#5 10/6/86 THERE ARE NO MARKUPS REQUIRED TO PERFORM THIS PROCEDURE.

10/6/86

TS#6 10/6/86 ALL MATERIALS REQUIRED TO PERFORM THIS TEST ARE AVAILABLE. ADDITIONAL RADWASTE LINERS ARE ON ORDER AND SHOULD BE ON SITE ON OR AROUND 10/24/86.

10/6/86

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REMARKS

TS # 7 10/6/86 COMPLETED REVIEW OF SYSTEM DEFICIENCY LIST (ATTACHMENT 9.8). THE FOLLOWING OPEN ITEMS AFFECT THIS TEST:

1) DR # 23704 REPLACE ASPHALT FLOW TOTALIZER ALSO ASSOCIATED DR # 23848 TO REPLACE FLOW ELEMENT PICKOFF. BOTH ITEMS WILL BE COMPLETED PRIOR TO PERFORMING SECTION 4.11 (REFER TO EXCEPTION E4.)

2) PR # 5584 RADWASTE DRUM LEVEL PROBES 2WSS-LT23A/B. RESOLUTION AND IMPLEMENTATION IS REQUIRED PRIOR TO COMPLETING STEPS 4.10.5.2 THROUGH 4.10.5.5 AND PERFORMING SECTION 4.11. (REFER TO EXCEPTION E2).

3) DR # 23331 FAILED TEMPERATURE TRANSMITTER 2WSS-TT142. REFER TO EXCEPTION E3.

NOTE: DR # 23848 (2WSS-FE202) WAS WRITTEN ON 10/6/86 AND DOES NOT APPEAR ON PRINTOUT.

10/6/86

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REMARKS

TS #8 10/6/86 COMPLETED WALKDOWN OF SYSTEM USING TWO-WAY RADIO, NOTED THE FOLLOWING:

1) VERY SLIGHT DEFLECTION OF DIGITAL READOUT ON EVAPORATOR BOTTOMS TANK (2LWS-TK10) LEVEL TRANSMITTER, 2LWS-LIT161.
2) DEFLECTIONS OF UP TO 2 pH UNITS ON THE WASTE CONCENTRATES pH INDICATOR (LOCATED ON INSTRUMENT RACK). DEFLECTIONS CAUSED ALARM CONDITION ON 2WSS-ZPNL210. INSTRUMENT IS 2WSS-AIT110.
3) NO OTHER EQUIPMENT OPERATION WAS NOTED.

10/6/86

TS #9 10/7/86 1645 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.3. NO VALVE OR ELECTRICAL LINEUPS WILL BE REQUIRED FOR THIS SECTION (SYSTEM LINEUP VERIFICATION ONLY). 10/7/86

TS #10 10/7/86 SEAL WATER FLOW ON 2SWR-RAK48A, 48B AND 208 WILL BE ZERO WHEN THE ASSOCIATED PUMPS ARE NOT RUNNING DUE TO SOLENOID VALVES.

10/7/86

RECORD COPY

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REMARKS

TS#11 10/7/86 SECTION 4.3.4, STEPS 4.3.4.1 THROUGH 4.3.4.13 NEED NOT BE PERFORMED DURING THIS TEST. THE AUXILIARY BOILER (2WSS-B2A) STARTUP WAS COMPLETED AND CHEMISTRY CONTROL DETERMINED DURING PRELIMINARY TESTING. 10/7/86

TS#12 10/7/86 SECTION 4.3.5, STEPS 4.3.5.1 THROUGH 4.3.5.11 NEED NOT BE PERFORMED DURING THIS TEST. THE ASPHALT TANK IS FILLED TO 85%, TEMPERATURE IS 321°F AS INDICATED ON 2WSS-TI114, AND THE ASPHALT RECIRCULATION SYSTEM IS OPERATING. 10/7/86

TS#13 10/7/86 SECTION 4.3.7, STEPS 4.3.7.1 THROUGH 4.3.7.8 NEED NOT BE PERFORMED DURING THIS TEST. THE LUBE OIL SYSTEM STARTUP WAS PERFORMED DURING PRELIMINARY TESTING. 10/7/86

TS#14 10/7/86 STOPPED TESTING AT 2330 HOURS FOR SHIFT TURNOVER. THE FOLLOWING SECTIONS ARE COMPLETE: 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6. 10/7/86

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REMARKS

TS #15 10/8/86 RESUMED TEST AT 0230. COMMENCED SECTION 4.5.1. THE ASPHALT RECIRC PUMP P3A WAS RUNNING PREVIOUSLY (SEE TEST SUMMARY NOTE # 12). PUMP WAS STOPPED THEN RE-STARTED TO START TEST PER STEP 4.5.1.1.1. SECTION 4.5.1 COMPLETED AT 0300. ASPHALT RECIRC PUMP P3B RESTARTED AFTER COMPLETION OF STEP 4.5.1.2.5 TO MAINTAIN SYSTEM IN RECIRCULATION.

BWoodland 10/8/86

TS #16 10/8/86 SECTION 4.4.1, STEPS 4.4.1.1 THROUGH 4.4.1.10 WILL NOT BE PERFORMED DURING THIS TEST. THE AUX. BOILER STEAM RATE VERIFICATION WAS PERFORMED DURING PRELIMINARY TESTING AND DOCUMENTED ON D.R. # 19782.

BWoodland 10/8/86

TS # 17 10/8/86 SECTION 4.4.4.2 AND 4.5.2 WILL NOT BE PERFORMED DURING THIS TEST. THE ASPHALT HEATUP RATE IS APPROXIMATELY 10°F PER DAY.

BWoodland 10/8/86

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REMARKS

TS#18 10/8/86 0845 COMPLETED PRETEST BRIEF. ATTEMPTED TO COMMENCE SECTION 4.4.1.2. IT WAS DISCOVERED THAT THE AUX. BOILER MALFUNCTION ALARM WAS ENERGIZED WITH NO APPEARANT CAUSE. TEST STOPPED AT 0900 TO TROUBLESHOOT. BWoodland 10-8-86

TS# 19 10/8/86 FOUND CONTROL RELAY CR3 CONTACT 79-80 (AUX. BOILER LOW-LOW LEVEL) STUCK CLOSED. RELAY WAS DISASSEMBLED AND CONTACTS CLEANED (REFERENCE DR#23873). THIS CORRECTED THE PROBLEM. BWoodland 10-8-86

TS#20 10/9/86 1300. RESUMED TEST, PRETEST BRIEF COMPLETE. COMMENCING SECTION 4.8.4.

10/9/86

TS#21 10/9/86 LEADS 10083 AND 10103 WERE LIFTED AT THE MODICON CONTROLLER INPUT MODULES, CH. 1. LEAD 10183 WAS LIFTED AT MODICON INPUT MODULE, CH. 2.

10/9/86

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REMARKS

TS#22 10/9/86 COMPUTER POINT 2WSSBC015 DID NOT PRINT ON
LWS PRINTER, ALTHOUGH THE CONSOLE CRT
RECOGNIZED THE STATUS CHANGE. THE PUMP
WAS STOPPED THEN RESTARTED, AND THE
COMPUTER POINT PRINTED. 10/9/86

TS#23 10/9/86 STEP 4.8.4.8.1 THE RED INDICATION AT
2SWR-PNL100 OF 2SWR-SOV15A POSITION
DID NOT LIGHT. THE SOLENOID DID OPEN
AS VERIFIED BY FLOW THROUGH THE SEAL
WATER RACK. REPLACED LIGHT BULBS, LIGHT
FUNCTIONS PROPERLY. 10/9/86

TS#24 10/9/86 ANNUNCIATOR 210424 DID NOT ENERGIZE.
THE LIGHT BULBS WERE REPLACED AND THE
WINDOW FUNCTIONED PROPERLY (STEP 4.8.4.9.1).
10/9/86

TS#25 10/9/86 STEP 4.8.4.30 10182 IS A TYPO, SHOULD
BE 10183.
10/9/86

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REMARKS

TS#26 10/9/86 COMPLETED SECTION 4.8.4 AT 1630.
COMMENCED SECTION 4.8.1. COMPLETED SECTION
4.8.2 AT 1830. 10/9/86
TS#27 10/13/86 1300 RESUMED TEST. PRETEST BRIEF
COMPLETED. COMPLETED SECTION 4.4.1.3, 4.4.2, AND
4.4.3.2 AT 1415. STOPPED TESTING 10/13/86
TS#28 10/14/86 0900 RESUMED TEST. PRETEST BRIEF COMPLETE.
COMMENCED SECTION 4.3.9. DURING LINEUP OF CAPPER
UNIT, THE MAGNET ASSEMBLY USED FOR PICKING UP
THE LINER LIDS WAS FOUND MISSING. PROBLEM REPORT
NO. 5995 WRITTEN TO DESIGN A REPLACEMENT
ASSEMBLY. 10/14/86
TS#29 10/14/86 1430 STOPPED TESTING. COMPLETED SECTION
4.4.3.1. 10/14/86
TS#30 10/15/86 1400 RESUMED TEST. PRETEST BRIEF COMPLETE.
COMMENCED EXTRUDER/EVAPORATOR HEATUP (SECTION
4.8.3.1). 10/14/86

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REMARKS

TS#31 10/15/86 1930 STOPPED TESTING. THE FOLLOWING SECTIONS ARE COMPLETE: 4.3.7, 4.3.8, 4.8.3.1, 4.8.3.2. 10/15/86

TS#32 10/16/86 1700 COMPLETED THE FOLLOWING EXTRUDER/EVAPORATOR SPEED CONTROL LOOP CALIBRATIONS:

1) IL2WSS-063 2WSS-ISH/HH 135
2) IL2WSS-068 2WSS-SSLX 135

REFER TO EXCEPTION #E1. LOOPS WERE PERFORMED WITH THE MOTOR UNCOUPLED FROM THE GEARBOX.

