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Computerized Operating Procedures for Shearing and Dissolution of Segments from LWBR Fuel Rods

by J. Osudar, P. G. Deeken, D. G. Graczyk,
J. E. Fagan, F. J. Martino, J. E. Parks,
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Errata for insertion into ANL-87-17, *Computerized Operating Procedures for Shearing and Dissolution of Segments from LWBR Fuel Rods*, by J. Osudar et al.

The Light Water Breeder Reactor was designed by Westinghouse Electric Corporation Bettis Atomic Power Laboratory and operated at Shippingport, PA, by the Duquesne Light Co. for the Department of Energy, Division of Naval Reactors. In the abstract and foreword to this report, we mistakenly credited operation of the reactor to Bettis. In addition, the title pages that precede the shear and dissolver procedures were mistakenly interchanged.

COMPUTERIZED OPERATING PROCEDURES FOR SHEARING AND DISSOLUTION OF SEGMENTS FROM LWBR FUEL RODS

by

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ABSTRACT

This report presents two detailed computerized operating procedures developed to assist and control the shearing and dissolution of irradiated fuel rods. The procedures were employed in the destructive analysis of end-of-life fuel rods from the Light Water Breeder Reactor (LWBR) that was operated at Shippingport, PA, by the Westinghouse Electric Corporation Bettis Atomic Power Laboratory. Seventeen entire fuel rods from the end-of-life core of the LWBR were sheared into 169 precisely characterized segments, and more than 150 of these segments were dissolved during execution of the LWBR Proof-of-Breeding (LWBR-POB) Analytical Support Project at Argonne National Laboratory. The procedures illustrate our approaches to process monitoring, data reduction, and quality assurance during the LWBR-POB work.

This topical report presents two detailed computerized procedures developed for operations involved in the destructive analysis of end-of-life (EOL) fuel rods from the Light Water Breeder Reactor (LWBR), which was operated at Shippingport, PA, by the Westinghouse Electric Corporation Bettis Atomic Power Laboratory for the Department of Energy, Division of Naval Reactors. Destructive analysis of the LWBR fuel rods was carried out by Argonne National Laboratory (ANL) as part of the LWBR Proof-of-Breeding (LWBR-POB) Analytical Support Project. The project is fully described in Ref. 1. This report is intended to make available to interested engineers and scientists the details of some aspects of our operations, particularly our approaches to process monitoring functions, data reduction, and quality assurance during the shearing and dissolution steps of the LWBR-POB work.

The procedures presented here, entitled OPRFSS and OPRDS1, were developed to assist and control operations with (1) a fully automated system (the Full Scale Shear or FSS) for shearing irradiated fuel rods into precisely characterized segments and (2) one of the twin automated systems (Dissolver System 1, DS1) for dissolving the sheared segments. Another procedure, employed with dissolver system DS2, is identical to that for DS1 (i.e., OPRDS1) except for component addresses in the computer system, and therefore is not presented. Seventeen entire EOL fuel rods from the LWBR were sheared into 169 segments with the FSS, and more than 150 of these segments were dissolved in either DS1 or DS2 during execution of the LWBR-POB Analytical Support Project.

Each procedure is presented as a listing of individual steps involved in the computerized operations, in a format consistent with the encoding required by the POB Software System (POBSYS).^{1,2} The POBSYS is a general-purpose software system, developed at ANL for our LWBR-POB work, which provides the tools to

carry out detailed operating procedures and perform conventional process control, data acquisition, and data management functions. Its application in our operating procedures permitted full replication of the operations from rod to rod or segment to segment, as well as error-free recording and manipulation of data.

The POBSYS software directs the flow of operations by means of a computer-readable version of the operating procedure. For each procedure step, POBSYS selects (1) a designated screen-display format for the video display terminal (VDT), (2) a designated overlay program which contains instructions to be followed by the computer in executing the particular step at hand, and (3) an appropriate text display instructing operators regarding their responsibilities in performing the step. Programmed information, such as the Forms Management System (FMS) codes for the screen displays and the names of the overlay programs, is available in the listing we provide for each step. However, the information items that will be most useful to the reader are the operator instructions, enclosed within a box for each step, and the textual documentation of the step-action "slave" routine, which describes in words and formulas the actions performed by the overlay program for a given step.

Major sections of each of the procedures are presented in outline form at the front of each procedure listing. These sections will give the reader an overall idea of what each entire procedure encompasses. A full appreciation of the detail to which the procedure goes, however, can only be obtained by a careful reading of the material.

The shearing and dissolution procedures described in this report represent the product of intensive effort by and interaction among a number of staff, operators, and programmers. The authors wish to express their gratitude for the support and cooperation that was so generously provided by all those involved in completing this task.

REFERENCES

1. D. G. Graczyk, J. H. Hoh, F. J. Martino, R. E. Nelson, J. Osudar, and N. M. Levitz, *Final Report for the Light Water Breeder Reactor Proof-of-Breeding Analytical Support Project*, Argonne National Laboratory Report ANL-87-2 (1987).
2. J. Osudar, J. E. Parks, and N. M. Levitz, "Aiming Toward Perfection with POBSYS, A New Software System," Computer Applications for Nuclear Power Plant Operations, Proc. of Int. Topical Meeting of the Am. Nucl. Soc., Pasco, WA, September 8-12, 1985.

Erratum to ANL-87-17.

Please note that the title pages for the shear and dissolver procedures were mistakenly interchanged.

OPRDS1

PROCEDURE FOR OPERATION OF THE
DISSOLVER SYSTEM DS1

<u>Step Number</u>	<u>Step Title</u>
01.00.00.00.00	FULL-SCALE SHEAR OPERATING PROCEDURE
02.00.00.00.00	PRE-SHEAR OPERATIONS
02.01.00.00.00	CELL M-3 PREPARATION
02.02.00.00.00	OUT-OF-CELL PREPARATION
02.03.00.00.00	SHEAR TOOLING INSTALLATION
02.04.00.00.00	SHEAR CHECKOUT
02.04.01.00.00	Feed System Checkout.
02.04.02.00.00	Sample Collection Station Checkout
02.04.03.00.00	Hydraulic Unit Checkout
02.04.03.01.00	Pre-Start Conditions
02.04.03.02.00	Ready to Start
02.05.00.00.00	FEED SYSTEM CALIBRATION CHECKS
02.05.01.00.00	Shear Plane Gauging
02.05.01.11.00	Gauge Rod Temperature at 2 Points
02.05.02.00.00	Forward Stop Gauging
02.06.00.00.00	TRANSFER STANDARD WEIGHING
03.00.00.00.00	PRE-SHEARING WEIGHING OPERATIONS
03.02.00.00.00	SAMPLE CAN WEIGHING
03.03.00.00.00	PRE-SHEARING BRUSH WEIGHING
04.00.00.00.00	FUEL ROD MEASUREMENT
04.01.00.00.00	ROD WEIGHT
04.01.01.00.00	Support Cradle Weight - CW1
04.01.02.00.00	Cradle Gross Weight CGW1.
04.01.03.00.00	Plenum Gas Release
04.01.04.00.00	Fuel Rod Weight After Gas Release
04.02.00.00.00	ROD TEMPERATURE AND LENGTH MEASUREMENT
04.02.01.00.00	Clamping the fuel rod in the carriage clamp jaws.

<u>Step Number</u>	<u>Step Title</u>
04.02.02.00.00	Positioning the the rod for length measurement.
05.00.00.00.00	FUEL ROD SHEARING
05.01.00.00.00	FUEL ROD CLAMPING FOR SHORT RODS
05.02.00.00.00	FUEL ROD CLAMPING - LONG RODS
05.03.00.00.00	POSITIONING THE FUEL ROD FOR SHEARING
05.04.00.00.00	HYDRAULIC SYSTEM START-UP
05.05.00.00.00	SEGMENT SHEARING
05.05.02.00.00	Automated cut cycle
05.06.00.00.00	POSITIONING CARRIAGE AFTER SHEARING LONG ROD SEGMENT 00.00
05.07.00.00.00	INSTALLATION OF THE PUSH ROD
05.08.00.00.00	FINAL SEGMENT SHEARING
05.09.00.00.00	CAN CHANGE AND BRUSHING SEQUENCE
06.00.00.00.00	POST-SHEARING WEIGHING OPERATIONS
06.01.00.00.00	FUEL ROD SEGMENT WEIGHING
06.02.00.00.00	POST-SHEARING BRUSH WEIGHING
06.03.00.00.00	FUEL ROD SEGMENT TRANSFER
90.00.00.00.00	EXCEPTIONS
90.01.00.00.00	REPLACEMENT CAN WEIGHING

Step 01.00.00.00 using FMS-11 form "GTSTEP" and overlay OSTART
Step title: "FULL-SCALE SHEAR OPERATING PROCEDURE"

(Display GTSTEP form.)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY
Step title: "PRE-SHEAR OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY
Step title: "CELL M-3 PREPARATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.01.00 using FMS-11 form "FSMAIN" and overlay OV211

Energize all Cell M-3 lights from lighting
panel E and cell face switches, if not on.
Cell lights are to remain on during the course
of rod shearing to maintain temperature
stability.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a sensor criteria record for sensor FSRTD1

Frequency of reading set to 7 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min automatic
reading

Number of past readings to keep = 3

Alarm limit minimum set point = 20.0000

Alarm limit minimum increment = 0.000000

Alarm limit maximum set point = 35.0000

Alarm limit maximum increment = 0.000000

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 7 min. 30 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor FSRTD2

Frequency of reading set to 7 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min automatic
reading

Number of past readings to keep = 3

Alarm limit minimum set point = 20.0000

Alarm limit minimum increment = 0.000000

Alarm limit maximum set point = 35.0000

Alarm limit maximum increment = 0.000000

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 7 min. 30 sec. 0 ticks.

Parameter record 3 is a sensor criteria record for sensor FSRTD3

Frequency of reading set to 7 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min automatic
reading

Number of past readings to keep = 3

Alarm limit minimum set point = 20.0000

Alarm limit minimum increment = 0.000000

Alarm limit maximum set point = 35.0000

Alarm limit maximum increment = 0.000000

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 7 min. 30 sec. 0 ticks.

Parameter record 4 is a sensor criteria record for sensor FSRTD4

Frequency of reading set to 7 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min automatic
reading

Number of past readings to keep = 3

Alarm limit minimum set point = 20.0000

Alarm limit minimum increment = 0.000000

Alarm limit maximum set point = 35.0000

Alarm limit maximum increment = 0.000000

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 7 min. 30 sec. 0 ticks.

Parameter record 5 is a sensor criteria record for sensor FSRTD5

Frequency of reading set to 7 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min automatic
reading

Number of past readings to keep = 3

Alarm limit minimum set point = 20.0000

Alarm limit minimum increment = 0.000000

Alarm limit maximum set point = 35.0000

Alarm limit maximum increment = 0.000000

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 7 min. 30 sec. 0 ticks.

Step 02.01.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Unlock all master-slave manipulators at each cell window. Check each manipulator for proper operation, including indexing and grip. Inspect all slave finger pads for looseness or wear, and replace if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn on the temperature recorder in console 2. Set the chart speed to one inch per hour, and set the clock to Standard Time. Record the date on the strip chart.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.04.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn on all in-cell balances. Check for proper power-up response. Allow for a 2 hour warm up period before calibration and use.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Unlock and close the rack disconnect breaker on console 1. Turn on control power and control air.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.06.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

If necessary, adjust the pneumatic supply regulators to:

G2 -- 70 psig
G3 -- 60 psig
G4 -- 15 psig
G5 -- 17 psig
G6 -- 7 psig

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "OUT-OF-CELL PREPARATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Assemble sample cans and caps for in-cell transfer. Handle sample cans carefully to prevent deformation. Use a permanent marker to label each can and cap with a segment identification. Run SCOWR to weigh the cans and caps on BAL 9.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Transfer the following items into cell via the can-out transfer system.

1. Sample cans
2. Brush pads
3. Viton O-ring for fuel port seal
4. 1 gal. freon-12

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "SHEAR TOOLING INSTALLATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Select the shear tooling set to be used. The tooling set consists of the shear housing and faceplate, shear blade, housing insert, O-ring, and seal compressor.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Using the telescope, closely inspect each component for dirt, cracks, etc. If any dirt is present, reclean components.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Clamp the shear housing in the in-cell vise, insert side face up. Install the insert in the housing and fasten with No. 10-32 x 1/2 long socket head cap screws using a 5/32-in. tee-handle allen wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place a brass backup ring into the seal compressor recess. Then place the O-ring into the recess.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.07.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Thread the seal compressor into the housing insert until the O-ring is seated. Using the telescope, inspect the housing for proper assembly and alignment.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.08.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check the housing for fit by passing the appropriate sized push rod through the housing bore.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.09.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the shear faceplate on the front of the housing (check that the faceplate jacking screws are removed), and fasten to the housing using the four 1/2-20 bolts. Tighten the bolts using the 3/8-in. impact wrench with a 3/8-in. ball-point allen wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.10.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Slide the shear housing into place in the milled recess on the shear baseplate, such that the rear bracket engages the two rear shoulder bolts, and slide the shear blade into the housing, engaging the blade head in the hydraulic cylinder coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.11.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Locate the two front hold-down bolts (red-head) in the face plate foot bracket, and tighten using a 3/16 ball-point wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.13.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Tighten down the two rear shoulder bolts. For the rear bolt on the right side (extended thread) use a 5/16-in. wrench. For the rear left bolt, use a 3/16-in. ball-point allen wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.14.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the fuel port seal activating mechanism in place using the two guide pins for alignment. Tighten the two fastening bolts using a 5/16 ball-point wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.15.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Connect the pneumatic supply lines to the mechanism (connect 6A to 6A and 6B to 6B). Connect the reed switch cable to connection J-10 on the valve bank manifold. Check operation of the fuel port seal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.16.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the bore plug in the shear housing. Check that the plug fits snugly and is correctly aligned. If necessary, adjust the bore plug bracket to correct for fit. Then, remove the plug.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.17.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Make sure that the proper REL tip is installed. Use the flat tip for top mounted rods or a tip corresponding to rod size for bottom mounted rods. See FSSF Maintenance Manual for tip changing procedure.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "SHEAR CHECKOUT"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Feed System Checkout."