10/16/86

TS#33 10/16/86 COMPLETED 2L2WSS-046 LOOP CALIBRATION

10/16/86

TS#34 10/25/86 THE WASTE SLUDGE TRANSFER PUMP 2WSS-P11 HAS BEEN REASSEMBLED AND TESTED SATISFACTORILY. PUMP WAS DISASSEMBLED TO REPLACE WORN PARTS REFERENCE WR# 107201 10/25/86

TS#35 10/27/86 1700 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.6.1. THE SPENT RESIN PUMP 2LWS-P7 DID NOT TRIP AT THE SETPOINT OF 2WSS-FQIS 100. ALSO, WASTE SLUDGE TANK LEVEL HI-HI TRIPPED

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REMARKS

TS#35 (CONT.) VALVE 2WSS-HV117 WHEN TANK LEVEL INDICATED 80%. TEST STOPPED AT 1730. WR# 113998 WRITTEN TO INVESTIGATE/REPAIR 2LWS-P7 TRIP. 10/27/86

TS#36 10/28/86 1400 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.4.1.2. COMPUTER POINT "WSSPC005 AUXILIARY BOILER B24 PRESSURE" ~~AE~~ JM 10/28/86 DID NOT COME IN ON STEPS 4.4.1.2.1 AND 4.4.1.2.3.1. WR# 113414 WRITTEN TO TROUBLESHOOT/REPAIR. 10/28/86

TS#37 10/28/86 1700 COMMENCED SECTION 4.6.1. THE WASTE SLUDGE TANK LEVEL INDICATION (2WSS-LT101) HAS BEEN RECALIBRATED FOR A SPECIFIC GRAVITY OF 1.0. REFER TO PROBLEM REPORT #6097. EXCEPTION # E18 IS NO LONGER REQUIRED. RE-PERFORMED STEPS 4.6.1.1 AND 4.6.1.6. STEP 4.6.1.7 DID NOT WORK (REFER TO TS#35). AFTER TRIPS OF 2LWS-P16A AND P16B (STEPS 4.6.1.12 AND 4.6.1.16 RESPECTIVELY) ON BATCH METER

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REMARKS

TS#37 (CONT.) 2WSS-FQIS100 SETPOINT, FLOW CONTINUED DUE TO SIPHONING ALTHOUGH THE PUMPS STOPPED. PR#6098 WRITTEN TO CHANGE PREDETERMINED FLOW TRIPS TO THE RESPECTIVE DISCHARGE VALVES (2WSS-HV117, HV118) VICE PUMP TRIPS. ALSO, DURING STEP 4.6.1.4, THE LWS COMPUTER DID NOT INHIBIT THE FLOOR DRAIN FILTER (2LWS-FLT101) ON WASTE SLUDGE TANK HIGH LEVEL. WR# 114359 WRITTEN TO TROUBLESHOOT AND REPAIR. SECTION 4.6.1 COMPLETED AT 1830, TESTING STOPPED. 10/28/86

TS#38 10/30/86 THE FOLLOWING LOOP CALIBRATIONS HAVE BEEN COMPLETED:

1) IL2WSS-074 COMPLETED ON 10/8/86. PROBLEM REPORT #5954 WAS ANSWERED ON 10/28/86 TO ACCEPT THE TEMPORARY TEMPERATURE TRANSMITTER AS PERMANENT. REFER TO EXCEPTION #E3.

2) IL2WSS-124 COMPLETED ON 10/21/86. REFER TO EXCEPTION #E5. 10/30/86

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REMARKS

TS#39 10/31/86 1300 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.6.4. DUE TO THE SMALL VOLUME OF WATER BEING MEASURED, THE CONTENTS OF THE 250 ml CYLINDER WAS PLACED IN A SMALLER GRADUATED CYLINDER (100 ml) FOR A MORE ACCURATE READING. CORRECTED STEP 4.6.4.10.1 (CHANGED 4.6.4.6 TO 4.6.4.3) TO OBTAIN NECESSARY INFORMATION FOR DATA SHEET 5.9. COMPLETED SECTION AT 1630. DUE TO THE ERATIC VOLUMES MEASURED, THE VOLUME OF SAMPLE FROM THE SAMPLE VALVE ALONE (AOV352) WAS MEASURED 4 TIMES, YIELDING 18ml EACH TIME. IT IS ASUMED THAT THE STANDPIPE DOES NOT FILL COMPLETELY (~~THAT~~ HM 10/31/86 PROBABLY DUE TO AIR POCKETS AND BUBBLES) AND RESULTS IN A SLIGHTLY DIFFERENT VOLUME EACH SAMPLE. 10/31/86

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REMARKS

TS#40 11/4/86 0800. COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.6.3. IN STEP 4.6.3.9, ALARM "TRANSFER PUMP P11 LOW SUCTION" CAME IN, HOWEVER COMPUTER POINT WSSFC001 DID NOT PRINT. WR# 114361 WRITTEN TO TROUBLESHOOT AND REPAIR. SECTION 4.6.3 COMPLETED AT 0930. COMMENCED SECTION 4.7 11/4/86

TS#41 11/4/86 CORRECTED TYPOS IN STEPS 4.7.1.4 AND 4.7.1.5. IN ORDER TO SIMULATE THE START OF TRANSFER PUMP 2WSS-P6 IN STEP 4.7.1.6, A SINGLE POINT CHANGE TO THE LWS COMPUTER FOR THE BOTTOMS TANK (2LWS-TK10) LEVEL WAS REQUIRED (TANK LEVEL WAS 0%) REFER TO EXCEPTION E23. SECTION 4.7.1 COMPLETED AT 1130. 11/4/86

TS#42 1430 11/4/86 COMPLETED SECTION 4.6.2. STOPPED TEST. 11/4/86

TS#43 11/12/86 DURING INITIAL OPERATIONS OF THE EXTRUDER/EVAPORATOR FEEDING WITH WATER VIA THE WASTE SLUDGE METERING PUMP, IT WAS FOUND

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REMARKS

TS#43 (CONT.) THAT THE STEAM FLOW TO THE EXTRUDER IS INSUFFICIENT TO PERMIT OPERATION AT THE DESIGN WASTE FEED RATES. THE MAXIMUM FEED RATE ATAINABLE WAS APPROXIMATELY 0.18 GPM WATER, THE DESIGN RATE BEING 0.5 GPM. PROBLEM REPORT #6158 WRITTEN TO INCREASE TRIM SIZE OF THE TEMPERATURE CONTROL VALVES FROM 1/4" TO 3/8" TO INCREASE THE STEAM FLOW.

11/12/86

TS#44 11/20/86 THE SLUDGE TRANSFER PUMP 2WSS-P11 HAS FAILED DUE TO WEAR. PUMP WAS REBUILT ON 10/23/86 WITH NEW PARTS. PROBLEM REPORT #6194 WRITTEN TO REPLACE PUMP WITH DIFFERENT, MORE SUITABLE DESIGN. TEMPORARY FIX IS TO REPLACE STAINLESS STEEL PUMP ROTOR WITH A HARDENED STEEL ROTOR.

11/20/86

TS#45 11/26/86 STARTED UP THE EXTRUDER/EVAPORATOR, FEEDING WASTE CONCENTRATES. WAS ABLE TO ACHIEVE APPROX. 0.5 GPM (200 RPM ON 2WSS-P7B). IT APPEARS THAT CHANGING THE VALVE TRIM HAS CORRECTED THE

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REMARKS

TS#45 (CONT.) WASTE FEED PROBLEM. 11/26/86

TS#46 11/26/86 1545 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.10.1. AT 1600, A FIRE SIGNAL FROM THE RADWASTE FIRE PANEL 2FPM-PNL131 TRIPPED THE RUNNING ASPHALT RECIRC. PUMP AND LUBE OIL PUMP. ALARM CLEARED AND PUMPS RESTARTED AT 1630.

11/26/86

TS#47 11/26/86 1650 ATTEMPTED TO START METERING PUMP P7A. PUMP STARTS, BUT STOPS WHEN START SWITCH IS RELEASED. P7A ISOLATED AND P7B STARTED. THE THE EXTRUDER TRIPS WILL BE PERFORMED USING ONLY METERING PUMP P7B. REFER TO EXCEPTION E26.

11/26/86

TS#48 11/26/86 1710 NOTED THAT THE ~~DIGIDAL~~ HM 11/26/86 DIGITAL ASPHALT FLOW INDICATION ON 2WSS-FIC202 IS VERY ERRATIC, CONTINUOUSLY CHANGING BETWEEN 0.05 TO 0.33 GPM. FLOW SETPOINT IS APPROX. 0.2 GPM. 11/26/86

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REMARKS

TS#49 11/26/86 1720 PERFORMED ~~STD~~ HM 11/26/86 STEP 4.10.2.5, HOWEVER WHEN LEAD 206 WAS LIFTED, THE SYSTEM RESPONDED IN A WAY THAT WAS NOT EXPECTED (P7B TRIPPED, THEN P5A AND P3B TRIPPED, FOLLOWED BY EXTRUDER TRIP). IT WAS DECIDED TO RESEARCH FURTHER THE SIMULATION OF THIS FUNCTION AT A LATER DATE, AND TO PROCEED WITH THE FOLLOWING TRIPS. 11/26/86

TS#50 11/26/86 DURING PERFORMANCE OF STEP 4.10.2.8.4, TS#111 ANNUNCIATOR 210208 "ASPHALT METERING PUMP P5A/B HIGH/LOW FLOW", COMPUTER POINT WSSFC008, "METERING PUMP 5A/B FLOW LOW", AND COMPUTER POINT WSSFC006 "WASTE CONCENTRATE METERING PUMP P7A/B FLOW) DID NOT ENGERGIZE/PRINT. TROUBLESHOOTING OF THE WASTE FLOW ELEMENTS IS IN PROGRESS 11/26/86

TS#51 11/26/86 1920 INDEXED CONTAINER TURNTABLE. INSPECTED LINER THAT WAS FILLING FOR PRESENCE OF WATER. NONE WAS FOUND. SECTION 4.10.2 COMPLETED, STOPPED TESTING. 11/26/86

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REMARKS

TS#52 11/29/86 1000 COMPLETED PRETEST BRIEF. COMMENCED SECTION 4.10.3: THE WASTE SLUDGE SYSTEM IS 'OUT OF COMMISSION' DUE TO MAINTENANCE ON THE SLUDGE TRANSFER PUMP, 2WSS-P11. FOR THIS REASON, THIS SECTION WILL BE HM 11/29/86 ~~PE~~ PERFORMED USING THE CONCENTRATES RECIRC. AND FEED SYSTEM. REFER TO EXCEPTION E30. ALSO, EXCEPTION E31 HAS BEEN TAKEN TO ALLOW THE EXTRUDER BARREL TEMPERATURE MANIPULATION TO BE PERFORMED USING THE MANUAL CONTROLS OF THE INDIVIDUAL TEMPERATURE CONTROLLERS. THIS DOES NOT AFFECT THE CONTROLLER SETPOINT OR TEMPERATURE TRIP POINT. 11/29/86