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Visually check that all pneumatic and electrical connections in cell are made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the feed bed-ways are clear of any obstructions.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check the fuel rod positioners by depressing the retract switch on the home zero retract module. After all positioners are up, extend the positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Set the low limit on the blade position indicator to +. Set the low limit on the REL to -90.00. Turn on the PSI and index the carriage to HZF. Check that motor current is less than 2 amps and watch the carriage LVDT cables.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.05.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the jog mode to index the carriage off the HZF switch. Return the carriage to the home zero retract position using the home switch. Again check for proper carriage motion and motor current. Watch the carriage cables.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.06.00 using FMS-11 form "FSMAIN" and overlay OPRACK

When the carriage reaches the home retract position, place the PSI in jog mode, and the direction switch to reverse. Jog the carriage to the high limit switch (set at approx. 118.5). If the high limit switch fails to actuate, stop the carriage and investigate.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the jog mode to index the carriage off the HZR switch then return the carriage to the home forward position using the home switch. At the home forward position, place the PSI in jog and jog the carriage to the low limit (set at approx. 13 in.). If the low limit fails to actuate, stop the carriage and investigate.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.08.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Return the carriage to approximately the 50 inch position. Turn PSI power off.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.00.00 using FMS-11 form "FSMAIN" and overlay DUMMY

Step title: "Sample Collection Station Checkout"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the can capping mechanism, if installed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Rotate the sample collection station to bring the can slot in the out position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place an empty can in the can holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Unlock the table and rotate the table to CAN UNDER. Raise the can and check for operation of the can up sensor.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.05.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the out position actuator and install a brush in the brush holder slot.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.06.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the can and brush and index the table to BRUSH UNDER. Raise the brush and lock the table.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the station in brush rotate, and brush the shear. Hold the brush switch in until the can under light comes on then release the switch until the brush under light comes on.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.02.08.00 using FMS-11 form "FSMAIN" and overlay 0V2428

Cycle the collection station through the sequence (2.4.2.4 through 2.4.2.7) a minimum of two more times. Ensure that the station operates freely, with no binding or misalignment.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 02.04.02.04.00

Step 02.04.02.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Leave the can under the shear in the UP position. Remove the brush assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "Hydraulic Unit Checkout"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "Pre-Start Conditions"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.01 using FMS-11 form "FSMAIN" and overlay OPRACK

Check the hydraulic fluid level in the reservoir. The level should be at or above the indicating line on the sightglass. If low, remove the oil breather and add oil (Monsanto Pydraul 50E only). Replace the oil breather.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.02 using FMS-11 form "FSMAIN" and overlay OPRACK

Check the accumulator precharge. The one gallon accumulator (EA-2) should be precharged to 1200 plus or minus 50 psig. The one quart accumulator (EA-1) should be precharged to 1500 plus or minus 50 psig. If either is low, recharge with dry nitrogen.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.03 using FMS-11 form "FSMAIN" and overlay OPRACK

Check SV-11 pneumatic supply pressure at 90 plus or minus 10 psig.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.04 using FMS-11 form "FSMAIN" and overlay OPRACK

Check shut the hydraulic cylinder bleed line isolation valves (V1, V2, and cylinder isolation valves).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.05 using FMS-11 form "FSMAIN" and overlay OPRACK

Open or check open pressure gauge isolation valves V-3 and V-4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.06 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the shear tooling has been properly installed and is clear of obstructions. Remove the safety block, if installed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.07 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the fuel port seal in the CLOSED position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.08 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the shear mode select switch in the RETRACT position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.01.09 using FMS-11 form "FSMAIN" and overlay OPRACK

Visually check that all hydraulic and electrical connections have been properly made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Ready to Start"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.01 using FMS-11 form "FSMAIN" and overlay OPRACK

Unlock and close the hydraulic unit power breaker.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.02 using FMS-11 form "FSMAIN" and overlay OPRACK

Start the hydraulic unit.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.03 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the SV-10 solenoid indicating light is ON.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.04 using FMS-11 form "FSMAIN" and overlay OPRACK

After approximately one minute of operation, check hydraulic pressure. The lower cylinder pressure, read on G-2, should be 2550 to 3000 psig (cycling). Upper cylinder pressure, read on G-1, should be 1750 plus or minus 50 psig (steady). Adjust lower cylinder pressure via the adjusting screw on valve UV-1. Adjust upper cylinder pressure with operator on R-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.05 using FMS-11 form "FSMAIN" and overlay OPRACK

With the cylinder fully retracted, check the shear blade position indicator. The indicator should read 1.500 plus or minus 0.010. Set the lo limit on the shear blade position indicator 0.010 less than the displayed full-retract position. Check the green BLADE UP light and display LO-LIMIT LED are both energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.06 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the shear mode selector switch in the INCH-DOWN mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.07 using FMS-11 form "FSMAIN" and overlay OPRACK

Fully extend the cylinder using the INCH-DOWN mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.08 using FMS-11 form "FSMAIN" and overlay OPRACK

Using the telescope, inspect the piston rod for oil leakage. If leakage is present, wipe off using a clean cloth.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.09 using FMS-11 form "FSMAIN" and overlay OPRACK

Retract the shear blade by placing the mode select switch to FAST SHEAR and depressing the RETRACT pushbutton.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.10 using FMS-11 form "FSMAIN" and overlay OPRACK

After the blade has retracted to the full up position, again extend the cylinder by using the FAST SHEAR mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.11 using FMS-11 form "FSMAIN" and overlay OPRACK

With the blade fully extended, check the shear blade position indicator. The indicator should read 0.000 plus or minus 0.010. Set the HI limit on the shear blade position indicator 0.010 greater than the displayed fully-extend position. Check the red BLADE-DOWN light and display HI-LIMIT LED are both energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.12 using FMS-11 form "FSMAIN" and overlay OPRACK

Cycle the hydraulic cylinder a minimum of three more times in the fast shear mode. Check that all limit indicators and lights work properly, and recheck the piston rod for oil leakage. If oil leakage continues during cycling, refer to the procedures in Reference 1.5.1

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.03.02.13 using FMS-11 form "FSMAIN" and overlay OPRACK

When completed, leave the blade in the down (extended) position, and turn off the hydraulic unit. Open the power breaker on the unit.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "FEED SYSTEM CALIBRATION CHECKS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Shear Plane Gauging"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.01.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Raise the fuel rod positioners by depressing the RETRACT switch on the home retract module with the master-slave.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.02.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Open the fuel rod port seal. Set the low alarm limit on the blade position readout to -. Set the low alarm limit on the REL readout to -90.00.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.03.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Carefully place the 35-in. gauge rod on the feed system rollers and slide the rod so the end passes through the housing insert and contacts the face of the shear blade.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.04.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Lower the fuel rod positioners by depressing the EXTEND switch on the home retract module with the master-slave, while holding the gauge rod against the shear blade.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.06.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Fully open the carriage clamp jaws using the 1/2-in. tee-handle socket wrench. Turn the top jaw clockwise to raise, and turn the side jaws counter-clockwise. Do not use excessive force when opening the clamp jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.07.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Turn on the PSI and preset the digital display to the AST digital readout. Set the PSI in the JOG mode, forward direction.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.08.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Using the JOG control, advance the carriage to the 36-in. position as indicated by the Absolute Shaft Transducer (AST) display.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn the JOG mode speed control switch fully counter-clockwise to minimize carriage speed. Check that the REL is in position to contact the rod. Place the PSI in the computer mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.11.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Gauge Rod Temperature at 2 Points"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.11.02 using FMS-11 form "FSMAIN" and overlay 251112

System is reading the gauge rod temperatures every 5 seconds and waiting for temperature to be stable within ± 0.3 c for 1 minute.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.1.11.2

TITLE: READ GAUGE ROD TEMPERATURE

ACTION: Read RTD1 and RTD2. Calculate TGR $(RTD1 + RTD2/2)$. Display the final readings and TGR.

DISPLAY: Computer is reading temperature every five seconds and waiting for temperature to be stable within 0.3 degrees C for one minute. (Display last six readings.)

TEST 1: Temperature is within the range 20-32 degrees C.

TEST 2: Temperature is stable to 0.3 degrees C for one minute. Test for three minutes.

ACCEPT: If both tests pass, go to 2.5.1.11.3.

REJECT: If Test 1 fails, display reading and message

RTD6 = 13.1 degrees C.
Reading is out of acceptable range.

If Test 2 fails, display:

RTD6 variation = 0.5 degrees C
Variation is out of acceptable range.

If Test 1 or 2 fails, repeat Step 2.5.1.11.2.

Step 02.05.01.13.00 using FMS-11 form "FSMAIN" and overlay 25113

Displayed below are the three machine base temperatures and their average for operator acceptance.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.1.13
2.5.2.16

TITLE: MACHINE BASE TEMPERATURE - TMB

ACTION: Read RTD3, RTD4 and RTD5. Calculate the average machine base temperature.

DISPLAY: Displayed below are the three machine base temperatures and their average for operator acceptance.

RTD3 = 26.0 C - SAVE IN LOG FILE
RTD4 = 27.0 C - SAVE IN LOG FILE
RTD5 = 28.0 C - SAVE IN LOG FILE

TMB = 27.0 C - SAVE IN DATA COMMON

TEST 1: Each temperature should be within the range 28-32 degrees C.

TEST 2: The difference between any two readings should not exceed 3 degrees C.

ACCEPT: If Test 1 and 2 pass, continue to next step.

REJECT: If Test 1 fails, display:

RTD4 = 35 degrees C
Reading is out of acceptable range.

If Test 2 fails, display:

RTD3 = 26 degrees C
RTD5 = 32 degrees C
Temperature difference is greater than 3 degrees C.

If Test 1 or 2 fails, repeat Step 2.5.1.13.

Step 02.05.01.16.00 using FMS-11 form "FSMAIN" and overlay 25116

Trial 1 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.1.16

TITLE: TRIAL 1 FOR AST AND REL AT SHEAR PLANE

ACTION: Calculate:

$$LGRT = 34.99643 [(1 + (1.19 \times 10^{-5})(TGRA - 20))]$$

$$XASTSP = LGRT / [(1 + (1.24 \times 10^{-5})(TMB - 19.56))]$$

Store LGRT and XASTSP in log and common files.

Position the carriage such that the AST value equals XASTSP. Save AST and REL values in log and data common.

DISPLAY: Trial 1 for AST and REL.

LGRT = _____ in.

XASTSP = _____ in.

AST = _____ in.

REL = _____ in.

TEST 1: AST must equal XASTSP plus or minus 0.001 in.

TEST 2: REL must equal 0.000 plus or minus 0.005 in.

ACCEPT: Pass Tests 1 and 2 continue to 2.5.1.17.

REJECT: If Test 1 fails, display:

XASTSP = 30.000
AST = 29.000
Values must be equal to continue.

Step 02.05.01.17.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 2 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.1.17
2.5.1.18
2.5.2.12
2.5.2.13

TITLE: TRIAL 2 OR 3 FOR AST AND REL

ACTION: Retract carriage 1.000 in. Then index forward
1.000 in. Read AST and REL. Save AST and REL
values in log and common files.

DISPLAY: TRIAL 2

AST - 30.000 in.
REL - 0.000 in.

TEST 1: AST reading must equal AST reading from Trial 1.

TEST 2: REL reading must be within plus or minus 0.0001 in.
of REL reading from Trial 1.

ACCEPT: If Tests 1 and 2 pass, continue.

REJECT: If Test 1 fails, display Trials 1 and 2 and -
AST values are not equal.
If Test 2 fails, display Trials 1 and 2 and -
REL values are out of acceptable range.

If Test 1 or 2 fails, repeat Step 2.05.01.17 or 2.5.1.18.

Step 02.05.01.18.00 using FMS-11 form 'FSMAIN' and overlay 25117

Trial 3 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.05.01.17.00)

Step 02.05.01.20.00 using FMS-11 form 'FSMAIN' and overlay 25120

Accept set of 3 trials.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 2.5.1.20
2.5.2.14

TITLE: AST AND REL TRIALS

ACTION: Display three trials of AST and REL Readings.
(AST and REL values are saved as they are taken.)

DISPLAY: TRIAL 1

AST = _____ in.

REL = _____ in.

TRIAL 2

AST = _____ in.

REL = _____ in.

TRIAL 3

AST = _____ in.

REL = _____ in.

TEST 1: All three AST readings must be identical.

TEST 2: All three REL readings must be within 0.0001 in.

ACCEPT: Pass Tests 1 and 2, display for operator acceptance.

Parameter record 1 is a logic branch to step 02.05.01.18.00

Step 02.05.01.20.01 using FMS-11 form 'FSMAIN' and overlay 25113

Displayed below are 3 machine base
temperatures and their average for operator
acceptance.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.13.00)

Step 02.05.01.20.02 using FMS-11 form "FSMAIN" and overlay 251202

Accept calculations.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.1.20.2

TITLE: SHEAR PLANE CALCULATIONS

ACTION: Calculations:

$REL RP = [REL(1) + REL(2) + REL(3)]/3$

$REL SP = REL RP$

$AST A = [AST(1) + AST(2) + AST(3)]/3$

$AST SP = AST A [(1 + 1.24 \times 10^{-5})(TMB - 19.56)]$

DISPLAY: Display calculated values of RELRP and ASTSP for operator acceptance.

Save RELRP, RELSP and ASTSP in log file.

Save RELSP, RELRP, ASTSP in data common.

Acceptance criteria are checked for each variable as it is read.
No computer criteria needed for this step.

Step 02.05.01.21.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.22.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the PSI in the JOG mode, reverse direction, and index the carriage back (away from the shear) 4 inches.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.23.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Gently slide the gauge rod out of the shear until the end is visible. Leave the rod on the feed system.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Forward Stop Gauging"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Start the hydraulics and retract the shear blade.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

When the blade is up, install the safety block under the shear coupling, and shut off the hydraulic unit.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the forward stop is fully extended in the down (gauging) position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Using the master-slave, gently slide the gauge rod through the shear housing until the end contacts the forward stop.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.05.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn on the friction drive. Check that the pinch roller has extended and the friction drive motor is turning.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.06.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the PSI in the JOG mode, forward direction, and index the carriage to the 24-in. position as indicated on the AST display.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.08.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn the JOG mode speed control switch fully counter-clockwise to minimize carriage speed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Using the JOG mode, advance the carriage until the gauge rod end contacts the REL as indicated on the REL digital display.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.10.00 using FMS-11 form "FSMAIN" and overlay 42212

Using the SINGLE-STEP mode of the PSI, advance the carriage until the REL indicates the Reference Position indicated below ± 0.0005 in. Place the PSI in computer mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.11.00 using FMS-11 form "FSMAIN" and overlay 25211

Trial 1 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.2.11

TITLE: TRIAL 1 FOR AST AND REL AT FORWARD STOP

ACTION: Read REL and AST. Save values in log and data common files.

DISPLAY: TRIAL 1

AST = _____ in.

REL = _____ in.

TEST 1: The REL value must equal RELRP plus or minus 0.0005 in.

ACCEPT: Pass Test 1 - continue.

REJECT: If Test 1 fails, display:

RELRP = _____ in.

Step 02.05.02.12.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 2 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.17.00)

Step 02.05.02.13.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 3 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.17.00)

Step 02.05.02.14.00 using FMS-11 form "FSMAIN" and overlay 25120

Accept set of 3 trials.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.20.00)

Parameter record 1 is a logic branch to step 02.05.02.10.00

Step 02.05.02.15.00 using FMS-11 form "FSMAIN" and overlay 25113

Displayed below are 3 machine base
temperatures and their average for operator
acceptance.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.13.00)

Step 02.05.02.17.00 using FMS-11 form "FSMAIN" and overlay 25217

Accept calculations.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 2.5.2.17

TITLE: CALCULATE ASTFS AND DSP-FS

ACTION: Calculate and display results
 $ASTFS = AST[1 + (1.24 \times 10^{-5})(TMB - 19.56)]$
 $DSP-FS = (ASTSP + RELSP) - (ASTFS + RELFS)$

DISPLAY: ASTFS = _____ in.

DSP-FS = _____ in.

Save ASTFS and DSP-FS in log and data common files.