TS#53 11/29/86 THE TEMPERATURES SHOWN FOR THE EXTRUDER TRIP POINTS AND NORMAL RANGES ARE INCORRECT THROUGHT THE SECTION AND WILL BE CORRECTED AS THE TEST CONTINUES. THESE TEMPERATURES WERE CHANGED BY THE VENDORS' PROCESS CONTROL PROGRAM AND INCORPORATED INTO THIS PROCEDURE BY FRF N2-POT-41-1-2. 11/29/86

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REMARKS

TS#54 11/29/86 PROCEDURE VERBAGE IS INCORRECT. WHEN THE MODICON COMPUTER RECIEVES A LOW OR HIGH TEMPERATURE SIGNAL FROM ANY OF THE TEMPERATURE CONTROLLERS, IT WILL IMMEDIATELY TRIP THE WASTE METERING PUMP. THE EXTRUDER AND ASPHALT METERING PUMP WILL TRIP AFTER THE TWO MINUTE TIME DELAY. 11/29/86

TS#55 11/29/86 1125 THE WASTE CONCENTRATES TRANSFER PUMP 2WSS-P6 HAS TRIPPED 3 TIMES ON LOW SUCTION FLOW ALTHOUGH THE PUMP DISCHARGE PRESSURE IS 51 PSIG. DISABLED THE FLOW SWITCH AND RESTARTED P6.
11/29/86

TS#56 11/29/86 1300 UNABLE TO INCREASE THE EXTRUDER BARREL #2 TEMPERATURE TO REACH THE HIGH. TEMP. SETPOINT. WHEN WASTE FEED FLOW IS AT 0.5 GPM, THE TEMP. CONTROL VALVE FOR BARREL 2 IS FULLY OPEN CONTINUOUSLY AND MAINTAINS TEMPERATURE ABOUT 15°F BELOW THE SETPOINT. HIGH TEMP. IS REACHED ONLY WHEN FLOW IS GREATLY DECREASED OR COMPLETELY STOPPED. REFER TO EXCEPTION E32. 11/29/86

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REMARKS

TS#57 11/29/86 1345 COMPLETED STEP 4.10.3.10.1.5. INDEXED THE LINER TURNTABLE TO INSPECT FOR WATER IN THE EXTRUDER DISCHARGE. NONE WAS FOUND.

11/29/86

TS#58 11/29/86 1630 COMPLETED BARREL #4 LOW TEMP. TRIP. STOPPED TEST FOR THE DAY. EXTRUDER LEFT IN HOT STANDBY CONDITION.

11/29/86

TS#59 11/30/86 0930 COMPLETED BRIEF, RESUMED TEST AT STEP 4.10.3.12.4. ATTEMPTED TO NOTIFY QA (NO ANSWER). ATTEMPTED TO INDEX THE LINER TURNTABLE, BUT TURNTABLE STOPPED ABOUT HALF WAY DUE TO A WEIGHT OVERLOAD. RESET THE OVERLOAD SWITCH AND TURNTABLE COMPLETED INDEXING. INSPECTED LINER FOR WATER, NONE FOUND. ATTEMPTED TO INDEX TURNTABLE AGAIN, TRIPPED ON OVERLOAD AGAIN AND WOULD NOT RESET. MANUALLY INDEXED TABLE AND RESET WEIGHT OVERLOAD. INDEXED TABLE AGAIN, THIS TIME IT WORKED. LOOKING INTO ADJUSTMENT OF OVERLOAD TRIP.

11/30/86

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REMARKS

TS#60 11/30/86 1130 UNABLE TO DECREASE BARREL #6 TEMPERATURE. THE TEMPERATURE OF THE WASTE/ASPHALT MIXTURE ENTERING BARREL 6 IS 350°F DUE TO PREHEAT IN BARREL 4 AND 5. BARREL 6 TEMPERATURE CONTROL VALVE STAYS SHUT DURING PROCESSING AND TEMPERATURE NEVER DECREASES BELOW 350°F. REFER TO EXCEPTION E33. 11/30/86

TS#61 11/30/86 1220 COMPLETED 4.10.3.16.10. INDEXED TURNTABLE AND INSPECTED LINER - NO WATER FOUND. SECTION 4.10.3 COMPLETE. TEST STOPPED. 11/30/86

TS#62 12/1/86 REPAIRED WASTE CONCENTRATE METERING PUMP 2WSS-P7A START SWITCH BY CLEANING AND ADJUSTING CONTACTS (CONTACTS WERE STICKING). REFER TO EXCEPTION E26.

12/1/86

TS#63 12/1/86 1100 COMPLETED BRIEF, RESUMED TEST TO PERFORM EXTRUDER DC DRIVE MALFUNCTION TRIP, STEP 4.10.2.5. QA NOTIFIED. STARTED EXTRUDER, ASPHALT METERING PUMP P5A, AND CONCENTRATE METERING PUMP P7A FEEDING AT APPROX. 0.5GPM. DRIVE MALFUNCTION

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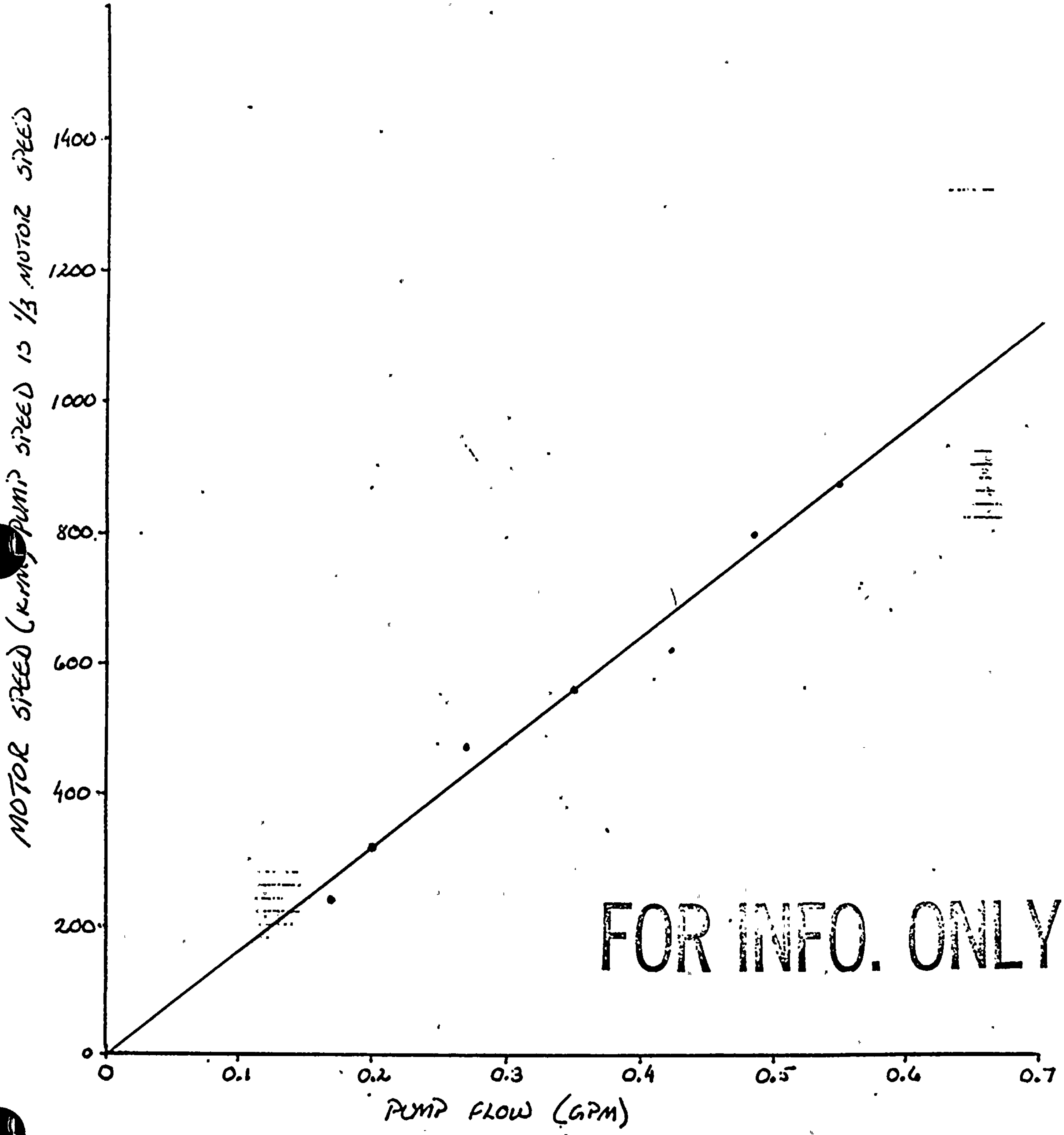
REMARKS

TS#63 (CONT.) SIMULATED BY PLACING A JUMPER FROM LEAD 206 TO LEAD 207 IN THE DC DRIVE PANEL. SYSTEM SHUTDOWN CORRECTLY. REFER TO TS#49 AND EXCEPTION E34. STOPPED TEST. Nick Mott 12/1/86

TS#64 12/2/86 REPAIRS TO THE SLUDGE TRANSFER PUMP 2WSS-P11 COMPLETE. REFER TO TEST SUMMARY NOTE TS#44. PUMP WAS REASSEMBLED WITH A HARDENED STEEL ROTOR INSTEAD OF 316SS. PUMP OPERATION IS SATISFACTORY. PERFORMED SPEED VS. FLOW RATE CALIBRATION OF SLUDGE METERING PUMPS TO BE USED DURING PROCESSING SINCE THE WASTE FEED FLOW ELEMENTS DO NOT FUNCTION CORRECTLY. TROUBLESHOOTING OF THE FLOW ELEMENTS IS IN PROGRESS (WR#115029). UNABLE TO CALIBRATE 2WSS-P12A DUE TO ITS' LEAKING MECHANICAL SEAL (PREVIOUSLY IDENTIFIED - WR#113927). P12B FLOW RATE GRAPH IS ATTACHED FOR REFERENCE.

NOTE: PR#6222 HAS BEEN WRITTEN TO Nick Mott 12/2/86
INSTALL PUMP SPEED INDICATORS IN 2WSS-PNL210.



FOR INFO. ONLY

WASTE SLUDGE METERING PUMP 2WSS-P12B

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REMARKS

TS#65 12/2/86 INCORPORATED FRF N2-POT-41-1-3 INTO PROCEDURE
12/2/86

TS#66 12/2/86 1600 COMPLETED BRIEF, RESUMED TESTING. NOTIFIED QA (W. SCHOLTEN); COMMENCED SECTION 4.11.1. PREPARATION OF WASTE IS NOT REQUIRED TO START TESTING, REFER TO EXCEPTION E35. PLACED THE SLUDGE TANK IN RECIRC AND SAMPLED PER N2-CSP-14.
12/2/86

TS#67 12/2/86 1730 SAMPLE RESULTS DETERMINED THE MAXIMUM WASTE FEED RATE TO BE 0.37 GPM AND THE MINIMUM ASPHALT FEED RATE TO BE 0.065 GPM. TEST WILL BE PERFORMED AT OR AS CLOSE AS POSSIBLE TO THESE FLOWRATES TO REFLECT MORE CLOSELY ACTUAL SYSTEM OPERATION. REFER TO EXCEPTION E36.
12/2/86

TS#68 12/2/86 OPERATIONAL NOTES - THE EXTRUDER BARREL TEMPERATURE CONTROLLERS HIGH AND LOW DEVIATION SETPOINTS HAVE BEEN CHANGED FROM 10% TO 20% DEVIATION TO ALLOW ADDED FLEXIBILITY

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REMARKS

TS#68 (CONT) DURING SYSTEM STARTUP AND OPERATION.
ALSO, PER THE VENDORS' RECOMMENDATION, BARREL #1 AND #7 COOLING WATER INLET AIR OPERATED VALVES (AOV153 AND AOV154) HAVE BEEN OVERRIDDEN OPEN TO ALLOW MORE PRECISE CONTROL OF EXTRUDER TEMPERATURE. IF THIS CHANGE APPEARS TO HELP, A PROBLEM REPORT WILL BE WRITTEN FOR A PERMANENT MODIFICATION.

12/2/86

TS#69 12/2/86 1800. COMMENCED PROCESSING. ASPHALT FEED IS 0.08 GPM, WASTE FEED IS APPROXIMATELY 0.25 GPM. WASTE SLUDGE METERING PUMP P12B SPEED IS 295 RPM (MOTOR). FLOWRATE WILL BE MONITORED BY MEASURING THE DISTILLATE DISCHARGE FROM THE EXTRUDER HOURLY, AND PERIODICALLY CHECKING THE METERING PUMP SPEED.

12/2/86

NOTE: REFER TO EXCEPTION E46 1/19/87

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REMARKS

TS#70 12/3/86 0400 COLLECTED DISTILLATE SAMPLES FROM THE DISTILLATE SKID. 12/3/86

TS#71 12/3/56 1300 COLLECTED DISTILLATE SAMPLES. 12/3/86

TS#72 12/3/86 1600 STOPPED WASTE METERING PUMP P12B, ASPHALT METERING PUMP AND SHUTDOWN EXTRUDER. THE WASTE SLUDGE TANK LEVEL IS 5%, WASTE LINER IS LESS THAN 1/4 FULL. AFTER EVALUATION OF RESULTS, IT WAS DECIDED TO STOP TESTING TO WRITE A PROCEDURE REVISION DUE TO THE EXCESSIVE NUMBER OF EXCEPTIONS THAT WOULD BE REQUIRED TO COMPLETE SECTION 4.11. THE LINER THAT WAS JUST POURED WILL BE SCRAPPED AND REPEATED AFTER THE FRF IS APPROVED AND INCORPORATED. 12/3/86

TS#73 12/4/86 1600 FRF N2-POT-41-1-4 APPROVED AND INCORPORATED INTO THE PROCEDURE. THE FOLLOWING PREVIOUS TEST EXCEPTIONS ARE NO LONGER REQUIRED: E35, E36, E37, E38, E39, E40, AND E41. 12/4/86

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REMARKS

TS#74 12/4/86 1700 COMPLETED BRIEF, COMMENCED TESTING PER SECTION 4.11.1 OF ERF N2-POT-41-1-4. 12/4/86

TS#75 12/~~5~~4/86 12/4/86 2100 CHEMISTRY RESULTS PER N2-CSP-14 DETERMINED THE MAXIMUM WASTE FLOW TO BE 0.331 GPM, AND THE MINIMUM ASPHALT FLOW TO BE 0.065 GPM. AN EMPTY LINER (SERIAL # Z73-72) IS IN POSITION UNDER THE EXTRUDER DISCHARGE. COMMENCED PROCESSING AT 2130. 12/4/86

TS#76 12/4/86 2200 SAMPLED DISTILLATE SKID 12/4/86

TS#77 12/5/86 0220 BARREL #6 HIGH TEMPERATURE (360°F) TRIPPED METERING PUMP (P12B). RESTARTED METERING PUMP AT 0235. 12/5/86

TS#78 12/5/86 0315 BARREL #6 HIGH TEMPERATURE AGAIN. SHUTDOWN EXTRUDER AND METERING PUMPS TO COOLDOWN BARREL #6. ISOLATED BARREL #6 TEMP. CONTROL VALVE, TV141 ON THE ASSUMPTION THAT VALVE MAYBE LEAKING BY. 12/5/86

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REMARKS

TS#79 12/5/86 0510 BARREL #6 TEMP. AT 322°F. STARTED
EXTRUDER, PSA AND WASTE PUMP P12B.
12/5/86

TS#80 12/5/86 1230 INCREASED ASPHALT FLOW TO 0.15
GPM DUE TO GRAINY APPEARANCE OF DISCHARGE
PRODUCT. 12/5/86

TS#81 12/5/86 1645 SYSTEM SHUTDOWN DUE TO LOSS
OF AC POWER. 12/5/86

TS#82 12/5/86 1830 RESTARTED EXTRUDER, METERING
PUMPS PSA, P12B. 12/5/86

TS#83 12/6/86 0025 SLUDGE TRANSFER PUMP 2WSS-P11
TRIPPED FOR AN UNKNOWN REASON. THIS WAS
DISCOVERED AT 0115 DUE TO NO DISTILLATE
DISCHARGE FLOW. THERE IS NO LOGIC TRIP
FOR THE METERING PUMPS ON LOSS OF TRANSFER
PUMP. METERING PUMP LOW FLOW IS DISABLED
SINCE THE FLOW LOOP DOES NOT FUNCTION
AS OF THIS DATE. RESTARTED P11 AND RESTORED
METERING FLOW. 12/6/86

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REMARKS

TS#84 12/6/86 1530 STOPPED METERING PUMP P12B. SECURED METERING PUMP P5A AND EXTRUDER SHUTDOWN AT 1545. SECTION 4.11.1 COMPLETED.

12/6/86

TS#85 12/7/86 TRANSFERED THE CONTENTS OF TK8 TO A WASTE TRUCK, BATCHED BEAD RESINS FROM SPENT RESIN TANK TO TK8. WHEN THE AGITATOR (2WSS-MIX9) WAS STARTED, IT OVERLOADED AND SHORTED THE WINDINGS. THE MOTOR WAS REMOVED AND REPLACED WITH A TEMPORARY MOTOR FROM THE WHAREHOUSE (WR #117746). WHILE ATTEMPTING TO RECIRC THE SLUDGE TANK, THE SUCTION AND DISCHARGE LINES PLUGGED. BLEW THE LINES CLEAR WITH AIR AND PUMPED ABOUT HALF OF THE TANK CONTENTS TO THE WASTE TRUCK TO DILUTE THE TANK CONTENTS. TANK RECIRC ESTABLISHED AND SAMPLE TAKEN AT 0400.

12/7/86

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REMARKS

TS#86 12/7/86 SAMPLE RESULTS DETERMINE MAX WASTE FEED RATE TO BE 0.399 GPM AND MIN. ASPHALT FEED RATE TO BE 0.0824 GPM. STARTED THE EXTRUDER AND METERING PUMP P5A AT 0600. STARTED METERING PUMP P12B AT 0625. 12/7/86

TS#87 12/7/86 0730 STOPPED P12B AND EXTRUDER DUE TO PLUG IN RESIN FEED LINE. 12/7/86

TS#88 12/7/86 1300 CLEARED PLUG IN FEED LINE. THE FLUSH/RECIRC. LINE IS PLUGGED, WILL TRY TO CLEAR LINE AFTER RESUMING PROCESSING. STARTED EXTRUDER AND P5B, AT 1245, P12B STARTED AT 1255. 12/7/86

TS#89 12/8/86 0100 INSTALLATION OF LINER LEVEL PROBE 2WSS-LI23B COMPLETED, UNIT IS FUNCTIONAL. STARTED RECORDING LEVEL INDICATION ON DATA SHEET. 12/8/86

TS#90 12/8/86 0730 STOPPED P12B. SHUTDOWN P5B AND SECURED EXTRUDER AT 0740. SECTION 4.11.2 COMPLETE. (LINER SERIAL # 6103-03). 12/8/86

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REMARKS

TS#91 12/8/86 ALTHOUGH BARREL 6 TEMPERATURE CONTROL VALVE IS ISOLATED (REFER TO TS#78), BARREL 6 TEMP. STEADILY INCREASES DURING PROCESSING. THIS IS PRESUMED TO BE DUE TO THE PRE-HEATING EFFECT OF BARREL 4 TCV. BARREL 6 TCV UNISOLATED IN PREPARATION FOR WASTE CONCENTRATES SOLIDIFICATION. 12/8/86

TS#92 12/8/86 INSTALLATION OF THE CONCENTRATES FEED FLOW ELEMENT AND ASSOCIATED EQUIPMENT COMPLETED. STARTED EXTRUDER TO CHECK OPERATION OF METER, APPEARS TO BE FUNCTIONAL, ALTHOUGH SLIGHTLY ERRATIC. SYSTEM SHUTDOWN. 12/8/86.