Step 02.05.02.19.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Turn off the friction drive assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.20.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.21.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Place the PSI in the LOCAL mode. Place the home select switch in the REVERSE position, and index the carriage to the home zero retract position. Watch the LVDT cables. When carriage is at HZR turn PSI power off.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.22.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Carefully remove the gauge rod from the shear and store. Leave the shear safety block in place.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.02.23.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Retract the REL.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "TRANSFER STANDARD WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.01.00.00 using FMS-11 form "FSMAIN" and overlay 261

Run TSOWR for the balances listed below. Sign off this step when TSOWR is complete.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.00.02.00.00 using FMS-11 form "FSMAIN" and overlay 282

Run TSFWR for each balance. When complete continue to step 3.0.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.00.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "PRE-SHEARING WEIGHING OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "SAMPLE CAN WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.01.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Assemble the sample cans and caps at balance 2 for weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.02.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Inspect all cans and caps to insure that they are clean and not damaged. (If a can or cap is destroyed a new one with the same identification may be weighed out-of-cell.)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.02.01.00 using FMS-11 form "FSSCRL" and overlay SAMJR

BALQA will run if it has not been run in the last 24 hours. BALCC will run if it has not been run in the last 4 hours.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.02.01.01 using FMS-11 form "FSSCRL" and overlay SAMCAN

Interactive in-cell weighing procedure of can and cap separately
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.02.01.02 using FMS-11 form "FSSCRL" and overlay F32212

Interactive in-cell weighing procedure of can and cap together
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "PRE-SHEARING BRUSH WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Inspect the brushes to insure they are clean and not damaged.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.02.01.00 using FMS-11 form "FSSCRL" and overlay PBRUSH

In-cell brush weighing procedure
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.00.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "FUEL ROD MEASUREMENT"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "ROD WEIGHT"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.00.00 using FMS-11 form "FSMAIN" and overlay 411

Step title: "Support Cradle Weight - CW1"

(Checking balance QA and calibration)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the fuel rod cradle lifting cylinders.
Open the large transfer lock inner door.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the A window and one at the B window, lift the cradle and place it on the cradle lifting cylinders. Leave the lifting hooks on the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Inspect the cradle for cleanliness. Clean if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Inspect balance 1 pan for cleanliness. Clean if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.05.00 using FMS-11 form "FSMAIN" and overlay OENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.06.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 tare reading - T1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

TITLE: READ AND DISPLAY BAL1 TARE

DISPLAY: T1, T2, T3 or T4 = X.X g

TEST: Balance tare should read 0-g plus or minus 1-g.

If limit is exceeded display:

T1 = 5-g

Tare is out of acceptable range of plus or minus 1-g.

(IF TARE IS OUT OF RANGE REPEAT STEP.)

Step 04.01.01.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.08.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.10.00 using FMS-11 form "FSMAIN" and overlay 4110

Displayed below for operator acceptance is the balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.01.11.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.12.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.13.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.14.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.01.15.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.16.00 using FMS-11 form 'FSMAIN' and overlay 4118

Displayed below for operator acceptance is the
cradle weight reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.17.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Raise the cradle lifting cylinders. Sign off
this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.18.00 using FMS-11 form 'FSMAIN' and overlay 4116

Displayed below for operator acceptance is the
balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 04.01.01.06.00)

Step 04.01.01.19.00 using FMS-11 form 'FSMAIN' and overlay 4119

Displayed below for operator acceptance is the
cradle weight - CW1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.1.1.19

TITLE: CALCULATE AND DISPLAY CW1

DISPLAY: CW1 = XXXX.X g

ACTION: CW1 will be stored for calculations later in 4.1.

1) $W1 = R1 - T1 \cdot T2 / 2$

2) $W2 = R2 - T2 \cdot T3 / 2$

3) $W3 = R3 - T3 \cdot T4 / 2$

Parameter record 1 is a logic branch to step 04.01.01.01.00

Step 04.01.01.20.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Install the fuel rod stops to prevent the rod
from rolling off the back of the feed rollers

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.21.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at the "B" window, lift the cradle and place it in the recess between the roller blocks and carriage ways.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.22.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the lifting hooks from the cradle and raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Cradle Gross Weight CGW1."

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Gently slide the fuel rod from the feed rollers on to the fuel rod cradle. Check that the rod rests in the V-groove of the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.02.01 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at the "B" window, lift the cradle and place it on the floor in front of BAL1. Keep the plenum above the horizontal plane.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.02.02 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the fuel rod clamp block at the tang end of the fuel rod and clamp the rod in the block.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.02.03 using FMS-11 form "FSMAIN" and overlay OPRACK

Position the pneumatic tang cutter and cut the fuel rod tang as close as possible to the fuel rod end.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.02.04 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the fuel rod from the fuel rod clamp block and position it on the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at the "B" window lift the cradle and place it on the cradle lifting cylinders. Keep the plenum above the horizontal plane. Leave the lifting hooks on the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.05.00 using FMS-11 form "FSMAIN" and overlay OENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.06.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - Y1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.05.00)

Step 04.01.02.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.08.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 reading - R1

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.10.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.08.00)

Step 04.01.02.11.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.12.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.13.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.14.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.00.00)

Step 04.01.02.15.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.16.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.17.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.18.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.00.00)

Step #4.01.02.23.00 using FMS-11 form 'FSMAIN' and overlay 41223

Displayed below for operator acceptance is the
cradle gross weight - CGW1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.1.2.23

TITLE: CALCULATE AND DISPLAY CGW1

DISPLAY: CGW1 = XXXX.X g

ACTION: Store CGW1 for later calculations in 4.1.

1) $W1 = R1 - T1 + T2/2$

2) $W2 = R2 - T2 + T3/2$

3) $W3 = R3 - T3 + T4/2$

Parameter record 1 is a logic branch to step #4.01.02.05.00

Step #4.01.02.25.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

With one operator at window 'A' and one at
window 'B' lift the cradle and place it in the
recess between the roller blocks and the
carriage ways. Keep the plenum above the
horizontal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.26.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Remove the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.27.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Gently slide the fuel rod from the cradle to
the feed rollers. Lower the fuel rod
positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.28.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Install the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.30.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

With one operator at the 'A' window and one at the 'B' window, lift the cradle and place it on the cradle lifting cylinders.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.31.00 using FMS-11 form 'FSMAIN' and overlay DENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.32.00 using FMS-11 form 'FSMAIN' and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step #4.01.01.00.00)

Step #4.01.02.33.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.34.00 using FMS-11 form 'FSMAIN' and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step #4.01.02.35.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.36.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the
balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.02.37.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off
this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.38.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the
cradle weight reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.39.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Raiso the cradle lifting cylinders. Sign off
this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.40.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the
balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.02.41.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off
this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.42.00 using FMS-11 form 'FSMAIN' and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.43.00 using FMS-11 form 'FSMAIN' and overlay 0PRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.44.00 using FMS-11 form 'FSMAIN' and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 04.01.01.06.00)

Step 04.01.02.45.00 using FMS-11 form 'FSMAIN' and overlay 41245

Displayed below for operator acceptance is the cradle weight before rod weighing CW1, and the cradle weight after rod weighing CW2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.1.2.45

TITLE: CALCULATE CW2. DISPLAY CW1 AND CW2.

ACTION: Calculate CW2. Store for calculations in 4.1.

1) $W1 = R1 - T1 \cdot T2 / 2$

2) $W2 = R2 - T2 \cdot T3 / 2$

3) $W3 = R3 - T3 \cdot T4 / 2$

4) $CW2 = W1 + W2 + W3 / 3$

Parameter record 1 is a logic branch to step 04.01.02.31.00

Step 04.01.02.46.00 using FMS-11 form 'FSMAIN' and overlay 41246

Displayed below for operator acceptance is the fuel rod weight before plenum gas release FRW1, and the fuel rod weight before plenum gas release corrected for balance calibration factor FRWC1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.1.2.46

TITLE: FUEL ROD WEIGHT BEFORE GAS RELEASE

DISPLAY: FRW1 = XXXX.X g

FRWC1 = XXXX.X g

ACTION: CALCULATE

FRW1 = CGW1 - CAW1

WHERE: CGW1 = cradle gross weight 1. Step 4.1.2.23

Parameter record 1 is a logic branch to step 04.01.01.03.00

Step 04.01.02.48.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the window "A" and one at window "B", lift the cradle and place it in the recess between the roller blocks and the carriage ways.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.49.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the lifting hooks from the cradle and raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.50.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Gently slide the fuel rod from the feed rollers to the cradle. Check that the rod rests in the V-groove of the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.51.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.02.52.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at window "A" and one at window "B", lift the cradle and position it for plenum gas release. Keep the plenum end above the horizontal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.03.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Plenum Gas Release"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.03.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Refer to the plenum puncture procedure. Sign off this step when the plenum puncture procedure has been completed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "Fuel Rod Weight After Gas Release"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the fuel rod cradle lifting cylinders.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the A window and one at the B window, lift the cradle and place it on the cradle lifting cylinders. Leave the lifting hooks on the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Inspect the cradle for cleanliness. Clean if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Inspect balance 1 pan for cleanliness. Clean if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.05.00 using FMS-11 form "FSMAIN" and overlay DENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.06.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.08.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.09.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.10.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.11.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.12.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.13.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.14.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.15.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.16.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.17.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.18.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.19.00 using FMS-11 form "FSMAIN" and overlay 41419

Displayed below for operator acceptance is the
cradle weight - CW3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 4.1.4.19

TITLE: CALCULATE AND DISPLAY CW3

DISPLAY: CW3 = XXXX.X g

CW1 = XXXX.X g

CW2 = XXXX.X g

ACTION: Calculate CW3 and store for calculations later in 4.1.

1) $W1 = R1 - T1 + T2/2$

Parameter record 1 is a logic branch to step 04.01.04.01.00

Step 04.01.04.21.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at
the "B" window, lift the cradle and place it
in the recess between the roller blocks and
carriage ways.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.22.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the lifting hooks from the cradle.
Raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.23.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Gently slide the fuel rod from the feed
rollers on to the fuel rod cradle. Check that
the rod rests in the V-groove of the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.24.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.26.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at the "B" window lift the cradle and place it on the cradle lifting cylinders. Keep the plenum above the horizontal plane. Leave the lifting hooks on the cradle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.27.00 using FMS-11 form "FSMAIN" and overlay OENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.28.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.00.00)

Step 04.01.04.29.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.30.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 reading - R1

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.31.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.32.00 using FMS-11 form *FSMAIN* and overlay 4116

Displayed below for operator acceptance is the
balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action *slave* routine:

(See step 04.01.01.05.00)

Step 04.01.04.33.00 using FMS-11 form *FSMAIN* and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off
this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.34.00 using FMS-11 form *FSMAIN* and overlay 4118

Displayed below for operator acceptance is the
balance 1 reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.35.00 using FMS-11 form *FSMAIN* and overlay 0PRACK

Raise the cradle lifting cylinders. Sign off
this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.36.00 using FMS-11 form *FSMAIN* and overlay 4116

Displayed below for operator acceptance is the
balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action *slave* routine:

(See step 04.01.01.06.00)

Step 04.01.04.37.00 using FMS-11 form *FSMAIN* and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off
this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.38.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.39.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.40.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.05.00)

Step 04.01.04.46.00 using FMS-11 form "FSMAIN" and overlay 41446

Displayed below for operator acceptance is the cradle gross weight - CGW2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 04.01.04.03.00

Step 04.01.04.48.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at window "A" and one at window "B" lift the cradle and place it in the recess between the roller blocks and the carriage ways. Keep the plenum above the horizontal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.49.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.50.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Gently slide the fuel rod from the cradle to the feed rollers. Lower the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.51.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the cradle lifting hooks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.53.00 using FMS-11 form "FSMAIN" and overlay OPRACK

With one operator at the "A" window and one at the "B" window, lift the cradle and place it on the cradle lifting cylinders.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.54.00 using FMS-11 form "FSMAIN" and overlay DENTRY

Tare balance 1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.55.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the balance 1 tare reading - T1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.56.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.57.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the
cradle weight reading - R1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.58.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Raise the cradle lifting cylinders. Sign off
this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.59.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the
balance 1 tare reading - T2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.60.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the cradle lifting cylinders. Sign off
this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.61.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the
cradle weight reading - R2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.62.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Raise the cradle lifting cylinders. Sign off
this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.63.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.64.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the cradle lifting cylinders. Sign off this step when they are completely down.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.65.00 using FMS-11 form "FSMAIN" and overlay 4118

Displayed below for operator acceptance is the cradle weight reading - R3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.66.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the cradle lifting cylinders. Sign off this step when they are completely raised.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.67.00 using FMS-11 form "FSMAIN" and overlay 4116

Displayed below for operator acceptance is the balance 1 tare reading - T4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.01.01.06.00)

Step 04.01.04.68.00 using FMS-11 form "FSMAIN" and overlay 41467

Displayed below for operator acceptance is the cradle weight after the fuel rod plenum gas release CW4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 4.1.4.67

TITLE: CALCULATE AND DISPLAY CW4

DISPLAY: CW4 = XXXX.X g

CW1 = XXXX.X g

CW2 = XXXX.X g

CW3 = XXXX.X g

ACTION: Calculate CW4 and store for calculations later in 4.1.

Parameter record 1 is a logic branch to step 04.01.04.03.00

Step 04.01.04.69.00 using FMS-11 form 'FSMAIN' and overlay 41468

Displayed below for operator acceptance is the fuel rod weight after plenum gas release FRW2, and FRW2 corrected for balance calibration factor FRWC2.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.1.4.68

TITLE: FUEL ROD WEIGHT AFTER GAS RELEASE

DISPLAY: FRW2 = XXXX.X g

FRWC2 = XXXX.X g

ACTION: Calculate FRWC2. Store for report generation.

FRW2 = CGW2 - CWA2

WHERE: CGW2 = From Step 4.1.4.46

Parameter record 1 is a logic branch to step 04.01.04.03.00

Step 04.01.04.71.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

With one operator at window 'A' and one at window 'B', lift the cradle and place it in its storage location in front of the shear.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.04.72.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Lower the cradle lifting cylinders. Remove the fuel rod stops. Close the transfer lock inner door.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.00.00.00 using FMS-11 form 'FSMAIN' and overlay ODUMMY

Step title: 'ROD TEMPERATURE AND LENGTH MEASUREMENT'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.00.00 using FMS-11 form 'FSMAIN' and overlay ODUMMY

Step title: 'Clamping the fuel rod in the carriage clamp jaws.'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.01.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Set the Preset Servo Indexer (PSI) jog speed to .6 in./sec.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Set the home zero switch to HZR. Check that REL is fully retracted.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn PSI power on and jog the carriage off the HZF switch.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Index the carriage to HZR.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.05.00 using FMS-11 form "FSMAIN" and overlay OPRACK

When carriage stops at HZR, turn PSI power off.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.06.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the carriage jaw wrench to lower the top jaw until it contacts the rod

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.07.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque limiter to torque the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque limiter to torque the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Step title: "Positioning the the rod for length measurement."

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.01.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the forward stop is lowered and the blade is retracted with the blade block in place.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.02.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Insert the can 00 and brush 00 in the sample collection station. Position the can to the in and up position. Insert the can spacer for a 3 in. can.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.03.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Open the O-ring seal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.04.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the shear housing bore plug.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.05.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the positioners until the rod is to the right of the RDT on positioner 1. Manually advance the carriage until the fuel rod protrudes through the shear housing and contacts the friction drive.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.06.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Use the carriage clamp jaw wrench to release the clamp jaws. Release the top jaw first.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.07.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Raise the positioners and turn the friction drive motor on.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.09.00 using FMS-11 form *FSMAIN* and overlay OPRACK

When the fuel contacts the forward stop, retract the carriage as necessary and extend the rod end locator(REL). Lower the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.10.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Turn the PSI on.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.11.00 using FMS-11 form *FSMAIN* and overlay OENTRY

Reset the PSI digital display to the AST readout value.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.12.00 using FMS-11 form *FSMAIN* and overlay 42212

With the PSI in the jog mode, slowly position the carriage until the REL digital display reads the value displayed below ± 0.0005 in.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.13.00 using FMS-11 form "FSMAIN" and overlay 42213

Set the PSI in the computer mode. The computer will position the carriage for fuel rod length measurement.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.02.14.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 1 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.17.00)

Step 04.02.02.15.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 2 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.17.00)

Step 04.02.02.16.00 using FMS-11 form "FSMAIN" and overlay 25117

Trial 3 for AST and REL pair.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.17.00)

Step 04.02.02.17.00 using FMS-11 form "FSMAIN" and overlay 25120

Displayed below are the 3 AST and REL trials for operator acceptance.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.05.01.20.00)

Parameter record 1 is a logic branch to step 04.02.02.14.00

Step 04.02.02.19.00 using FMS-11 form "FSMAIN" and overlay 42219

Displayed below are the 3 fuel rod temperatures and their average for operator acceptance. Computer is reading fuel rod temperature every 5 seconds and waiting for temperature to be stable within +/- .3 degrees C for 1 min.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.2.2.18

TITLE: FUEL ROD TEMPERATURE

ACTION: Read and display RTD1 and RTD2. Store.
Calculate the average fuel rod temperature TFR

$$TFR = RTD1 + RTD2 / 2$$

Display TFR also

DISPLAY: Computer is reading fuel rod temperatures every five seconds and waiting for temperature to be stable within .3 degrees C for one minute.