TS#93 12/8/86 SAMPLED EVAPORATOR BOTTOMS TANK AT 1555 IN PREPARATION FOR SOLIDIFICATION. 12/8/86

TS#94 12/8/86 2000 COMMENCED PROCESSING PER SECTION 4.11.3 MAXIMUM WASTE FEED RATE 0.57GPM, MINIMUM ASPHALT FEED RATE 0.10 GPM. EXTRUDER AND P5A STARTED AT 2000, P7A STARTED AT 2005. WHILE PERFORMING THIS SECTION, THE LINER WILL BE ALLOWED TO FILL TO THE HIGH/HIGH LEVEL

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REMARKS

TS#94 (CONT.) TRIP POINT TO COMPLETE SECTION 4.10,
STEPS 4.10.5 THROUGH 4.10.5.5.5. 12/8/86

TS#95 12/8/86 2030 INDEXED AN EMPTY LINER UNDER THE
EXTRUDER AND RESET THE ASPHALT FLOW TOTALIZER.
THE LINER LEVEL INDICATOR IS ERRATIC, PROBABLY
DUE TO INTERFERENCE FROM THE ALUMINUM DRIP
PAN. 12/8/86

TS#96 12/8/86 2300 LINER LEVEL INDICATION IS STEADY AT
0.57 FEET. 12/8/86

TS#97 12/9/86 1030 THE DISCHARGE DRAIN VALVE FOR P7A
WAS FOUND CRACKED OPEN AND SHUT. THIS
APPEARANTLY EXCESSIVELY FED THE EXTRUDER, AS
WATER WAS SEEN COMMING FROM THE DISCHARGE
AS BARREL #2 AND 3 TEMPERATURE WENT LOW.
SYSTEM SHUTDOWN, A NEW LINER PLACED ON
THE TURNTABLE, INDEXED, SYSTEM RESTARTED
AT 1145, LINER LEVEL 0.2 FEET. 12/9/86

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REMARKS

TS#98 12/9/86 2000 SYSTEM SHUTDOWN TO ALLOW BATCHING THE EVAPORATOR OVER TO THE BOTTOMS TANK. CHEMISTRY NOTIFIED TO RESAMPLE BOTTOMS TANK. SAMPLE WAS PERFORMED AT 0500, 12/10/86

12/10/86

TS#99 12/10/86 EXTRUDER AND P5A STARTED AT 0840, P7A STARTED AT 0850. MAXIMUM WASTE FEED RATE IS 0.56 GPM, MINIMUM ASPHALT FEED IS 0.178 GPM. LINER LEVEL IS 1.1 FEET. 12/10/86

TS#100 SECURED WASTE FEED AT 1230, LOWERED EXTRUDER SPEED TO PERFORM STEAM DOME BOILOUTS DUE TO INABILITY TO ACHIEVE DESIRED WASTE FEED RATE. RESTARTED P7A AT 1450.

12/10/86

TS#101 12/10/86 METERING PUMP P7A APPEARS TO BE LEAKING BY INTERNALLY DURING OPERATION. PUMP SPEED IS NOWHERE CLOSE TO INDICATED OR DISTILLATE DISCHARGE FLOWRATES.

12/10/86

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REMARKS

TS# 102 12/11/86 0445 LINER LEVEL HIGH ANNUNCIATOR ENERGIZED. LINER LEVEL IS 3.0 FEET (LI223B).
12/11/86

TS# 103 12/11/86 0640 LINER LEVEL HIGH/HIGH ANNUNCIATOR ENERGIZED, INDICATION 3.25 FEET, ASPHALT TOTALIZER INDICATES 340 GALLONS OF ASPHALT. EXTRUDER, P5A, P7A TRIP.
12/11/86

TS# 104 12/11/86 0700 RESTARTED EXTRUDER, P5A TO FLUSH CONCENTRATES SYSTEM AND BOIL OUT EXTRUDER STEAM DOMES. SYSTEM SHUTDOWN AT 0825. STOPPED TEST 12/11/86

TS# 105 12/11/86 1300 LINER Z73-72 WAS FILLED ON 12/6/86. (FILTER SLUDGE SOLIDIFICATION). LINER WAS COMPLETELY COOLED AND HARDENED ON 12/10/86. COMPRESSIVE STRENGTH MEASURED 0% DEFLECTION AT 50 PSI. COMPRESSION GAUGE M&TE #08507-16 CALIBRATION DUE 6/4/87. RESUMED TEST, PERFORMED SECTION 4.9 (CAPPED LINER). TEST STOPPED AT 1500. 12/11/86

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REMARKS

TS#106 12/15/86 LINER 6103-03 WAS FILLED ON 12/8/86.
(BEAD RESIN SOLIDIFICATION). LINER WAS COOLED
AND COMPLETELY HARDENED ON 12/12/86.
COMPRESSIVE STRENGTH MEASURED 0% DEFLECTION
AT 50 PSI (MOTE 8507-16, DUE 6/1/87). ATTEMPTED
TO TAKE A CORE SAMPLE TO INSPECTED FOR
VOIDS, HOWEVER THIS DID NOT WORK. (MELTED
ASPHALT AROUND CORE BIT.) 12/15/86

TS#107 12/16/86 REMOVED LINER 6103-03 FROM BUILTING
AND CUT LINER AWAY FROM ASPHALT MONOLITH.
DROVE WEDGES INTO THE MONOLITH, THEN DROPPED
MONOLITH 3 TIMES TO SPLIT IT. NO WATER
WAS FOUND, A SMALL VOID WAS NOTED IN THE
TOP OF THE MONOLITH. THIS PRODUCT APPEARS
TO BE ACCEPTABLE. 12/15/86

TS#108 12/17/86 REMOVED LINERS 273-72 (FILTER SLUDGE)
AND 6103-02 (CONCENTRATES) FROM THE BUILDING
TO SPLIT THEM FOR INSPECTION. THE
CONCENTRATES LINER WAS COMPLETELY COOLED

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REMARKS

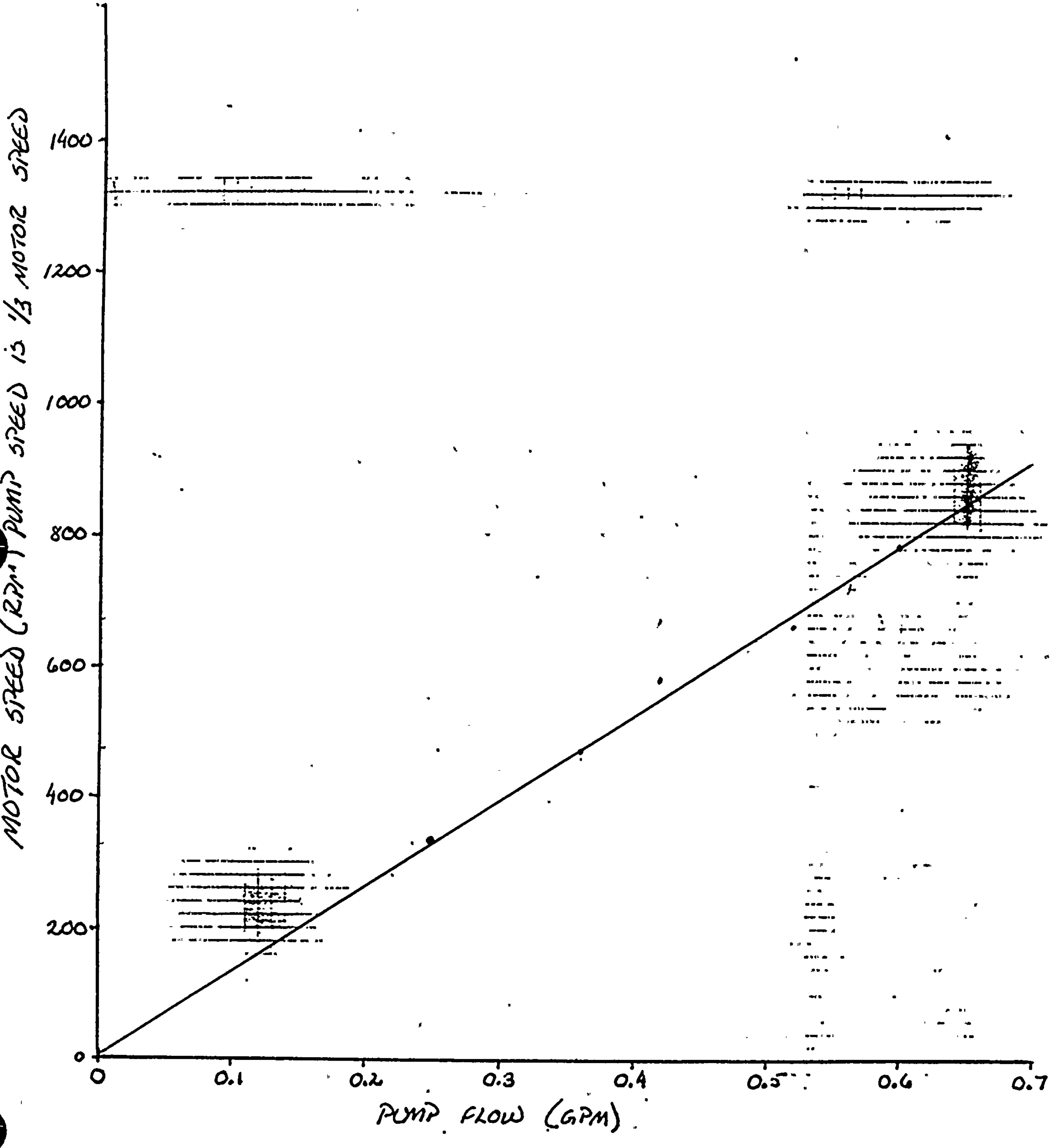
TS#108 (CONT.) AND HARDENED ON 12/16/86. COMPRESSIVE STRENGTH MEASURED 1/32" DEPRESSION AT 50 PSI. (M&TE #8507-16, DUE 6/4/87). BOTH LINERS WERE SPLIT IN THE SAME MANNER AS THE SLUDGE LINER. NO FREE STANDING WATER WAS NOTED IN EITHER MONOLITH, AND NO VOIDS WERE FOUND. BOTH PRODUCTS ARE ACCEPTABLE.

12/17/86

TS#109 12/18/86 TROUBLESHOOTING AND RECALIBRATION OF THE WASTE SLUDGE FLOW METER (2WSS-FE200) COMPLETE. UNIT IS FUNCTIONAL. ALSO COMPLETED INSTALLATION OF TACHOMETERS IN THE CONTROL PANE (2RWL210) TO MONITOR METERING PUMP SPEED. CALIBRATED TACHOMETERS TO MOTOR SPEED AND MEASURED TO INDICATED FLOW RATES FOR SLUDGE METERING PUMPS P12A AND B AND CONCENTRATES METERING PUMP P7A.

12/18/86

WASTE SLUDGE METERING PUMP 2WSS-P12A



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REMARKS

TS#110 12/19/86 COMPLETED CALIBRATION OF METERING PUMPS MOTOR SPEED AND VERIFICATION OF INDICATED VS. MEASURED FLOW. BOTH WASTE STREAM FLOW METERS APPEAR TO BE FUNCTIONAL AND ACCURATE.

12/19/86

TS#111 12/19/86 COMPLETED LOOP CALIBRATION OF ASPHALT FLOW ELEMENT (2L2WSS=099, REFER TO EXCEPTION E4). VERIFIED OPERATION OF ANNUNCIATOR 210208 (METERING PUMP P5A/B HIGH/LOW FLOW) AND COMPUTER POINT WSSFC008 WHICH PREVIOUSLY DID NOT WORK (REFER TO TS#50).

12/19/86

TS#112 12/20/86 REPLACED THE AUX. BOILER FEED PUMP WITH A NEW PUMP/MOTOR ASSEMBLY FROM THE FACTORY. REPLACEMENT PUMPS (NEW DESIGN) AND PIPING MODIFICATION WILL BE PERFORMED WHEN ALL PARTS ARE AVAILABLE.

12/20/86

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REMARKS

TS#113 12/21/86 INCORPORATED MODICON CHANGES PER E&DCR C54057 FOR THE WASTE CONCENTRATES SYSTEM HOT FLUSHES. THIS CHANGE DELETED THE LOW TEMPERATURE SWITCH TO ALLOW THE FLUSH SYSTEMS TO OPERATE.

12/21/86

TS#114 12/22/86 0830 COMPLETED BRIEF, QA WITNESS W. SCHOLTENS PRESENT. ATTEMPTED TO START EXTRUDER TO PROCESS WASTE SLUDGE AND VERIFY OPERATION FLOW ELEMENT FE200. THE SLUDGE TRANSFER PUMP (P11) IS FAILED AGAIN AND WILL NOT PUMP SUFFICIENT HEAD TO SUPPLY THE SLUDGE METERING PUMPS. WR# 118179 WRITTEN TO REPAIR PUMP WHEN PARTS ARE AVAILABLE. PUMP WILL BE REPLACED WITH DIFFERENT DESIGN (CENTRIFUGAL) PUMP AS SOON AS POSSIBLE (EXPECT MID-JANUARY.

12/22/86

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REMARKS

TS# 115 12/22/86 1400 RESUMED TESTING TO PERFORM SECTION 4.4.4.1 HOT FLUSH WATER EJECTORS THE FLOW SWITCHES DO NOT TRIP SHUT THE ASSOCIATED SOLENOID VALVES ON LOW FLOW AS PROCEDURE STATES. REFER TO EXCEPTION E43. AFTER STARTING FLUSH IT TAKES ABOUT 10 MINUTES FOR TEMPERATURE TO INCREASE TO 125°F. THIS IS THE REASON FOR DELETING THE LOW TEMPERATURE TRIPS (TS# 113). COMPLETED SECTION 4.4.4.1 AT 1630. COMMENCED SECTION 4.7.2. 12/22/86

NOTE: THE HOT FLUSH SYSTEMS TEMPERATURE CONTROL VALVES (TCV395 AND 397) HAVE NOT BEEN CALIBRATED YET. THE VALVES HAVE BEEN ADJUSTED TO MAINTAIN THE REQUIRED TEMPERATURE (125°F). TCV397 HAS A CRACKED YOKE AND IS TO BE REPLACED WHEN PARTS ARE AVAILABLE. VALVE IS FUNCTIONAL (REFERENCE WR#113999). REFER TO EXCEPTION E11. 12/22/86

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REMARKS

TS#116 12/22/86 1730 THE CONCENTRATES SAMPLE SYSTEM IS IDENTICAL TO THE SLUDGE SAMPLE SYSTEM; THE SAME DIFFICULTIES WERE ENCOUNTERED (REFER TO TEST SUMMARY NOTE #TS39). CORRECTED A TYPO IN STEP 4.7.2.10.1 TO OBTAIN THE NECESSARY INFORMATION FOR DATA SHEET. SAMPLE VOLUMES COLLECTED WERE ERRATIC. AFTER DATA WAS COMPLETED, THE SAMPLE VALVE CAVITY (AOV356) VOLUME WAS MEASURED TO BE 18ml 4 CONSECUTIVE TIMES. TESTING COMPLETE, TEST STOPPED. 12/22/86

TS# 117 12/24/86 REVIEWED PROCEDURE WITH W. SCHOLTENS OF QA. 12/24/86

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REMARKS

TS# 118 12/24/86 EVALUATION OF THE TEST ACCEPTANCE CRITERIA (SECTION 7.0) IS AS FOLLOWS:

1) SECTION 7.1 : THE ABILITY OF THE SOLID WASTE SYSTEM TO RECIEVE INPUTS FROM THE LWS SYSTEM HAS BEEN SATISFACTORILY DEMONSTRATED BY LISTED STEPS WITH THE EXCEPTION OF STEP 4.6.1.7 (PREDETERMINED FLOW TRIP OF THE SPENT RESIN TRANSFER PUMP 2LWS-P7). WR# 113998 WAS WRITTEN TO TROUBLESHOOT. THIS IS AN LWS COMPUTER PROBLEM.

2) SECTION 7.2 : THE EXTRUDER/EVAPORATOR PROCESS CONTROL HAS BEEN SATISFACTORILY DEMONSTRATED BY THE LISTED STEPS WITH THE FOLLOWING EXCEPTIONS:

a) DURING STEP 4.10.2.8.4, ANNUNCIATOR 210208, COMPUTER POINTS WSSFC008 AND WSSFC006 DID NOT COME IN. ALL TRIPS PERFORMED AS DESIRED. ANNUNCIATOR

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TS#118 (CONT.) 210208 AND COMPUTER POINT WSSFC008 WERE TESTED SATISFACTORILY AT A LATER DATE DURING PERFORMANCE OF THE ASPHALT FLOW LOOP CALIBRATION (IL2WSS-099). THE WASTE CONCENTRATES HIGH/LOW FLOW COMPUTER POINT (WSSFC006) DID NOT FUNCTION DUE TO THE FACT THAT THE WASTE CONCENTRATES FLOW ELEMENT WAS NOT FUNCTIONAL AT THE TIME THIS STEP WAS PERFORMED (WR#115029). IN ADDITION, THE LOW FLOW SETPOINTS ARE BEING CHANGED (PR#6336). COMPUTER POINT WSSFC006 WILL BE VERIFIED AFTER RECALIBRATION OF THE LOW FLOW TRIP SETPOINT (WR#118119).

b) EXCEPTIONS E30 AND E31 WERE TAKEN. BOTH EXCEPTIONS AFFECT ALL OF SECTION 4.10.3 (EXTRUDER TEMPERATURE TRIPS). THESE EXCEPTIONS ARE PROCEDURAL ONLY AND DO NOT AFFECT THE INTENT OR ACCEPTANCE OF THE STEPS.

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REMARKS

TS#118 (CONT.)

c) STEP 4.10.3.8, EXTRUDER BARREL #2 HIGH TEMPERATURE TRIP WAS NOT PERFORMED. REFER TO EXCEPTION E32. ALSO, STEP 4.10.3.14, BARREL #6 LOW TEMPERATURE TRIP WAS NOT PERFORMED. REFER TO EXCEPTION E33. THE INABILITY TO PERFORM THESE TRIPS IS DUE TO THE CHARACTERISTICS OF THE EXTRUDER ITSELF. DURING WASTE PROCESSING, THESE TRIPS WILL NOT OCCUR UNLESS THERE IS AN ASSOCIATED MALFUNCTION IN THE SYSTEM SUCH AS AN ABRUPT LOSS OF WASTE FEED FLOW, OR A FAILURE OF THE PRECEDING BARRELS HEATING SYSTEM. THE TRIP LOGIC FOR THESE TRIPS IS IDENTICAL TO THE OTHER ~~12~~ 10 M. 12/24/86 TEMPERATURE TRIPS THAT WERE SUCCESSFULLY PERFORMED.

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TS#118 (CONT.)

3) SECTION 7.3 : THE ENTIRE SECTION 4.11 WAS REVISED BY ERF N2-POT-41-1-4. THE ABILITY OF THE EXTRUDER TO PROCESS THE VARIOUS WASTE FORMS WAS SATISFACTORILY DEMONSTRATED. DURING THE PERFORMANCE OF 411.1 AND 411.2 (WASTE SLUDGE AND BEAD RESIN SOLIDIFICATIONS, RESPECTIVELY), THE FEED FLOW ELEMENT WAS NOT FUNCTIONAL. HOWEVER, FEED RATES WERE CLOSELY MONITORED DURING PROCESSING USING THE METERING PUMP SPEED, AND FLOW-BALANCE USING THE DISTILLATE SYSTEM DISCHARGE FLOW RATE.

4) SECTION 7.4 : ALL THE REQUIREMENTS FOR THIS CRITERIA WERE SATISFACTORILY MET AND RESULTS RECORDED IN TEST SUMMARY NOTES TS#106 AND TS#108.

12/24/86

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TS# 119 1/5/87 SUMMARY OF TEST

THIS SYSTEM PERFORMS BETTER THAN EXPECTED. THE RESTRAINTS IMPOSED BY THE VENDOR'S PROCESS CONTROL PROGRAM ARE MORE STRINGENT THAN IS ACTUALLY REQUIRED TO PROVIDE AN ACCEPTABLE BURIAL PRODUCT. IF THE EXTRUDER IS RUN WITHIN THE PRESCRIBED LIMITS, WITH ALL THE PROTECTIVE FEATURES FUNCTIONING, THERE IS NO DOUBT THAT THE WASTE/ASPHALT MIXTURE WILL MEET ALL NECESSARY REQUIREMENTS. THE SYSTEM RELIABILITY WILL BE UPGRADED IN THE NEAR FUTURE BY REPLACING THE AUX. BOILER FEED PUMP WITH TWO BETTER, MORE SUITABLE PUMPS, AND REPLACING THE PROGRESSIVE CAVITY SLUDGE TRANSFER PUMP WITH TWO CENTRIFUGAL SLURRY PUMPS. IT IS MY RECCOMENDATION THAT THIS SYSTEM BE DECLARED OPERATIONAL.

1/5/87

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REMARKS

TS#120 1/8/87 CORRECTED MODICON LOGIC AND RETESTED
COMPUTER POINT WSSFC001 SATISFACTORILY (WR# 114361,
STEP 4.6.3.9) 1/8/87

TS#121 1/14/87 STEP 4.4.1.2.3.1 COMPUTER POINT WSSPC005
AUX BOILER B24 PRESSURE LOW WAS REPAIRED AND
VERIFIED BY PMT ON WR 113414. 1/14/87

TS#122 1/14/87 STEP 4.6.1.7 WR# 113998 WAS WRITTEN TO
TROUBLESHOOT AND REPAIR. SITUATION IS BEING
EVALUATED AND A MODIFICATION REQUEST IS TO
BE WRITTEN. 1/14/87

TS#123 1/14/87 DURING STEP 4.6.1.4, IT APPEARED THAT THE
FLOOR DRAIN FILTER (2LWS-FLT101) DID NOT INHIBIT
INDEX ON SLUDGE TANK HIGH LEVEL. THIS WAS
BASED ON THE LWS COMPUTER GRAPHIC DISPLAY.
DURING TROUBLESHOOTING (WR# 114359) IT WAS FOUND
THAT THE FILTER DID IN FACT INHIBIT, HOWEVER
THERE IS NO INDICATION OF THIS FUNCTION.
1/14/87

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REMARKS

TS#124 1/19/87 INCORPORATED FRF N2-POT-41-1-5 INTO PROCEDURE. 1/19/87

TS#125 1/19/87 THE FOLLOWING SPECIAL TEST EQUIPMENT WAS NOT USED TO PERFORM THIS PROCEDURE (SECTION 3.0)

1) FLOW TOTALIZER - THERE IS NO PORTION OF THIS PROCEDURE THAT REQUIRED THE USE OF A FLOW TOTALIZER.