TEST 1: Temperature is in range of 20-32 degrees C

TEST 2: Temperature is stable to 3 degrees C for one minute.
Test for three minutes.

ACCEPT: Pass tests 1 and 2. Display RTD1, RTD2 and TFR for operator acceptance.

REJECT: If test 1 fails, display: RTD1 = 13.7 degrees C
Reading is out of acceptable range.

If test 2 fails, display: RTD1 variation = 0 degrees C
Variation is out of acceptable range.

If 1 or 2 fails, display: Repeating Step 4.2.2.18.

Step 04.02.02.20.00 using FMS-11 form 'FSMAIN' and overlay 25113

Displayed below are the 3 machine base temperatures and their average for operator acceptance.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.05.01.13.00)

Step 04.02.02.21.00 using FMS-11 form 'FSMAIN' and overlay 42221

Accept calculated values.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 4.2.2.21

ACTION: Calculate:

$$ASTRE = ASTAVE (1 + 1.24 \times 10^{-5}) (TMB - 19.56)$$

WHERE: ASTRE = the carriage location at the rod end corrected for thermal expansion of the feed system and ball screw.

ASTAVE = average of the three AST trials (from Step 4.2.2.17).

1.24×10^{-5} = coefficient of thermal expansion of the feed system and ball screw (in./in./degrees C)

TMB = average machine base temperature
Step 4.2.2.18

19.56 = the temperature in degrees C at which the feed system is true

$$LFR = (ASTRE - ASTFS) + (RELRE - RELFS) + LGRT$$

WHERE

LFR = fuel rod length

ASTRE = the carriage location at the rod end corrected for thermal expansion of the feed system and ball screw.

ASTFS = the carriage location at the forward stop position from Step 2.5.2.17

RELRE = the REL value at the rod end from Step 4.2.2.17

LGRT = the true gauge rod length from Step 2.5.1.18

DISPLAY: Displayed below is the calculated value for fuel rod length:

LFR = 116.234 in.

Step 04.02.02.22.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Turn the friction drive power off.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.00.00.00.00 using FMS-11 form "FSMAIN" and overlay 5

Step title: "FUEL ROD SHEARING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "FUEL ROD CLAMPING FOR SHORT RODS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.01.00.00 using FMS-11 form "FSMAIN" and overlay 511

Check that the REL reading is +/-0.50 mils of the RELRP value shown below. If not use the jog mode to position the carriage for RELRP +/-0.50 mils.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the top carriage clamp jaw until it contacts the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque wrench to torque the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.04.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque wrench to torque the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Set the REL alarm limits to + and - 2.00 mils of the current REL reading.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.06.00.00 using FMS-11 form "FSMAIN" and overlay 516

Place the PSI in computer mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "FUEL ROD CLAMPING - LONG RODS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Set the LD limit on the REL to -99.99 and retract the carriage 1.000 in. Retract the REL from the carriage.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.02.00.00 using FMS-11 form "FSMAIN" and overlay 522

Manually advance the carriage forward 11.000 inches. Use the AST to determine carriage position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the top carriage clamp jaw until it contacts the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.04.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque wrench to torque the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Use the clamp jaw torque wrench to torque the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.06.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the PSI in the computer mode.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "POSITIONING THE FUEL ROD FOR SHEARING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check that the PSI is on and in the computer mode. When this step is signed off the computer will position the fuel rod 1.000 inches from the shear plane.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.00.00 using FMS-11 form "FSMAIN" and overlay 532

Displayed below for operator acceptance is the AST reading with the fuel rod end 1.000 inches from the shear plane.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.3.2

TITLE: POSITIONING THE FUEL ROD FOR SHEARING

ACTION:

- 1) Read starting AST
- 2) Calculate desired AST
- 3) Position carriage for desired AST
- 4) Display starting and end AST values and DFS-SP

DISPLAY: AST = XXX.XXX

STARTING AST = XXX.XXX

DSP-FS = XX.XXX

The carriage will be retracted a distance equal to DSP-FS + 1.000 in. The 1.000 in. will be added to the first cut.

- 1) Read the starting AST for display.
- 2) Calculate the distance to retract the carriage and the desired AST reading.

DRC = DSPFS + 1.000

WHERE

DRC = the distance to retract the carriage (in.).

DSPFS = the distance from the shear plane to the forward stop as calculated in Step 2.5.2.17 (0V2527).

$AST(Desired) = AST(Starting) + DRC$

$ASTD = ASTS + DRC$

3) Retract the carriage to ASTD.

Step 05.03.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Install the shear body bore plug. Close the fuel rod port seal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.00.00.00 using FMS-11 form "FSMAIN" and overlay DDUMMY

Step title: "HYDRAULIC SYSTEM START-UP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Unlock and close the hydraulic unit power breaker.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Start the hydraulic unit.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Check the hydraulic hoses, fittings, cylinder, and power pack for oil leaks.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.04.00.00 using FMS-11 form "FSMAIN" and overlay 544

Check hydraulic pressures. Lower cylinder pressure should be 2550 to 3000 psig (cycling). Upper cylinder pressure should be 1750 +/-50 psig.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a sensor criteria record for sensor FSPT1

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min single max
single min automatic reading

Number of past readings to keep = 3

Single reading minimum set point = 2400.00

Single reading maximum set point = 3100.00

Alarm limit minimum set point = 2400.00

Alarm limit maximum set point = 3100.00

New exception receiver queue name is OPRFSS

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 0 min. 30 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor FSPT2

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm1 min single max
single min automatic reading

Number of past readings to keep = 3

Single reading minimum set point = 1650.00

Single reading maximum set point = 1850.00

Alarm limit minimum set point = 1650.00

Alarm limit maximum set point = 1850.00

New exception receiver queue name is OPRFSS

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 0 min. 30 sec. 0 ticks.

Step 05.04.00.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

Remove the shear safety block.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.08.00.00 using FMS-11 form 'FSMAIN' and overlay OPRACK

With the shear mode selector switch in the fast shear position, cycle the cylinder a minimum of three times. Check the shear blade position indicator lights for proper operation. Leave the shear blade in the down position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.05.00.00.00 using FMS-11 form 'FSMAIN' and overlay 55

Step title: 'SEGMENT SHEARING'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.0

TITLE: SEGMENT SHEARING

ACTION: THIS STEP INITIALIZES THE INTERSTEP COMMON VARIABLES (IN 'STEP') WHICH ARE USED DURING THE SHEARING CYCLE.

Step 05.05.01.00.00 using FMS-11 form 'FSMAIN' and overlay 551

(Computing segment shearing plan)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.1

TITLE: SEGMENT SHEARING CUT PLAN CALCULATIONS

ACTION: THIS SLAVE ROUTINE IMPLEMENTS THE CUT PLAN CALCULATIONS SECTION OF SEGMENT SHEARING. THE CUT PLAN FOR A SEGMENT IS CALCULATED AND DISPLAYED FOR OPERATOR ACCEPTANCE.

Step 05.05.02.00.00 using FMS-11 form 'FSMAIN' and overlay 552

Step title: 'Automated cut cycle'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.2

TITLE: AUTOMATED CUT CYCLE

ACTION: THIS STEP OPENS THE TEMPERATURE LOG FILE AT THE START OF THE CUT CYCLE. FUEL ROD TEMPERATURE IS READ ONCE PER CUT CYCLE AND THE DATA IS STORED IN THE TEMPERATURE LOG FILE.

Step 05.05.02.01.00 using FMS-11 form *FSSHER* and overlay 5521

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.2.1

TITLE: INITIALIZATION BEFORE FIRST CUT

ACTION: THIS STEP WAITS FOR OPERATOR SIGNOFF BEFORE INITIATING
FULLY AUTOMATED SHEARING OF A SEGMENT.

Step 05.05.02.02.00 using FMS-11 form *FSSHER* and overlay 5522

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.2.2

TITLE: FULL SCALE SHEAR AUTOMATIC CYCLE EXECUTION

ACTION: THIS ROUTINE OPERATES THE AUTOMATED SEGMENT SHEARING CYCLE.
A BASIC SHEARING CYCLE CONSISTS OF THE FOLLOWING STEPS:

1. THE SHEAR BLADE IS RAISED.
2. THE FUEL-ROD SEAL IS OPENED.
3. THE CARRIAGE IS INDEXED FORWARD.
4. THE FUEL-ROD SEAL IS CLOSED.
5. THE FUEL-ROD TEMPERATURE IS READ.

6. THE SHEAR BLADE IS LOWERED.

DURING THE SHEARING CYCLE THE PROGRAM MONITORS SYSTEM
SENSORS FOR DATA COLLECTION AND SOFTWARE INTERLOCKS.

Step 05.05.02.03.00 using FMS-11 form *FSSHER* and overlay 5523

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.2.3

TITLE: CHECK IF BOUNDARY CUT NEXT OR JUST DONE

ACTION: THIS STEP IS A SUBROUTINE OF THE SHEARING CYCLE. IF THE NEXT
CUT IS TO BE A SEGMENT BOUNDARY CUT THE STEP DIRECTS THE
PROGRAM TO THE BOUNDARY CUT CALCULATIONS ROUTINE. IF THE
PREVIOUS CUT WAS A SEGMENT BOUNDARY CUT THE PROGRAM IS
DIRECTED TO THE ACTUAL BOUNDARY CUT LOCATION CALCULATIONS
ROUTINE.

Step 05.05.02.04.00 using FMS-11 form *FSSHER* and overlay 5524

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

STEP: 5.5.2.4

TITLE: BOUNDARY CUT CALCULATIONS

ACTION: IN THIS STEP THE EXPECTED AST VALUE AT THE SEGMENT BOUNDARY LOCATION IS CALCULATED. THE EQUATION CORRECTS FOR MACHINE BASE TEMPERATURE AND ANY CHANGE IN THE REL VALUE FROM ITS REFERENCE POSITION. THERE ARE THREE SEPARATE CASES FOR CALCULATION THE CORRECTED SEGMENT BOUNDARY LOCATION.

CASE 1 - BOUNDARY CUT 1 FOR LONG RODS.

Step 05.05.02.05.00 using FMS-11 form "FSMAIN" and overlay 5525

(Shearing of segment complete)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.5.2.5

TITLE: CALCULATION OF ACTUAL SEGMENT BOUNDARY CUT LOCATION

ACTION: AFTER A SEGMENT BOUNDARY CUT IS MADE THE ACTUAL BOUNDARY CUT POSITION (ASCP) IS CALCULATED. THERE ARE THREE SEPARATE CASES FOR CALCULATING ABCP.

CASE 1 - ACTUAL BOUNDARY CUT POSITION FOR BOUNDARY CUT 1 OF A LONG ROD.

THE REL IS NOT IN CONTACT WITH THE FUEL ROD AND THE CARRIAGE IS POSITIONED FORWARD 10.000 INCHES FROM THE ROD END.

$$ABCP = ASTBC[1 + (1.24 \times 10^{-5})(TMB - 19.56)] + [RELBC - RELRP] + [10]$$

Step 05.05.02.06.00 using FMS-11 form "FSMAIN" and overlay 5526

The computer will push the stub section of the end closure into the sample can by indexing the carriage forward .5 in. After the stub is pushed in, the carriage is retracted 3.000 inches and then the blade is lowered.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.5.2.6

TITLE: PUSHING THE FUEL-ROD STUB INTO THE SAMPLE CAN.

ACTION: AFTER THE FINAL CUT HAS BEEN MADE ON A FUEL ROD, A SHORT ZIRCALOY STUB SECTION REMAINS. THIS STEP PUSHES THE STUB INTO THE SAMPLE CAN, LOWERS THE BLADE, CLOSES THE FUEL-ROD TEMPERATURE LOG, AND INSTRUCTS THE PROGRAM TO GO TO THE BLADE BRUSHING SEQUENCE.

Step 05.05.99.00.00 using FMS-11 form "FSSHER" and overlay 8PPL0T

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "POSITIONING CARRIAGE AFTER SHEARING LONG ROD SEGMENT 00"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.01.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Use the clamp jaw wrench to loosen the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.02.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Use the clamp jaw wrench to loosen the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.03.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Set the LO limit on the blade position indicator to +. Place the PSI in the local mode and retract the carriage 11.000 inches.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.04.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Extend the rod end locator. Set the LO limit on the blade position indicator to -.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.05.00.00 using FMS-11 form "FSMAIN" and overlay 565

Use the jog mode to position the carriage such that the REL value is +/-0.0005 in. of the RELRP value shown below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.6.5

TITLE: DISPLAY RELRP FROM STEP 2.5.1.20.2

ACTION: Retrieve RELRP value and display.

DISPLAY: RELRP = X.XX mils

Step 05.06.06.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Lower the top carriage clamp jaw until it contacts the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.07.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Use the clamp jaw torque wrench to torque the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Use the clamp jaw torque wrench to torque the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.06.09.00.00 using FMS-11 form "FSMAIN" and overlay 569

Place the PSI in computer mode, and set the REL HI and LO limits .005 in. above and below the current REL reading.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.8.9

TITLE: RESUME SHEARING LONG ROD

ACTION: AFTER SHEARING SEGMENT 00 OF A LONG ROD, THIS STEP COMPLETES CARRIAGE REPOSITIONING BY RETURNING TO CUT PLAN CALCULATIONS FOR THE NEXT SEGMENT.

Step 05.07.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY
Step title: "INSTALLATION OF THE PUSH ROD"

Since the laser calibration of the FSS feed system shows a relatively large error in positioning the carriage below an AST reading of 22 inches, a push rod will be used for shearing below this point.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.01.00.00 using FMS-11 form "FSMAIN" and overlay 571

Displayed below for operator acceptance is the corrected carriage position at the fuel rod end(PFRE).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.7.1

TITLE: CALCULATE AND DISPLAY THE CORRECTED CARRIAGE POSITION AT THE FUEL ROD END (PFRE)

ACTION: Calculate and store PFRE for later calculations

$PFRE = ASTM[1 + (1.24 \times 10^{-5})(TMB - 19.56)] + [RELM - RELRP]$

WHERE:

ASTM = the current AST value (AST minimum value)

RELM = the current REL value

RELRP = the REL reference value (Step 2.5.1.20.2)

DISPLAY:

PFRE = XX.XXX

ASTM = XX.XXX

TMB = XX.X

Step 05.07.02.00.00 using FMS-11 form "FSMAIN" and overlay 0PRACK

Use the carriage clamp jaw wrench to loosen the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.03.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Use the carriage clamp jaw wrench to loosen the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.04.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Set the LOW LIMIT on the blade position indicator to +. Set the REL LO limit to -90.00. Place the PSI in the local mode and retract the carriage 32.000 inches.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.06.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Raise the fuel rod positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.07.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Position the appropriate size push rod against the fuel rod end.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.08.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Hold the push rod against the fuel rod end and lower the positioners.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.09.00.00 using FMS-11 form *FSMAIN* and overlay 565

Use the jog mode to position the carriage such that the REL value is +/-0.0005 in. of the RELRP value shown below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 05.06.05.00.00)

Step 05.07.10.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Lower the top clamp jaw until it contacts the push rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.11.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Use the clamp jaw wrench to torque the side jaws.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.12.00.00 using FMS-11 form *FSMAIN* and overlay OPRACK

Use the clamp jaw torque wrench to torque the top jaw.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.07.13.00.00 using FMS-11 form *FSMAIN* and overlay 5713

Displayed below for operator acceptance is the corrected carriage position at the push rod end (PPRE).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.7.13

TITLE: CALCULATE AND DISPLAY THE CORRECTED CARRIAGE POSITION AT THE PUSH ROD END (PPRE)

ACTION: Calculate PPRE. Store PPRE for later calculations.

$PPRE = ASTPR[1 + (1.24 \times 10^{-5})(TMB - 19.56)] + [RELPR - RELRP]$

WHERE:

ASTPR = the current AST value (AST at the push rod end)

RELPR = the current REL value (REL at the push rod end)

RELRP = RELRP from Step 2.5.1.20.2

DISPLAY:

PPRE = XX.XXX

ASTPR = XX.XXX

TMB = XX.X

Step 05.07.14.00.00 using FMS-11 form *FSMAIN* and overlay 5714

Displayed below for operator acceptance is the corrected push rod length (PRC).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.7.14

TITLE: PUSH ROD LENGTH (PRL)

ACTION: PRL = PPRE - PFRE

WHERE:

PPRE - from Step 5.7.13

PFRE - from Step 5.7.1

DISPLAY:

PRL = XX.XXX

PPRE = XX.XXX

PFRE = XX.XXX

Store PRL for later calculations.

Step 05.07.15.00.00 using FMS-11 form "FSMAIN" and overlay 5715

Set the LOW LIMIT on the blade position indicator to -. Set the HI and LO limits on the REL indicator to .005 in. above and below the current REL reading. Place the PSI in the computer mode. Enter initials to continue shearing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.08.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "FINAL SEGMENT SHEARING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.08.01.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.08.01.01.00 using FMS-11 form "FSMAIN" and overlay 5811

(Compute final segment shear plan)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.8.1

TITLE: FINAL SEGMENT SHEAR PLAN

ACTION: Calculate number of cuts (NC)

$NC = (\text{Segment Length} / .04) - 1$

(round up to the nearest whole number)

Calculate cut length (CL)

$CL = \text{Segment Length} / NC$

DISPLAY:

Segment length = X.XXX

Cut Length = 0.XXX

No. of Cuts = XX

Step 05.09.00.00.00 using FMS-11 form "FSMAIN" and overlay 00UMMY

Step title: "CAN CHANGE AND BRUSHING SEQUENCE"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the can -- switch the in position actuator to DOWN.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Release the table lock pin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.03.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Index the brush under.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.04.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lock the table.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.05.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the brush -- switch the in position actuator to UP.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.06.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Cap the can and then remove the capping fixture.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.07.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the can -- switch the out position actuator to UP.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.08.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the can from the sample collection station. Place it in the storage rack.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.09.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the next can in the sample collection station and place the cap in the capping mechanism. Insert the can spacer for a 3 in. can.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.10.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the can -- switch the out position actuator to DOWN.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.11.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Switch the table/brush rotate to BRUSH.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.12.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Push the BRUSH button and hold until the CAN UNDER light comes on -- release the BRUSH button and wait until the BRUSH UNDER light comes on. Repeat this step three times.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.13.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the brush -- switch the in position actuator to DOWN.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.14.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Release the table lock pin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.15.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Switch the table/brush rotate to table rotate enable.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.16.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Index the can under.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.17.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lock the table.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.18.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the can -- switch the in position actuator to UP.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.19.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Raise the brush -- switch the out position actuator to UP.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.20.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Remove the brush from the sample collection station and place it in its respective brush cup holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.21.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Place the next brush in the sample collection station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.22.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Lower the brush -- switch the out position actuator to DOWN.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.09.23.00.00 using FMS-11 form "FSMAIN" and overlay 5923

Done with shearing a segment, brushing, and changing the can. PROCEDURE DECISION POINT:
Proceed to next segment -- OR --
Reposition carriage after first segment of long rod -- OR --
Calculate final segment cut plan -- OR --
Rod shearing completed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

STEP: 5.9.23

TITLE: SHEARING CYCLE DECISION POINT

ACTION: IN THIS OVERLAY A DECISION IS MADE ON WHERE IN THE PROCEDURE TO GO TO NEXT. IF THE PREVIOUS SEGMENT WAS THE FIRST SEGMENT IN A LONG ROD, SECTION 5.7 IS DISPLAYED NEXT. IF THE NEXT SEGMENT IS TO BE SHEARED, SECTION 5.5 IS DISPLAYED. IF THE NEXT SEGMENT IS THE FINAL SEGMENT, SECTION 5.8 IS DISPLAYED. IF SEGMENT SHEARING IS COMPLETE, SECTION 6.0 IS DISPLAYED.

Step 06.00.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "POST-SHEARING WEIGHING OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "FUEL ROD SEGMENT WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.01.00.00 using FMS-11 form "FSMAIN" and overlay 611

Assemble the sample cans at the M-3-A window for weighing

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.02.00.00 using FMS-11 form "FSSCRL" and overlay 612

BALQA will run if it has not been run in the last 24 hours. BALCC will run if it has not been run in the last 4 hours.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.02.01.00 using FMS-11 form "FSSCRL" and overlay POSCAN

Interactive segment weighing procedure
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "POST-SHEARING BRUSH WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Assemble the brushes at BAL2 for weighing

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.02.00.00 using FMS-11 form "FSSCRL" and overlay POSBRH

Interactive brush weighing procedure
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.03.00.00.00 using FMS-11 form "FSMAIN" and overlay 0DUMMY

Step title: "FUEL ROD SEGMENT TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.03.01.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Collect the canned fuel segments for transfer to the Dual Dissolver System in Cell M-1. Inspect each can to ensure its integrity before transferring.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.02.00.00 using FMS-11 form "FSMAIN" and overlay OPRACK

Carefully load the canned fuel segments into the transfer can of the Cell M-3 can-out system. Proceed with the can-out operation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.03.00.00 using FMS-11 form "FSMAIN" and overlay F633

Co-ordinate the intra-cell transfer of the canned fuel segments with the shift supervisor at the dissolver system. (Ensure that the transfer is expected so that the samples can be readily received at Cell M-1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 90.00.00.00.00 using FMS-11 form "FSMAIN" and overlay QGOTO

Step title: "EXCEPTIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 99.99.99.99.99

Step 90.01.00.00.00 using FMS-11 form "FSMAIN" and overlay ODUMMY

Step title: "REPLACEMENT CAN WEIGHING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 90.01.01.00.00 using FMS-11 form "FSSCRL" and overlay SAMJR

BALQA will run if it has not been run in the last 24 hours. BALCC will run if it has not been run in the last 4 hours.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 90.01.02.00.00 using FMS-11 form "FSSCRL" and overlay RECAN

Replacement can weighing
Type R <RETURN> to take a balance reading.
Type B <RETURN> to repeat a reading.
Type <RETURN> for identification to exit weighing routine.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 99.00.00.00.00 using FMS-11 form "FSMAIN" and overlay TESTXX

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 99.01.00.00.00 using FMS-11 form "FSMAIN" and overlay TESTYY

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 99.99.99.99.99 using FMS-11 form "FSMAIN" and overlay ODUMMY

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

OPRFSS

PROCEDURE FOR OPERATION OF THE
FULL-SCALE SHEAR

<u>Step Number</u>	<u>Step Title</u>
01.00.00.00.00	DDS DISSOLVER 1 OPERATING PROCEDURE
02.00.00.00.00	PRELIMINARY OPERATIONS
02.01.00.00.00	BALANCE CALIBRATION AND PERFORMANCE CHECK (BALQA)
02.02.00.00.00	MATERIALS AND EQUIPMENT PREPARATION
02.02.01.00.00	Sample Bottle Preparation
02.02.01.03.00	In-Cell Sample Bottle Weighing
02.02.02.00.00	Blend Tank Preparation
02.02.02.01.00	Blend Tank Support Weighing
02.02.03.00.00	Solution Sampling and Transfer Materials Preparation
02.02.04.00.00	Gas Sampling Preparation
02.03.00.00.00	AIR AND HELIUM SYSTEMS STARTUP
02.03.02.00.00	70 PSIG Dry Air Supply
02.03.03.00.00	120 PSIG Dry Air Supply
02.03.04.00.00	125 PSIG Control Air Supply
02.03.05.00.00	Annulus Helium Supply
02.03.06.00.00	Solenoid Valve Bank Air Supply
02.04.00.00.00	SAMPLE LOADING
02.05.00.00.00	DISSOLVER VESSEL LEAK TEST
02.06.00.00.00	OFF-GAS SYSTEM LEAK TEST
02.06.01.00.00	System Pressurization
02.06.02.00.00	In-Cell Off-Gas System Leak Test
02.06.03.00.00	Out-of-Cell Off-Gas System Leak Test
02.06.04.00.00	Hold Tank Evacuation
02.07.00.00.00	BLEND TANK AND VACUUM RESERVOIR TANK LEAK TEST
02.07.01.00.00	Blend Tank Leak Test
02.07.02.00.00	Solution Filter Leak Test
02.08.00.00.00	CONDENSER COOLING SYSTEM STARTUP

<u>Step Number</u>	<u>Step Title</u>
03.00.00.00.00	PRIMARY DISSOLUTION SEQUENCE
03.01.00.00.00	REAGENT CHARGING
03.02.00.00.00	DISSOLVER PRESSURIZATION
03.03.00.00.00	DISSOLVER HEATUP
03.03.01.00.00	Heater Startup
03.03.02.00.00	Heatup
03.04.00.00.00	PRIMARY DISSOLUTION
03.05.00.00.00	DISSOLVER COOLDOWN
03.06.00.00.00	OFF-GAS TRANSFER
03.07.00.00.00	SOLUTION TRANSFER
03.07.01.00.00	Blend Tank Preparation for Transfer
03.07.01.01.00	Place the Blend Tank in the TRANSFER WEIGHING CONDITION
03.07.02.00.00	Solution Transfer to Blend Tank
03.07.03.00.00	Material Balance Check
03.08.00.00.00	DISSOLVER VESSEL REFLUX RINSING
03.08.01.00.00	Reagent Metering
03.08.02.00.00	Dissolver Rinsing
03.08.03.00.00	Dissolver Heat-Up
03.08.04.00.00	Dissolver Reflux
03.08.05.00.00	Dissolver Cooldown
03.09.00.00.00	REFLUX SOLUTION TRANSFER
03.09.01.00.00	Blend Tank Preparation for Transfer
03.09.01.01.00	Place the Blend Tank in the TRANSFER WEIGHING CONDITION
03.09.02.00.00	Rinse Solution Transfer to Blend Tank
03.09.03.00.00	Material Balance Check
03.10.00.00.00	GAS SAMPLING
03.11.00.00.00	OFF-GAS RELEASE

<u>Step Number</u>	<u>Step Title</u>
04.00.00.00.00	SECONDARY DISSOLUTION SEQUENCE
04.01.00.00.00	REAGENT CHARGING
04.01.01.00.00	Reagent Logging and Transfer
04.02.00.00.00	DISSOLVER PRESSURIZATION
04.03.00.00.00	DISSOLVER HEATUP
04.04.00.00.00	SECONDARY DISSOLUTION
04.05.00.00.00	DISSOLVER COOLDOWN
04.06.00.00.00	OFF-GAS TRANSFER
04.07.00.00.00	SOLUTION SAMPLING AND TRANSFER
04.07.01.00.00	Solution Sampling Preparation
04.07.02.00.00	Blend Tank Preparation for Transfer
04.07.02.01.00	Place the Blend Tank in TRANSFER WEIGHING CONDITION
04.07.03.00.00	Secondary Solution Transfer to Blend Tank
04.07.04.00.00	Secondary Dissolution Solution Sampling
04.07.05.00.00	Completion of Solution Transfer
04.07.06.00.00	Sample Bottle Weighing
04.07.07.00.00	Material Balance Check
04.08.00.00.00	DISSOLVER VESSEL REFLUX RINSING
04.08.01.00.00	Reagent Metering
04.08.02.00.00	Dissolver Rinsing
04.08.03.00.00	Dissolver Heat-Up
04.08.04.00.00	Dissolver Reflux
04.08.05.00.00	Dissolver Cooldown
04.09.00.00.00	REFLUX SOLUTION TRANSFER
04.09.01.00.00	Blend Tank Preparation for Transfer
04.09.01.01.00	Place the Blend Tank in the TRANSFER WEIGHING CONDITION
04.09.02.00.00	Rinse Solution Transfer to Blend Tank

<u>Step Number</u>	<u>Step Title</u>
04.09.03.00.00	Material Balance Check
04.10.00.00.00	DISSOLVER VESSEL RINSING
04.10.01.00.00	Blend Tank Preparation For Transfer
04.10.02.00.00	Reagent Metering
04.10.03.00.00	Dissolver Rinsing
04.10.04.00.00	Rinse Solution Transfer to Blend Tank
04.10.05.00.00	Material Balance Check
05.00.00.00.00	BLEND TANK OPERATIONS
05.01.00.00.00	UNSPIKED SOLUTION BLENDING
05.01.01.00.00	Check Balance Performance
05.01.02.00.00	Blend Tank Weighing
05.01.03.00.00	Solution Blending
05.01.04.00.00	Blend Tank Weighing
05.02.00.00.00	UNSPIKED SOLUTION SAMPLING
05.02.01.00.00	Solution Sampling
05.02.02.00.00	Sample Bottle Weighing
05.02.03.00.00	Blend Tank Weighing
05.03.00.00.00	SOLUTION SPIKING
05.03.01.00.00	Spike Charging
05.03.02.00.00	Spike Dissolution
05.03.03.00.00	Blend Tank Weighing
05.04.00.00.00	SPIKED SOLUTION SAMPLING
05.04.01.00.00	Solution Sampling
05.04.02.00.00	Sample Weighing
05.04.03.00.00	Blend Tank Weighing
06.00.00.00.00	POST-DISSOLUTION OPERATIONS
06.01.00.00.00	SOLUTION COOLING

<u>Step Number</u>	<u>Step Title</u>
06.02.00.00.00	OFF-GAS SYSTEM VENTING
06.02.01.00.00	Off-Gas Release
06.02.02.00.00	Off-Gas System Flushing
06.03.00.00.00	HULL RECOVERY
06.04.00.00.00	BLEND TANK SOLUTION DISPOSAL
06.04.01.00.00	Solution Cooling
06.04.02.00.00	Solution Transfer
06.05.00.00.00	BLEND TANK CLEAN-UP
06.05.01.00.00	Preparation for Blend Tank Rinsing
06.05.02.00.00	Reagent Metering
06.05.03.00.00	Blend Tank Rinsing
06.05.04.00.00	Blend Tank Weighing
07.00.00.00.00	POST-DISSOLUTION CLEAN-UP
07.01.00.00.00	CONTAMINATED BLEND TANK STORAGE
07.02.00.00.00	SOLUTION FILTER REMOVAL
07.03.00.00.00	HOLD TANK DRAINING
07.04.00.00.00	SAMPLE LINE RINSING
11.00.00.00.00	GAS SAMPLING CYLINDER PURGE
11.01.00.00.00	GAS CYLINDER PREPARATION
12.00.00.00.00	BLEND TANK DECONTAMINATION
12.01.00.00.00	MATERIAL AND EQUIPMENT PREPARATION
12.01.01.00.00	Assemble Solution Transfer Materials
12.01.02.00.00	Blend Tank Installation
12.02.00.00.00	REAGENT CHARGING
12.03.00.00.00	BLEND TANK HEATUP
12.04.00.00.00	BLEND TANK COOLDOWN
12.05.00.00.00	PRIMARY DECONTAMINATION SOLUTION TRANSFER

<u>Step Number</u>	<u>Step Title</u>
12.06.00.00.00	REAGENT CHARGING
12.07.00.00.00	BLEND TANK HEATUP
12.08.00.00.00	BLEND TANK COOLDOWN
12.09.00.00.00	SECONDARY DECONTAMINATION SOLUTION TRANSFER
12.10.00.00.00	BLEND TANK DRYING
12.11.00.00.00	BLEND TANK COOLDOWN
12.12.00.00.00	RESTOCK DECONTAMINATED BLEND TANK
12.12.01.00.00	Blend Tank Weight Verification
12.12.02.00.00	Blend Tank Storage
12.13.00.00.00	POST-DISSOLUTION CLEAN-UP

Step 01.00.00.00.00 using FMS-11 form "GTSTEP" and overlay OSTART
Step title: "DDS DISSOLVER 1 OPERATING PROCEDURE"

(Display GTSTEP form.)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.00.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY
Step title: "PRELIMINARY OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY
Step title: "BALANCE CALIBRATION AND PERFORMANCE CHECK (BALQA)"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.01.01.00.00 using FMS-11 form "D1MAIN" and overlay 211

A calibration and performance check 'BALQA' is
initiated for Blend Tank balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

BALQA is initiated for BAL-5 (Mettler PK-60). If BALQA passes, the procedure continues to the next step, after an operator sign-off. If BALQA fails, the procedure goes into Exception Handling. The operator determines the need to either rerun BALQA or repair the balance.