2) THERMOMETER - DATA SHEET 5.3 THAT REQUIRED THE USE OF A THERMOMETER WAS DELETED BY FRF N2-POT-41-1-5.

3) 0-100 PSIG PRESSURE GAGE - THIS GAGE WAS SPECIFIED FOR USE IN STEP 4.8.3.1.6, HOWEVER A PERMANENT GAGE IS INSTALLED IN THE SYSTEM THAT INDICATES THE PRESSURE THAT THIS STEP REQUIRED (2WSS-PI143, CAL DUE 4/14/89).

4) 4-20 MADC POWER SUPPLY - THIS WAS REQUIRED FOR SECTION 4.10, HOWEVER, INSTALLED SYSTEM EQUIPMENT WAS USED INSTEAD. REFER TO EXCEPTION E31. 1/19/87

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REMARKS

TS#126 1/19/87 TESTING PER SECTIONS 4.11.1 AND 4.11.2 WERE PERFORMED WITHOUT THE INSTALLED WASTE SLUDGE FLOW ELEMENT BEING OPERATIONAL. TESTING WILL BE RE-PERFORMED TO VERIFY PROPER OPERATION OF FLOW ELEMENT DURING SOLIDIFICATION OF A MIXED RESIN AND FILTER CAKE WASTE STREAM. THE DISTILLATE SYSTEM DISCHARGE WILL BE MONITORED TO VERIFY THAT IT CAN REMOVE ORGANIC CARBONS TO AN ACCEPTABLE VALUE (ORGANIC CARBONS WERE MONITORED DURING PREVIOUS SOLIDIFICATIONS, HOWEVER, NO EFFORT WAS MADE TO REDUCE THE PPM CONCENTRATION)

1/19/87

TS#127 1/19/87 BATCHED THE SPENT RESIN TANK TO WASTE SLUDGE TANK AND SAMPLED IN PREPARATION FOR SOLIDIFICATION. ADDED 13 GALLONS OF CAUSTIC TO INCREASE THE WASTE STREAM CONDUCTIVITY.

1/19/87

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REMARKS

TS#128 1/20/87 1330 RESUMED TESTING, COMPLETED BRIEF. STARTED THE EXTRUDER/EVAPORATOR AND ASPHALT METERING PUMP P5A. STARTED WASTE FEED PUMP P12B AT 1350. SAMPLED THE DISTILLATE SKID DISCHARGE AT 1600.

1/20/87

TS#129 1/20/87 FIRST LINER FILLED AT 1700. INDEXED TURNTABLE TO FILL SECOND LINER. INCREASED ASPHALT FLOW TO 0.25 GPM DUE TO GRAINY APPEARANCE OF THE EXTRUDER DISCHARGE.

1/20/87

TS#130 1/20/87 2400 SECOND LINER FILLED, FLUSHED WASTE FEED SYSTEM AND SHUTDOWN THE EXTRUDER. REMOVED THE TWO FILLED BARRELS TO THE COOLING AREA. TESTING STOPPED.

NOTE: THIS SERIES OF SOLIDIFICATIONS IS BEING PERFORMED WITH 55 GALLON DRUMS VICE 50 CU. FT. LINERS.

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REMARKS

TS# 131 1/21/87 0630 RESUMED TESTING. THE WASTE SLUDGE TANK CONTENTS HAS BEEN PUMPED OUT AND REFILLED WITH BEAD RESINS, AND RESAMPLED. STARTED THE EXTRUDER AND METERING PUMPS P5B AND P12A. ADJUSTED WASTE FLOW TO 0.35GPM, ASPHALT FLOW TO 0.25GPM.

1/21/87

TS# 132 1/21/87 THE FIRST BARREL POURED (BARREL NO. 1) HAS PARTIALLY COOLED AND SHRANK TO APPROX. 75% OF ITS ORIGINAL VOLUME. FOR THIS REASON, THE NEXT TWO BARRELS WILL BE FILLED USING A THREE-PASS FILL SYSTEM. INDEXED THE TURNTABLE AT 0900, FILLING BARREL NO. 4.

1/21/87

TS# 133 1/21/87 1100 SHIFTED DISTILLATE POLISHING FILTERS DUE TO A HIGH TOC EFFLUENT OF 58.6 PPM. REPLACED THE CHARCOAL FILTER MEDIA IN BOTH POLISHING FILTERS.

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REMARKS

TS#134 1/21/87 1130 INDEXED THE TURNTABLE, SHIFTED AND CLEANED THE DISTILLATE POLISHING FILTERS. 1/21/87

TS#135 1/21/87 1300 RESAMPLED DISTILLATE SYSTEM DISCHARGE. INDEXED TURNTABLE AT 1330. 1/21/87

TS#136 1/21/87 1530 INDEXED TURNTABLE. 1/21/87

TS#137 1/21/87 1730 INDEXED TURNTABLE. 1/21/87

TS#138 1/21/87 2000 COMPLETED FILLING OF BARREL NO. 4, INDEXED TURNTABLE, FLUSHED THE WASTE FEED SYSTEM AND SHUTDOWN THE EXTRUDER. STOPPED TESTING. DISTILLATE SAMPLE TAKEN AT 1300 SHOWED A HIGH TOC OF 360 PPM. TESTING WILL BE RESUMED IN THE MORNING TO COLLECT AND ANALYSE MORE DISTILLATE SAMPLES. 1/21/87

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REMARKS

TS#139 1/22/87 IT APPEARS THAT THE INDICATED ASPHALT FLOW (2WSS-FIC202) IS SLIGHTLY GREATER THAN ACTUAL FLOW, DETERMINED BY THE TOTALIZED ASPHALT READING COMPARED TO THE ACTUAL VOLUME OF THE PREVIOUSLY FILLED 55 GALLON BARRELS. TESTING STOPPED PENDING A CALIBRATION CHECK AND POSSIBLE RE-CALIBRATION OF THE ASPHALT FLOW TRANSMITTER.

1/22/87

TS#140 1/22/87 1600 BARREL NO. 1 HAS COMPLETELY COOLED. THE COMPRESSIVE STRENGTH IS GREATER THAN 50 PSI, NO FREE STANDING WATER, HOWEVER THE MONOLITH HAS A LARGE (APPROX. 6-7") DEPRESS~~ING~~ION IN THE CENTER AND SHRANK TO ABOUT 75% OF ITS ORIGINAL SIZE.

1/22/87

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REMARKS

TS#141 1/23/87 BARREL NO. 2 IS COOLED, GREATER THAN 50 PSI COMPRESSIVE STRENGTH, NO FREE STANDING WATER. THE MONOLITH RETAINED MOST OF ITS ORIGINAL SIZE, HOWEVER HAS A VERY LARGE DEPRESSION IN IT'S CENTER OF ABOUT 15" DEEP. BARREL NO. 3 AND 4 (FILLED USING THREE-PASS FILL) APPEAR TO HAVE RETAINED AT LEAST 95% OF THEIR ORIGINAL FILLED VOLUME WITH ONLY VERY SLIGHT DEPRESSIONS IN THE CENTERS (ABOUT 1 TO 1½"). BOTH ARE GREATER THAN 50 PSI COMPRESSIVE STRENGTH, WITH NO FREE STANDING WATER. 1/23/87

TS#142 1/26/87 THE ASPHALT FLOW TRANSMITTER HAS FAILED COMPLETELY DUE TO A BAD PRINTED CIRCUIT BOARD IN THE TRANSMITTER. PARTS ARE ON ORDER TO REPAIR THE UNIT.

1/26/87

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REMARKS

TS#143 1/29/87 1130 COMPLETED A CALIBRATION RUN OF ASPHALT METERING PUMP P5A SPEED VS. FLOWRATE (ATTACHED) TO ALLOW SYSTEM OPERATION TO OBTAIN MORE DISTILLATE SAMPLES. STARTED THE EXTRUDER, STARTED ASPHALT METERING PUMP P5A, SPEED SET TO 210 RPM (MOTOR), .1 GPM FLOW. STARTED WASTE METERING PUMP P12A. ADJUSTED FLOW TO 0.31 GPM.