Step 02.01.01.01.00 using FMS-11 form "D1MAIN" and overlay 2111

A request for the Transfer Standard Final Weighing Routine, 'TSFWR', is initiated for Blend Tank balance BAL-5. 'TSFWR' should be run at BAL-5 at least once during the processing of the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is asked if he would like to run the Transfer Standards Final Weighing Routine (TSFWR). If he answers 'Y' then the TSFWR is initiated. After the program has run, the procedure continues to the next step after an operator sign-off. If he answers 'N' then the procedure continues to the next step after an operator sign-off.

Step 02.01.02.00.00 using FMS-11 form "D1MAIN" and overlay 212

A calibration and performance check 'BALQA' is
initiated for PK-300 balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

BALQA is initiated for BAL-7 (Mettler PK-300). If BALQA passes, the procedure continues to the next step, after an operator sign-off. If BALQA fails, the procedure goes into Exception Handling. The operator determines the need to either rerun BALQA or repair the balance.

Step 02.01.02.01.00 using FMS-11 form 'D1MAIN' and overlay 2111

A request for the Transfer Standard Final Weighing Routine, 'TSFWR', is initiated for PK-300 balance BAL-7. 'TSFWR' should be run at BAL-7 at least once during the processing of the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.01.01.01.00)

Step 02.01.03.00.00 using FMS-11 form 'D1MAIN' and overlay 0213

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

FRIF is checked to see if in-cell BAL-4 (PK-2000) is to be used. If it is, the procedure automatically continues to the next step which will run BALQA for BAL-4. If BAL-4 is not used, the procedure skips the step which would run BALQA for BAL-4.

Step 02.01.03.01.00 using FMS-11 form 'D1MAIN' and overlay 213

A calibration and performance check 'BALQA' is initiated for PK-2000 balance BAL-4.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

BALQA is initiated for BAL-4 (Mettler PK-300). If BALQA passes, the procedure continues to the next step, after an operator sign-off. If BALQA fails, the procedure goes into Exception Handling. The operator determines the need to either rerun BALQA or repair the balance.

Step 02.01.03.02.00 using FMS-11 form 'D1MAIN' and overlay 2111

A request for the Transfer Standard Final Weighing Routine, 'TSFWR', is initiated for PK-2000 balance BAL-4. 'TSFWR' should be run at BAL-4 at least once during the processing of the fuel rod.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.01.01.01.00)

Step 02.02.00.00.00 using FMS-11 form 'D1MAIN' and overlay 00UMMY

Step title: 'MATERIALS AND EQUIPMENT PREPARATION'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.01.00.00 using FMS-11 form 'D1MAIN' and overlay 00UMMY

Step title: 'Sample Bottle Preparation'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.01.01.00 using FMS-11 form 'D1MAIN' and overlay PLNBLK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

If a plenum or blank dissolution is specified, the procedure goes to the step specified by the branch number.

Parameter record 1 is a logic branch to step 02.02.01.01.02

Parameter record 2 is a logic branch to step 02.02.01.01.04

Step 02.02.01.01.01 using FMS-11 form "DISCRL" and overlay 22111

Obtain the ten sample bottles identified below for use in this dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The ten solution sample bottle identification numbers for the dissolution are displayed. The computer checks to see if the bottles have been weighed out-of-cell, and informs the operator of the status of each of the sample bottles. The procedure continues to the next step, after an operator sign-off.

Step 02.02.01.01.02 using FMS-11 form "DISCRL" and overlay 22111

Obtain the four sample bottles identified below for use in this dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The four solution sample bottle identification numbers for the plenum dissolution are displayed. The computer checks to see if the bottles have been weighed out-of-cell, and informs the operator of the status of the sample bottles. The procedure continues to the next step, after an operator sign-off.

Step 02.02.01.01.03 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 02.02.01.02.00

Step 02.02.01.01.04 using FMS-11 form "DISCRL" and overlay 22113

Obtain the two sample bottles identified below for use in this dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The two solution sample bottle identification numbers for the blank dissolution are displayed. The computer checks to see if the bottles have been weighed out-of-cell, and informs the operator of the status of the sample bottles. The procedure continues to the next step, after an operator sign-off.

Step 02.02.01.02.00 using FMS-11 form "DISCRL" and overlay OPRACK

Transfer the sample bottles into cell M-1 via the transfer tunnel per the posted procedure.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.01.03.00 using FMS-11 form "D1MAIN" and overlay PLNBLK

Step title: "In-Cell Sample Bottle Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 02.02.01.03.02

Parameter record 2 is a logic branch to step 02.02.01.03.04

Step 02.02.01.03.01 using FMS-11 form "DISCRL" and overlay MTBOTS

Weigh the ten sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous reading.
After weighing, place each bottle in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to identify the in-cell PK-300 balance number that the empty solution sample bottles will be weighed on. The balance number entered must be 7 or 8 or the operator is again prompted to enter the balance number. All weighings are taken by the operator entering 'R' <RETURN>. The ten bottles are weighed, one at a time, on the balance designated. First, a tare reading is taken which must be 0 +/- 0.005 g. If the tare is out of range, the operator is prompted to retake the tare reading. The bottle and cap are then weighed together. A final tare reading is taken which again must be 0 +/- 0.005 g. All weighings may be retaken by the operator entering a 'B' <RETURN>. The in-cell bottle and cap weight is calculated as

$$[R1 - (T1 + T2)/2] \div CALF$$

and compared to the out-of-cell weight. If the weight difference is greater than 0.01 g, the operator is prompted to reweigh the bottle and cap in-cell. If after two attempts the in-cell and out-of-cell weights still do not agree within +/- 0.01 g, the operator will be prompted to weigh a new bottle and cap out-of-cell and bring it in-cell. If the in-cell and out-of-cell weights agree within +/- 0.01 g, the sample bottle and cap weight and the difference between the in-cell and out-of-cell weights is logged. If the in-cell and out-of-cell weights do not agree, the procedure must be repeated. When all ten bottles and caps have been weighed, the weights are displayed a final time, and the procedure continues to the next step, after an operator sign-off.

Step 02.02.01.03.02 using FMS-11 form "DISCRL" and overlay PMTBOT

Weigh the four sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous reading.
After weighing, place each bottle in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 2.2.1.3.1 (MTBOTS) (except that this is a plenum dissolution and only 2 bottles are weighed).

Step 02.02.01.03.03 using FMS-11 form "D1MAIN" and overlay NOBLNK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 02.02.02.00.00

Step 02.02.01.03.04 using FMS-11 form "DISCRL" and overlay BMTBOT

Weigh the two sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous reading.
After weighing, place both bottles in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 2.2.1.3.1 (MTBOTS) (except that this is a blank dissolution and only 2 bottles are weighed).

Step 02.02.02.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
Step title: "Blend Tank Preparation"
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
Step title: "Blend Tank Support Weighing"
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.01 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank assembly. The procedure continues to the next step, after an operator sign-off.

Step 02.02.02.01.02 using FMS-11 form "D1MAIN" and overlay OPRACK

Visually check the Blend Tank secondary vessel and the support pan. Check that the heater is seated and the vessel clamped in the upright position. Use a mirror to ensure that the heater and the support pan are free of foreign objects. Clean if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.03 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.04 using FMS-11 form "D1SCL" and overlay 22212

The Blend Tank secondary vessel and support pan are now weighed automatically. Ensure that the manipulators do not touch the assembly during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0 ± 1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank onto BAL-5. After a 15-second delay, the weight of the blend tank heater and support pan is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0 ± 1 g or the step goes into Exception Handling. The corrected weight of the blend tank heater and support pan is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (T1 + T2)/2] \times \text{CALF}$$

This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 02.02.02.01.05 using FMS-11 form "D1SCL" and overlay 22213

Select the Blend Tank identified below and position it in the heater using the in-cell crane.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The identity of the blend tank as designated in FRIF is displayed. The operator verifies the identity of the blend tank by entering its identification. If the blend tank identification does not match the one designated in FRIF, the blend tank identification must be reentered. If the same identification is entered twice in a row, it will be accepted and the operator is prompted to enter a comment. In either case the blend tank

Step 02.02.02.01.06 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.07 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.02.01.08 using FMS-11 form "D1SCRL" and overlay 22215

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0/-1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with empty tank is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0/-1 g or the step goes into Exception Handling. This weighing procedure is

repeated 3 times. The corrected weight of the blend tank heater and support pan is calculated as follows:

$$\text{corrected wt.} = [(R1 + R2 + R3)/3 - (T1 + T2 + T3 + T4)/4] * CALF$$

This weight is displayed and logged. The empty blend tank weight is calculated by subtracting the weight of the blend tank heater and support pan (step 2.2.2.1.2) from the weight of the blend tank assembly with empty blend tank. This weight is displayed, logged, and written in the Historical Log file. The procedure continues to the next step, after an operator sign-off.

Step 02.02.02.01.09 using FMS-11 form "D1MAIN" and overlay OPRACK

Connect the solution transfer line (attached to CV-11) to the Blend Tank fill port. Connect the vacuum line to the tank vacuum port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.03.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
Step title: "Solution Sampling and Transfer Materials Preparation"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.03.01.00 using FMS-11 form "D1MAIN" and overlay PLNBLK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 02.02.03.01.02

Parameter record 2 is a logic branch to step 02.02.03.01.04

Step 02.02.03.01.01 using FMS-11 form "D1MAIN" and overlay NOPLEN

Obtain the following disposable materials for use in this dissolution:
one secondary dissolution sampling line,
two Blend Tank sampling lines,
two 9-in. polyethylene tubes,
one teflon-lined Dissolver gasket.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

If a plenum dissolution is not specified, the procedure goes to the step specified by the branch number after the operator executes the instructions in the step description and sign the step off.

Parameter record 1 is a logic branch to step 02.02.03.02.00

Step 02.02.03.01.02 using FMS-11 form "D1MAIN" and overlay OPRACK

Obtain the following disposable materials for use in this dissolution:

- one Blend Tank sampling line,
- one polyethylene sampling tube,
- one teflon-lined Dissolver gasket,
- one 250-ml polyethylene hull bottle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.03.01.03 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 02.02.03.02.00

Step 02.02.03.01.04 using FMS-11 form "D1MAIN" and overlay OPRACK

Obtain the following disposable materials for use in this dissolution:

- one Blend Tank sampling line,
- one polyethylene sampling tube,
- one teflon-lined Dissolver gasket.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.03.02.00 using FMS-11 form "DISCRL" and overlay 22312

Obtain the solution filter assembly identified below for use in this dissolution. Verify that the filter assembly has been properly reassembled and leak tested.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The identity of the solution filter as designated in FRIF is displayed. The operator verifies the identity of the filter by entering its identification (FR-XX). If the filter identification does not match the one designated in FRIF, the filter identification must be reentered. If the same identification is entered twice in a row, it will be accepted. In either case, the solution filter identification will be logged and written to the Historical Log file. The procedure continues to the next step, after an operator sign-off.

Step 02.02.03.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Install the solution filter assembly in line between CV-7 and CV-9. Ensure that the filter assembly is installed with the LOCKING COLLAR ON TOP.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.02.03.04.00 using FMS-11 form "D1MAIN" and overlay PLNBLK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 02.03.00.00.00

Parameter record 2 is a logic branch to step 02.03.00.00.00

Step 02.02.04.00.00 using FMS-11 form "DISCRL" and overlay 2241
Step title: "Gas Sampling Preparation"

Obtain the two gas sampling cylinders identified below for use in this dissolution. Attach a label with the rod and segment number of this run to the gas sampling cylinders and install the cylinders at the gas sampling station in MA-010 per the posted procedure.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The identities of the gas sampling cylinders as designated in FRIF are displayed. The operator verifies the identity of the cylinders by entering their identification (SC-XX). If the entered cylinder identification(s) does not match FRIF, the cylinder identifications must be reentered. If the same identifications are entered twice in a row, they will be accepted. In either case, the gas sampling cylinder identifications will be logged and written to the Historical Log file. The procedure continues to the next step, after an operator sign-off.

Step 02.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UAMY
Step title: "AIR AND HELIUM SYSTEMS STARTUP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.01.00.00 using FMS-11 form "D1MAIN" and overlay 0OPRAC

Check that the following air and helium systems are ready for operation per the procedure posted at each system:
70 PSIG Dry Air Supply
120 PSIG Dry Air Supply
125 PSIG Dry Air Supply
5 PSIG Annulus Helium Supply
95 PSIG (Minimum) Solenoid Valve Air Supply

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.02.00.00 using FMS-11 form "DISCRL" and overlay 2313
Step title: "70 PSIG Dry Air Supply"

70 PSIG Dry Air Supply System Pressure Setpoint Verification. Air pressure should be 70 +/- 2 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The 70 PSIG dry air system pressure (PT-5) is read. If the pressure is 70 +/- 2 PSIG, the procedure continues to the next step, after an operator sign-off. If the pressure is less than 68 PSIG or greater than 72 PSIG, the operator is prompted to manually adjust the pressure to 70 +/- 2 PSIG. The computer displays the pressure every 5 seconds until it is 70 +/- 2 PSIG. The procedure then continues to the next step, after an operator sign-off.

Step 02.03.03.00.00 using FMS-11 form "DISCRL" and overlay 2323
Step title: "120 PSIG Dry Air Supply"

120 PSIG Dry Air Supply System Pressure Setpoint Verification. Air pressure should be 120 +/- 2 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The 120 PSIG dry air supply system pressure (PT-4) is read. If the pressure is 120 +/- 2 PSIG, the procedure continues to the next step, after an operator sign-off. If the pressure is less than 118 PSIG or greater than 122 PSIG the operator is prompted to manually adjust the pressure to 120 +/- 2 PSIG. The computer displays the pressure every 5 seconds until it is 120 +/- 2 PSIG. The procedure then continues to the next step, after an operator sign-off.

Step 02.03.04.00.00 using FMS-11 form "DISCRL" and overlay 2334
Step title: "125 PSIG Control Air Supply"

Control Air Pressure Setpoint Verification.
Air pressure should be 125 +/- 1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The dissolver's control valve pressure (PT-11) is read. If the pressure is 125 +/- 1 PSIG, the procedure continues to the next step after an operator sign-off. If the pressure is less than 124 PSIG or greater than 126 PSIG the operator is prompted to manually adjust the pressure to 125 +/- 1 PSIG. The computer displays the pressure every 5 seconds until it is 125 +/- 1 PSIG. The procedure then continues to the next step, after an operator sign-off.

Step 02.03.05.00.00 using FMS-11 form "DISCRL" and overlay 2345
Step title: "Annulus Helium Supply"

Annulus Helium Pressure Setpoint Verification.
Helium pressure should be 5 +/- 3 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The 5 PSIG annulus helium pressure (PT-13) is read. If the pressure is 5 +/- 1 PSIG, the procedure continues to the next step, after an operator sign-off. If the pressure is less than 4 PSIG or greater than 6 PSIG, the operator is prompted to manually adjust the pressure to 5 +/- 1 PSIG. The computer displays the pressure every 5 seconds until it is 5 +/- 1 PSIG. The procedure then continues to the next step, after an operator sign-off.

Step 02.03.06.00.00 using FMS-11 form "DISCRL" and overlay 2352
Step title: "Solenoid Valve Bank Air Supply"

Solenoid Bank and Air Supply System Pressure
Setpoint Verification. Air pressure should be
at least 95 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The solenoid valve bank air supply pressure (PT-6) is read. If the pressure is at least 95 PSIG, the procedure continues to the next step, after an operator sign-off. If the pressure is less than 95 PSIG, the operator is prompted to manually adjust the pressure to 95 PSIG. The computer displays the pressure every 5 seconds until it is at least 95 PSIG. The procedure then continues to the next step, after an operator sign-off.

Step 02.03.07.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

If a blank dissolution is specified, the procedure goes to the step specified by the branch number.

Parameter record 1 is a logic branch to step 02.04.04.00.00

Step 02.04.00.00.00 using FMS-11 form "D1MAIN" and overlay 00JAWY
Step title: "SAMPLE LOADING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.01.00.00 using FMS-11 form 'D1MAIN' and overlay 2411

Retrieve the canned fuel segment identified below for dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The identity of the canned fuel segment to be used in the dissolution is displayed. The procedure continues to the next step, after an operator sign-off.

Step 02.04.02.00.00 using FMS-11 form 'D1MAIN' and overlay 2413

BALCC will run.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

BALCC is initiated for the in-cell balance to be used to weigh the canned fuel segment, as designated by FRIF. If the balance passes BALCC, the procedure will continue to the next step, after an operator sign-off. If BALCC fails or BALQA has not passed within the last 48 hours, BALQA will run. If BALQA passes, the procedure continues to the next step, after an operator sign-off. If BALQA fails, the procedure will go into Exception Handling. The operator determines the need to either rerun BALQA or repair the balance.

Step 02.04.03.00.00 using FMS-11 form 'DISCR1' and overlay 2412

Weigh the canned segment on the in-cell balance listed below to verify segment identity.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous balance reading.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

FRIF is checked to see on which balance (BAL-7 or BAL-4) the canned fuel segment is to be weighed and displays the balance number. The operator is prompted to tare, then read the balance by entering 'R' <RETURN>. The tare reading must be 0 +/- 0.01 g for BAL-4 or 0 +/- 0.001 g for BAL-7 or the operator will be prompted to repeat the tare reading. After a satisfactory tare is read, the sample can is to be placed on the balance and weighed by entering 'R' <RETURN>. The reading is displayed to the operator. The operator is then prompted to remove the can from the balance and read the tare by entering 'R' <RETURN>. The tare reading is displayed. If the tare reading is not 0 +/- 0.01 g for BAL-4 or 0 +/- 0.001 g for BAL-7, the operator will be prompted to repeat the tare reading. The weighing process is repeated 3 times. The three fuel sample can weights are calculated and displayed.

$W1 = R(1) - [T(1) + T(2)] / 2$ Segment Gross Weight = $(W1 + W2 + W3) / 3 * CALF$
The calculated weight is compared to the weight of the can logged during shearing operations. If the can was weighed on BAL-4 (PK-2000), the weights must agree within 0 +/- 0.05 g. If they don't agree the step will be repeated automatically. If they still don't agree on the second try, the procedure goes into Exception Handling. If the can was weighed on BAL-7 (PK-300), the weights must agree within 0 +/- 0.005 g. If they don't agree the step will be repeated automatically. If they still don't agree on the second try, the procedure goes into Exception Handling and the operator is prompted to enter a comment. If the weights agree within the specifications, the procedure continues to the next step, after an operator sign-off.

Step 02.04.04.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Using the crane, remove the spider flange and sample basket from the Dissolver.
CAUTION: USING THE ALIGNMENT TOOL, GUIDE THE BASKET AS IT IS RAISED OUT OF THE DISSOLVER.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.04.01.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 02.04.08.00.00

Step 02.04.05.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Remove the sample basket from its holder and inspect. Ensure that the basket is empty before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.06.00.00 using FMS-11 form "DISCR1" and overlay 2428

Contact the shift supervisor to enter below the identity of the canned fuel segment to be dissolved, thus verifying the segment selection.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The shift supervisor is requested to enter the identity of the canned fuel segment to be dissolved. If the entry agrees with the segment identity previously entered to initiate 0PRDDS, the shift supervisor is requested to enter his initials, which verifies and logs the identity of the canned segment. If the identity of the segment does not agree, the shift supervisor is prompted to reenter the identity of the segment. If there remains a discrepancy between segment identities, the procedure goes into Exception Handling and a comment regarding the discrepancy must be entered. The procedure then returns to this step, and awaits a shift supervisor sign-off, which acknowledges and logs the new identity of the canned fuel segment.

Step 02.04.07.00.00 using FMS-11 form "D1MAIN" and overlay 2417

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

FRIF is checked to determine the height of the canned fuel segment (3-in. or 6-in.) to be dissolved. Depending upon the can height, instructions will be displayed explaining how to puncture the can lid.

Step 02.04.07.01.00 using FMS-11 form "D1MAIN" and overlay 24171

Place the 6-in sample can in the sample basket, cap end up, and place the basket in the can lid puncturing device. Gently operate the lever to puncture the can lid. Remove the basket with can, and attach its holder

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

This step is used to circumvent the instructions explaining how to puncture the lid of a 3-in. can if FRIF indicates that a 6-in. can is to be dissolved.

Step 02.04.07.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the 3-in sample can, cap end up, on the raised support platform of the can lid puncturing device. Gently operate the lever to puncture the can lid. Remove the can and carefully SLIDE the can down the inside of the TILTED sample basket. DO NOT DROP INTO BASKET. Attach the basket, with can, to the basket holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.08.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the used gasket from the Dissolver flange and replace with a new gasket.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.09.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 02.04.09.03.00

Step 02.04.09.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the spider flange and basket (containing the sample can) into position in the Dissolver. Using a mirror, check that the gasket is centered after the flange is seated.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.09.02.00 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 02.04.10.00.00

Step 02.04.09.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the spider flange and empty basket into position in the Dissolver. Using a mirror, check that the gasket is centered after the flange is seated.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.10.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Position all four swing bolts upright. Using 15 to 20 PSIG air pressure to operate the impact wrench, seat each nut against the flange. Use a criss-cross tightening pattern. CHECK THAT THE FLANGE DOES NOT COCK WHEN TIGHTENING.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.04.11.00.00 using FMS-11 form "D1MAIN" and overlay SPGRPH

Raise impact wrench air pressure to 50 PSIG for final nut tightening. Use a criss-cross tightening pattern.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The primary HEATUPLOG is started on the GIGI terminal that corresponds to the dissolver procedure being run.

Step 02.05.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "DISSOLVER VESSEL LEAK TEST"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.05.01.00.00 using FMS-11 form "D1MAIN" and overlay 251

PCS-06 is energized to pressurize the
Dissolver vessel with dry air to 120 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the dissolver's control valve pressure (PT-11) is read. If the pressure is less than 124 PSIG or greater than 126 PSIG, the operator is prompted to manually adjust the pressure. The computer displays the pressure every 5 seconds until the pressure setting is correct. Then, the 120 PSIG dry air supply pressure (PT-4) is read. If it is less than 118 PSIG or greater than 122 PSIG, the operator is prompted to manually adjust the pressure. The computer then displays the dry air supply pressure every 5 seconds until it is 120 +/- 2 PSIG. When the pressure is 120 +/- 2 PSIG, PCS-06 is energized and the dissolver pressure (PT-7) and the 120 PSIG dry air pressure (PT-4) are displayed and updated every second. If, 10 seconds after PCS-06 is energized, the dissolver pressure is less than 40 PSIG, PCS-08 is energized and a message is displayed informing the operator that there is a leak in the dissolver vessel. The procedure will then go into Exception Handling. If, 10 seconds after PCS-06 is energized, the dissolver pressure is at least 40 PSIG, the dissolver pressure and dry air are monitored every second. When the dissolver pressure is equal to or greater than 117 PSIG and is equal to the dry air supply pressure +/- 1 PSIG, both pressures are read and displayed for one minute. After the minute has elapsed, PCS-08 is energized, plot P (pressure) is displayed on the GIGI terminal, and the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
Time to next reading set to 1 min. 0 sec. 0 ticks.

Step 02.05.02.00.00 using FMS-11 form "D1MAIN" and overlay 252

Dissolver Vessel Leak Test in progress. Leak
test passes if change in vessel pressure is no
more than 2.0 PSI after 15 minutes.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

At the start of the step, the initial dissolver pressure (PT-7) is displayed. The current value of the dissolver pressure is displayed every 5 seconds along with the pressure difference between the current pressure reading and the initial pressure reading. If, after 15 minutes, the current value is within +/- 2 PSIG of the initial value, the leak test has passed, P & I diagram D (Off-Gas System) is displayed on the GIGI terminal, and the procedure automatically continues to the next step. If the dissolver pressure values differ by more than 2 PSIG, the operator is informed that the dissolver vessel has failed the leak test and the procedure goes into Exception Handling.

Parameter record 1 is a logic branch to step 02.05.01.00.00

Step 02.06.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "OFF-GAS SYSTEM LEAK TEST"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 02.06.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "System Pressurization"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.01.01.00 using FMS-11 form "D1MAIN" and overlay 362

PCS-08 is energized to vent the Dissolver
vessel to the Hold Tank until pressures have
equalized to +/- 1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the hold tank pressure (PT-9) is read. If the pressure is greater than 35 PSIG, a message is displayed informing the operator that the pressure is too high to energize PCS-08 and the procedure goes into Exception Handling. If the hold tank pressure is equal to or less than 35 PSIG, PCS-08 is energized. After PCS-08 is energized, the hold tank pressure and dissolver pressure (PT-7) are read and displayed once every second until the dissolver pressure equals the hold tank pressure within +/-1 PSIG. The procedure automatically continues to the next step.

Step 02.06.01.02.00 using FMS-11 form "D1MAIN" and overlay 2614

PCS-09 is energized to pump residual gas in the Dissolver vessel to the Hold Tank. OBSERVE PG-7 TO ENSURE THAT PUMP P-3 SHUTS OFF AT LESS THAN 2, BUT BEFORE 0 PSIG. GREEN LIGHT ON CONTROLLER INDICATES P-3 IS ON. USE OUT-OF-CELL PUMP 'OFF' SWITCH IF NECESSARY!

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Before energizing PCS-09, the hold tank pressure (PT-9) and dissolver pressure (PT-7) must be less than 35 PSIG. If either pressure reading is greater than 35 PSIG, the operator is informed and the step goes into Exception Handling. Five seconds before energizing PCS-09, the gas flow rate (FM-3), hold tank pressure, and dissolver pressure are displayed. If, after PCS-09 is energized, the hold tank pressure becomes greater than 35 PSIG, PCS-08 is energized, the operator is informed, and the step goes into Exception Handling. When PCS-09 is energized and the dissolver pressure is less than 2 PSIG, PCS-08 is energized and the off-gas transfer is complete. If the hold tank pressure is less than 10 PSIG, the operator is informed that there is inadequate pressure to start the leak test, and the procedure goes into Exception Handling. If the hold tank pressure is equal to or greater than 10 PSIG, the procedure automatically continues to the next step.

Step 02.06.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "In-Cell Off-Gas System Leak Test"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.02.01.00 using FMS-11 form "D1SCRL" and overlay 2621

PCS-12 is energized for one minute to recirculate the gas in the Hold Tank. The gas recirculation rate should be maintained at 25 +/- 3 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-12 is energized for 1 minute to recirculate the gas in the hold tank. During the minute, the hold tank pressure (PT-9) and gas flow rate (FM-3) are displayed every 10 seconds. If the gas flow rate is not 25 +/- 3 L/min, an alarm appears and the operator is informed that the rate must be manually adjusted. At the end of 1 minute, the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1FM-3

Frequency of reading set to 0 min. 15 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm max alarm min automatic reading

Alarm limit minimum set point = 22.0000

Alarm limit maximum set point = 28.0000

New exception receiver queue name is 0PRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3

Monitoring status -- turn off: alarm max alarm min

Monitoring status -- turn on: (none)

Step 02.06.02.02.00 using FMS-11 form "D1SCRL" and overlay 2622

PCS-08 is energized to stop in-cell gas recirculation to allow Hold Tank pressure to stabilize. Stable pressure is indicated by three successive readings within +/-0.1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized and the hold tank pressure (PT-9) is read every 5 seconds. When the pressure has stabilized, as indicated by 3 successive hold tank pressure readings within 0.1 PSIG, the hold tank pressure reading is stored for use in step 2.6.2.4 (2624) and the procedure automatically continues to the next step.

Step 02.06.02.03.00 using FMS-11 form "D1MAIN" and overlay 2623

PCS-12 is energized for five minutes to recirculate the gas in the Hold Tank. The gas recirculation rate should be maintained at 25+/-3 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-12 is energized for 5 minutes to recirculate the gas in the hold tank. During the 5 minutes, the hold tank pressure (PT-9) and gas flow rate (FM-3) are displayed every 15 seconds. The time into recirculation and the time remaining are updated every minute. If the gas flow rate is not 25+/-3 L/min, an alarm appears and the operator is informed that the rate must be manually adjusted. At the end of 5 minutes, the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1FM-3
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm max alarm min automatic reading
Alarm limit minimum set point = 22.0000
Alarm limit maximum set point = 28.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 ticks.
Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3
Monitoring status -- turn off: alarm max alarm min
Monitoring status -- turn on: (none)

Step 02.06.02.04.00 using FMS-11 form "DISCRL" and overlay 2624

PCS-00 is energized to stop in-cell gas recirculation to allow Hold Tank pressure to stabilize. Stable pressure is indicated by three successive readings within +/-0.1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After PCS-00 is energized, the hold tank pressure (PT-9) is displayed every 5 seconds. When the pressure has stabilized, as indicated by 3 successive hold tank pressure readings within 0.1 PSIG, the hold tank pressure value is stored. This value is then compared with the hold tank pressure reading in step 2.6.2.2 (2622). If the difference between the two pressure readings is greater than 1 PSIG, the in-cell system has failed the leak test, the operator is informed, and the procedure goes into Exception Handling. If the readings are within 1 PSIG, the operator is informed that the in-cell system has passed the leak test and the procedure automatically continues to the next step.