1/29/87

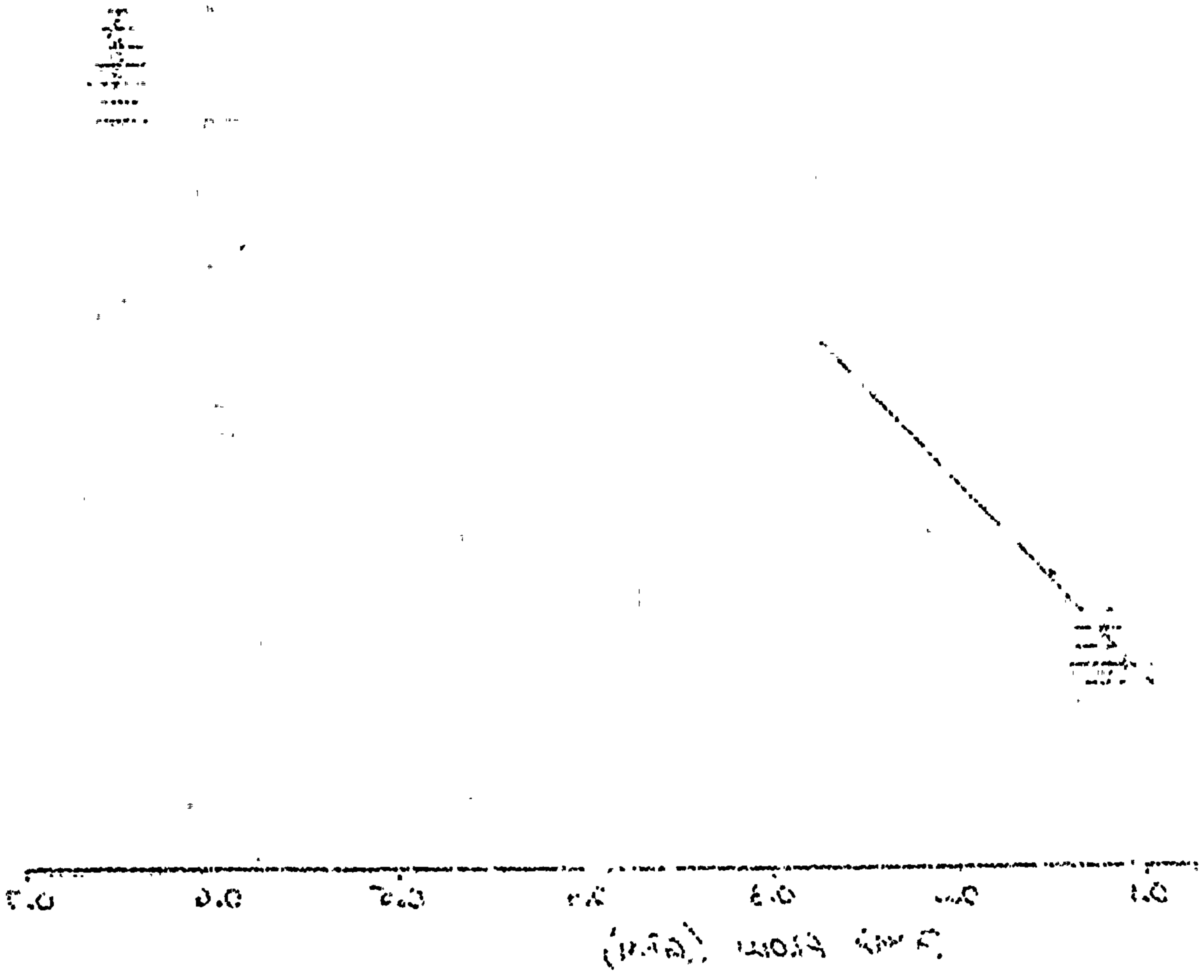
TS#144 1/29/87 1430 COLLECTED DISTILLATE DISCHARGE SAMPLES.

1/29/87

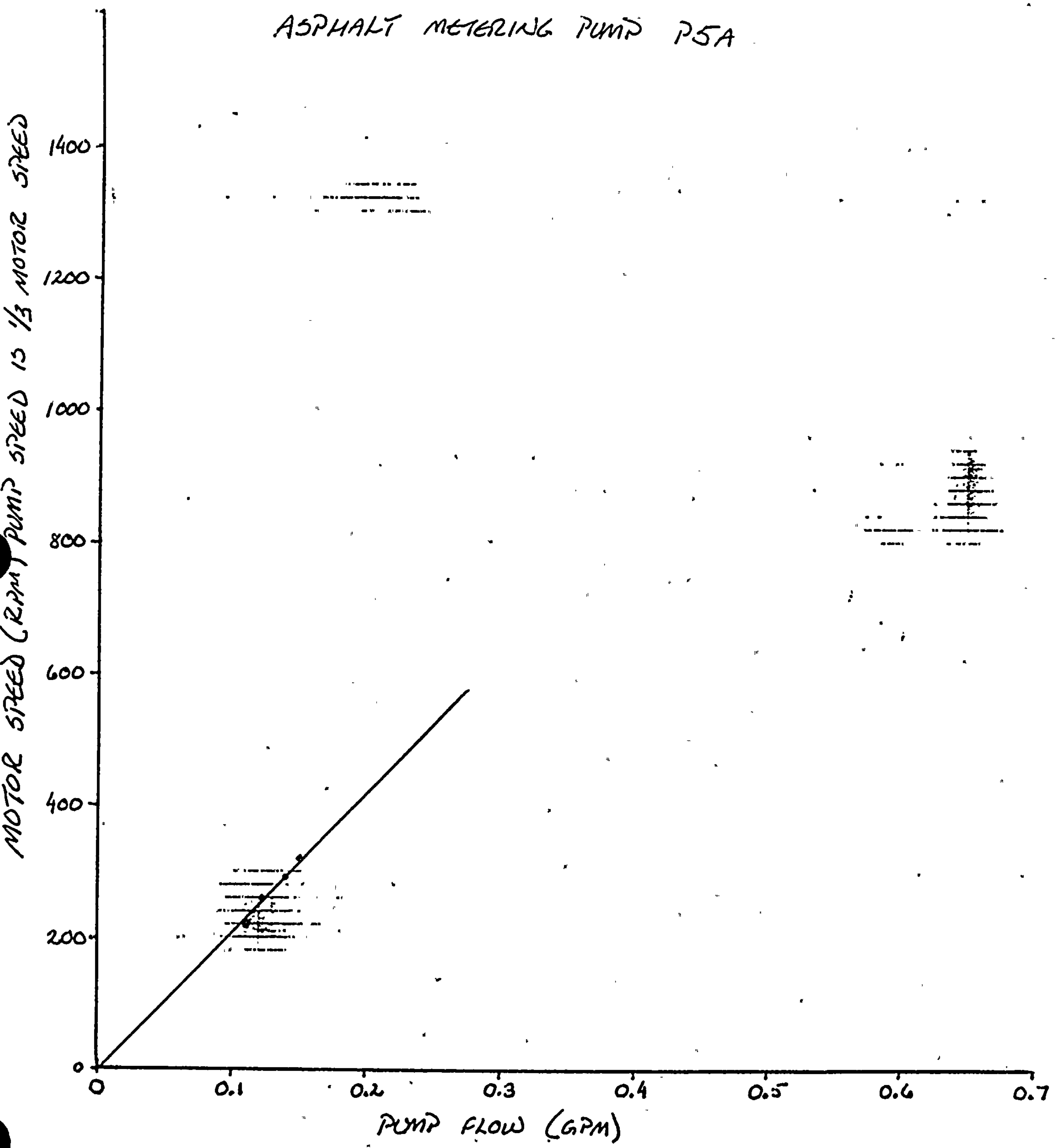
TS#145 1/29/87 1830 DISTILLATE SAMPLES INDICATE 296 PPM TOC, 270.6 PPM TOC FILTERED THROUGH A MILLIPORE FILTER. SYSTEM SHUTDOWN, TESTING STOPPED.

1/29/87

RECORD COPY



ASPHALT METERING PUMP P5A



FOR INFO. ONLY

NIAGARA MOHAWK POWER CORP.

TEST SUMMARY

Attachment 10.0

Waste Solidification System
N2-POT-41-1

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Project NINE MILE POINT UNIT 2

REMARKS

TS# 146 1/30/87 TESTING EVALUATION: FOR BEAD RESIN SOLIDIFICATION IN PARTICULAR, A SINGLE PASS DRUM (OR LINER) FILL APPEARS TO BE IMPRACTICAL ~~TO~~ 1/30/87 DUE TO THE LARGE AMOUNT OF SHRINKAGE OF THE END PRODUCT. THREE PASS FILLING RESULTS IN A GREATLY IMPROVED FILL PERCENTAGE WITH MUCH LESS SHRINKAGE. IN ALL CASES, THE MONOLITH IS HARD, FREE-STANDING, WITH NO VISIBLE FREE STANDING WATER. THE HIGH ORGANIC DISCHARGE FROM THE DISTILLATE SYSTEM IS BEING EVALUATED, LOOKING AT POSSIBLY USING MORE EFFECTIVE FILTRATION AND OIL-REMOVING FILTER MEDIA. THE ASPHALT FLOW TRANSMITTER WILL BE REPAIRED AND RECALIBRATED WHEN NEW BOARDS ARE AVAILABLE, WORK TO BE PERFORMED UNDER WR# 115925.

1/30/87

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NIAGARA MOHAWK POWER CORP.

[illegible]

Attachment 10.0

Waste Solidification System

[illegible]

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of ______

Date [illegible]

Subject [illegible]

SUMMARY

TEST SUMMARY CODE NUMBER	CLOSURE DATE	[illegible] NUMBER	DESCRIPTION	NO.
35, 122		WR 11498	[illegible]	
36, 121	10/29/86	WR 11416	[illegible]	
37	11/10/86	PR 9057	[illegible]	
37	11/14/86	PR 4085	[illegible]	
37, 123	12/23/86	WR 11433	[illegible]	
40, 120	1/8/87	WR 11441	[illegible]	
43, 45	11/18/86	PR 6157	[illegible]	
44	1/7/87	PR 3109	[illegible]	
50	1/15/87	[illegible] 7024	[illegible]	
[illegible]		[illegible]	[illegible]	

RECORD COPY

NIAGARA MOHAWK POWER CORP.

TEST SUMMARY

Attachment 10.0

Waste Solidification System
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of ________

Date N/A
Project NINE MILE POINT UNIT 2

REMARKS

PROCEDURE STEP/ SECTION NO.	DESCRIPTION	DOCUMENT NUMBER	CLOSURE DATE	TEST SUMMARY NOTE NUMBER
4.6.1.7	SPENT RESIN PUMP (2LWS-P7) TRIP ON PREDETERMINED FLOW (2WSS-FQ15100)	WR 113998		35, 122
4.4.1.2.1, 4.4.1.2.3.1	COMPUTER POINT WSSPC005 AUXILIARY BOILER B26 PRESSURE	WR 113414	10/29/86	36, 121
4.6.1	RECALIBRATE 2WSS-LT101 FOR A SPECIFIC GRAVITY OF 1.0	PR 6097	11/10/86	37
4.6.1	CHANGE PREDETERMINED FLOW TRIPS TO VALVES VICE PUMPS	PR 6098	11/14/86	37
4.6.1.4	FLOOR DRAIN FILTER FLT101 FAILED TO INHIBIT ON TANK HIGH LEVEL	WR 114359	12/23/86	37, 123
4.6.3.9	P11 LOW SUCTION FLOW COMPUTER POINT FAILED TO TRIP.	WR 114361	1/8/87	40, 120
NA	REPLACE VALVE TRIM IN EXTRUDER TEMPERATURE CONTROL VALVES	PR 6158	11/18/86	43, 45
NA	SLUDGE TRANSFER PUMP 2WSS-P11 FAILED DUE TO WEAR	PR 6194	1/7/87	44
4.10.2.8.4	TROUBLESHOOT & REPAIR WASTE FEED FLOW TRANSMITTERS	WR 115029	1/15/87	50
4.10.2.8.4	WASTE FEED LOW FLOW SETPOINTS RECALIBRATION	WR 118119		118

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