Step 02.06.02.05.00 using FMS-11 form "D1MAIN" and overlay PLNBLK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 02.06.04.00.00

Parameter record 2 is a logic branch to step 02.06.04.00.00

Step 02.06.03.00.00 using FMS-11 form "D1MAIN" and overlay 00UNMY

Step title: "Out-of-Cell Off-Gas System Leak Test"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.03.01.00 using FMS-11 form "D1SCRL" and overlay 2631

PCS-13 is energized for one minute to recirculate the gas in the Hold Tank. The gas recirculation rate should be maintained at 20+/-5 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-13 is energized for 1 minute to recirculate the gas in the hold tank. During the minute, the hold tank pressure (PT-9) and gas flow rate (FM-3) are displayed every 10 seconds. If the gas flow rate is not 20+/-5 L/min, an alarm appears and the operator is informed that the rate must be manually adjusted. At the end of 1 minute, the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1FM-3
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
Alarm limit minimum set point = 15.0000
Alarm limit maximum set point = 25.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3
Monitoring status -- turn off: alarm1 max alarm1 min
Monitoring status -- turn on: (none)

Step 02.06.03.02.00 using FMS-11 form "D1SCRL" and overlay 2622

PCS-00 is energized to stop in-cell gas recirculation to allow Hold Tank pressure to stabilize. Stable pressure is indicated by three successive readings within +/-0.1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.06.02.02.00)

Step 02.06.03.03.00 using FMS-11 form "D1MAIN" and overlay 2633

PCS-13 is energized for five minutes to recirculate the gas in the Hold Tank. The gas recirculation rate should be maintained at 20+/-5 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 02.06.03.01 (except PCS-13 is energized for 5 minutes).

Parameter record 1 is a sensor criteria record for sensor D1FM-3
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
Alarm limit minimum set point = 15.0000
Alarm limit maximum set point = 25.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3
Monitoring status -- turn off: alarm1 max alarm1 min
Monitoring status -- turn on: (none)

Step 02.06.03.04.00 using FMS-11 form "D1SCRL" and overlay 2634

PCS-00 is energized to stop in-cell gas recirculation to allow Hold Tank pressure to stabilize. Stable pressure is indicated by three successive readings within +/-0.1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 02.06.02.04 (except out-of-cell leak test is performed).

Step 02.06.04.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Hold Tank Evacuation"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.06.04.01.00 using FMS-11 form "DISCRL" and overlay 2642

PCS-10 is energized to vent the Hold Tank to the cell to 0/-1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After PCS-10 has been energized, the hold tank pressure (PT-9) is displayed every 5 seconds. When the pressure is equal to or less than 1 PSIG, the procedure automatically continues to the next step.

Step 02.06.04.02.00 using FMS-11 form "DISCRL" and overlay 2641

PCS-14 is energized to evacuate the Hold Tank to -7 PSIG. When tank pressure is equal to or less than -7 PSIG, PCS-00 is energized to stop evacuation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-14 is energized. The hold tank pressure (PT-9) and gas flow rate (FM-3) are displayed every 10 seconds. When the hold tank pressure is equal to or less than -7 PSIG, PCS-00 is energized, P & I diagram C (Blend Tank Evacuation System) is displayed on the GIGI terminal and the procedure automatically continues to the next step.

Step 02.07.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "BLEND TANK AND VACUUM RESERVOIR TANK LEAK TEST"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.07.01.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Blend Tank Leak Test"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.07.01.01.00 using FMS-11 form "DISCRL" and overlay 2714

PCS-20 is energized to evacuate the Vacuum Reservoir Tank and Blend Tank. When pressure in both the Blend Tank and the Vacuum Reservoir Tank are equal to or less than -9 PSIG, PCS-00 is energized to stop evacuation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-20 is energized. The vacuum reservoir tank pressure (PT-17) and the blend tank pressure (PT-15) are displayed every 5 seconds. When the vacuum reservoir tank pressure is equal to or less than -9 PSIG and the blend tank pressures is equal to or less than -9 PSIG, PCS-00 is energized and the procedure automatically continues to the next step. If the vacuum reservoir tank pressure does not reach -9 PSIG after 7 minutes or the blend tank pressure does not reach -9 PSIG after 7 minutes, PCS-00 is energized. A message is displayed informing the operator that a leak exists and that the leak must be fixed and the step repeated.

Step 02.07.01.02.00 using FMS-11 form "D1MAIN" and overlay 2715

Blend Tank and Vacuum Reservoir Tank Leak Test in progress. Leak Test passes if change in tank pressure is no more than 0.5 PSI after 5 minutes.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

At the start of the step, an initial blend tank pressure (PT-15) and vacuum reservoir tank pressure (PT-17) are read and displayed. The current values of the blend tank pressure and vacuum reservoir pressure are read and displayed every 5 seconds. The time elapsed and time remaining are updated every 5 seconds also. If after 5 minutes, the initial values are within +/-0.5 PSIG of the current values, the leak tests have passed, P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal, and the procedure automatically continues to the next step. If the blend tank values differ by more than 0.5 PSIG, the blend tank has failed the leak test. If the vacuum reservoir tank pressure values differ by more than 0.5 PSIG, the vacuum reservoir tank has failed the leak test. If either leak test has failed, the operator is informed and the procedure goes into Exception Handling.

Step 02.07.02.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Solution Filter Leak Test"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.07.02.01.00 using FMS-11 form "D1SCR3" and overlay 2721

PCS-21 is energized to evacuate the Solution Filter Assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-21 is energized. If, after 10 seconds, the blend tank pressure (PT-15) is less than -9 PSIG, the procedure automatically continues to the next step. If the blend tank pressure reading is equal to or greater than -9 PSIG, the operator is informed that a solution filter leak is indicated and is instructed to enter (RETURN) when the leak has been fixed. After a (RETURN) is entered, PCS-20 is energized to evacuate the blend tank pressure to -9 PSIG and the vacuum reservoir tank to -9 PSIG. The readings are updated and displayed every 5 seconds. When the above criteria is met, the step automatically restarts.

Step 02.07.02.02.00 using FMS-11 form "D1MAIN" and overlay 2722

Solution Filter Leak Test in progress. Leak test passes if change in filter pressure is no more than 0.5 PSI after 2 minutes.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

PCS-21 is still energized at this step. The leak test will last 2 minutes. At the start of the step an initial blend tank and solution filter pressure reading (PT-15) is taken. Every 5 seconds thereafter, a blend tank pressure reading is taken and compared to the initial reading. If the difference is greater than 0.5 PSIG, the operator is informed that the leak test has failed and is instructed to enter (RETURN) when the leak has been fixed to send the procedure automatically back to step 2.7.2.1 (2721). If 2 minutes have passed without a difference in the blend tank readings of more than 0.5 PSIG, the operator is informed that the leak test has passed, PCS-00 is energized and the procedure will continue to the next step, after an operator sign-off.

Step 02.08.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "CONDENSER COOLING SYSTEM STARTUP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.08.01.00.00 using FMS-11 form "D1MAIN" and overlay PIB

Check the out-of-cell condenser cooling system for proper operation per the procedure posted at the cooling system.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram B (Dissolver Cooling System) is displayed on the GIGI terminal. This step is part of an operator sign-off step.

Step 02.03.02.00.00 using FMS-11 form "D1MAIN" and overlay 01PRACK

Open cooling water bulkhead valves V-1 and V-3 located at workstation M-1-C, then turn on circulating pump P-1, and P-12 (if not already on).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 02.03.03.00.00 using FMS-11 form "D1SCRL" and overlay 283

Set cooling water flow to the Dissolver to the value specified below by adjusting flow valve V-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

FRIF is checked to see which Thorex volume is specified. (If a blank run is being performed the Thorex volume is 1 liter). If the Thorex volume is 1 liter then the condenser cooling water flow (FM-1) must be set to 1.0+/-0.1 gpm. If the flow is not set correctly, the operator is prompted to adjust the flow accordingly. The flow is read every 5 seconds until it is 1.0+/-0.1 gpm. The procedure continues to the next step, after an operator sign-off. If the Thorex volume is 2 or 3 liters, the condenser cooling water flow must be set to 1.8+/-0.1 gpm. If the flow is not set correctly, the operator is prompted to adjust the flow accordingly. The flow is read every 5 seconds until it is 1.8+/-0.1 gpm. The procedure continues to the next step, after an operator sign-off.

Step 02.03.04.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 03.11.00.00.00

Step 03.00.00.00.00 using FMS-11 form "D1MAIN" and overlay 00024Y

Step title: "PRIMARY DISSOLUTION SEQUENCE"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.01.00.00.00 using FMS-11 form "D1MAIN" and overlay 00024Y

Step title: "REAGENT CHARGING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.01.01.00.00 using FMS-11 form "D1MAIN" and overlay 311

At the Reagent Charging Station in MA-010, add the quantity of THOREX reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal. After a 15-second delay, the amount of THOREX reagent to be added to the charge vessel, according to FRIF, is displayed. The amount of THOREX specified is logged and the procedure continues to the next step, after an operator sign-off.

Step 03.01.02.00.00 using FMS-11 form "D1SCRL" and overlay 312

After the THOREX reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

First, the type of reagent added to the charge vessel must be entered by the operator. The operator has two chances to enter 'THOREX' in order to proceed to the next entry. If 'THOREX' is not entered on the second try, step 3.1.1 of the procedure will be automatically repeated. If 'THOREX' has been entered as

the reagent added, the operator is then prompted to enter the batch number. If the batch number entered is left blank or contains more than two digits, the operator is prompted to reenter the batch number. Once the batch number has been accepted, the operator must enter the weight of the reagent added to the charge vessel. If the weight entered does not agree with the amount specified by FRIF, within +/-5 g, the operator is prompted to reenter the weight. If the amount still does not agree within +/-5 g, the operator is instructed to adjust the amount added to the charge vessel and repeat the step. After the correct weight of THOREX has been entered, the reagent type, reagent batch number, and reagent weight are logged, and the procedure continues to the next step, after an operator sign-off.

Step 03.01.03.00.00 using FMS-11 form "D1MAIN" and overlay 313

PCS-01 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Dissolver through the Dissolver spray ring per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE, /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Before energizing PCS-01, the dissolver pressure (PT-7) is checked. If the dissolver pressure is greater than 5 PSIG, a message is displayed informing the operator that PCS-01 will not be energized and instructing the operator to enter (RETURN) when the problem is corrected. The dissolver pressure is then checked again. If the dissolver pressure is less than 5 PSIG, PCS-01 is energized. The operator signs off the step after the reagent has been pumped to the dissolver and PCS-00 is energized.

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 03.01.04.00.00 using FMS-11 form "D1MAIN" and overlay PIFNO
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram F (Dissolver Pressurization) is displayed on the GIGI terminal. This step is not part of an operator sign-off step.

Step 03.02.00.00.00 using FMS-11 form "D1MAIN" and overlay 00000

Step title: "DISSOLVER PRESSURIZATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE, /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.02.01.00.00 using FMS-11 form "D1MAIN" and overlay 421

PCS-07 is energized to pressurize the Dissolver vessel with dry air to 70 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE, /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Before energizing PCS-07, the dissolver's control valve pressure (PT-11) is read. If the pressure is less than 124 PSIG or greater than 126 PSIG, the operator is prompted to manually adjust the pressure to 125 +/- 1 PSIG. The computer displays the pressure every 5 seconds until the pressure setting is correct. Then the 70 PSIG dry air supply pressure (PT-5) is read. If it is less than 68 PSIG or greater than 72 PSIG, the operator is prompted to adjust the pressure. The computer then reads the dry air supply pressure every 5 seconds until it is 70 +/- 2 PSIG. When the pressure is 70 +/- 2 PSIG, the dissolver pressure (PT-7) is read. If the pressure is equal to or greater than 45 PSIG, the operator is informed that PCS-07 will not be energized and the procedure goes into Exception Handling. Five seconds before PCS-07 is energized, the dissolver pressure and the 70 PSIG dry air pressure are read and displayed. PCS-07 is energized and the two pressures are read and displayed every 5 seconds. When the difference between the dry air supply pressure and the dissolver pressure is less than 1 PSIG and the dissolver pressure is greater than 44 PSIG, a 1-minute clock is started. During the minute, the dissolver pressure and the 70 PSIG pressure are read and displayed every 5 seconds. When the minute has passed, P & I diagram B (Dissolver Cooling System) is displayed on the GIGI terminal and the procedure automatically continues to the next step.

Step 03.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UAWY

Step title: "DISSOLVER HEATUP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UAWY

Step title: "Heater Startup"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.01.01.00 using FMS-11 form "D1MAIN" and overlay 3311

PCS-16 is energized to initiate full cooling
water flow to the Dissolver condenser.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-16 is energized. Ten seconds after PCS-16 is energized, the cooling water flow (FM-1) is read. If the flow is equal to or greater than 1.5 gpm, there is adequate cooling water flow to the condenser, plot A (temperature) is displayed on the GIGI terminal, and the procedure continues to the next step, after an operator sign-off. If the cooling water flow is less than 1.5 gpm, a message is displayed informing the operator that there is inadequate flow to the condenser. The cooling water flow is now read every 5 seconds, until the operator has manually adjusted it to at least 1.5 gpm.

Step 03.03.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At Dissolver Heater Power Supply Cabinet PE1:
position disconnect switch to 'ON',
reset kilowatt-hour meter PI1L and PI1U to
zero.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.01.02.01 using FMS-11 form "D1MAIN" and overlay SENS25

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Activates 25 sensor criteria alarms.

Parameter record 1 is a sensor criteria record for sensor D1TC-1

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 40.0000

Alarm limit maximum set point = 35.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-3

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 50.0000

Alarm limit maximum set point = 45.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-5

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 30.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 4 is a sensor criteria record for sensor D1TC-6

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 25.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 5 is a sensor criteria record for sensor D1TC-13

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 600.000

Alarm limit maximum set point = 525.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 6 is a sensor criteria record for sensor D1TC-15

Frequency of reading set to 1 min. 0 sec. 0 ticks.

```
Parameter record 17 is a sensor criteria record for sensor D1PT-1
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on:  alarm1 max alarm1 min alarm2 max
                                automatic reading
Alternate alarm maximum set point = 80.0000
```

Alarm limit minimum set point = 10.0000
Alarm limit maximum set point = 50.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 18 is a sensor criteria record for sensor D1PT-19
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 1.00000

Parameter record 19 is a sensor criteria record for sensor D1PT-3
Frequency of reading set to 2 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 10.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 20 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 21 is a sensor criteria record for sensor D1PT-7
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 135.000
Alarm limit maximum set point = 128.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 22 is a sensor criteria record for sensor D1PT-9
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 35.0000
Alarm limit maximum set point = 30.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 23 is a sensor criteria record for sensor D1PT-11
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
Alarm limit minimum set point = 123.000
Alarm limit maximum set point = 128.000

New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 24 is a sensor criteria record for sensor D1PT-13
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max automatic reading
Alternate alarm maximum set point = 30.0000
Alarm limit minimum set point = 2.00000
Alarm limit maximum set point = 0.00000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 25 is a sensor criteria record for sensor D1FW-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 1.00000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 03.03.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the Dissolver Heater Temperature Control Panel:
position panel power switch S1 to 'ON'
(if not already on)
position control power switch S5 to 'ON'
and silence alarm
position temperature controller TIC1L and TIC1U power switches to 'ON'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.01.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

On TIC1L:
set S.P.1 to 450+/-5 deg C
set S.P.2 to 600+/-5 deg C
depress Limit Reset switch.
On TIC1U:
set S.P.1 to 0+/-5 deg C
set S.P.2 to 600+/-5 deg C
depress Limit Reset switch.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.01.05.00 using FMS-11 form "D1MAIN" and overlay 3315

Depress Heater Reset switch S2 to energize the Dissolver 1 lower zone heaters.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

When the computer senses that the lower zone heaters are energized, by reading the lower zone heater kilowatt-hour meter (KWHMLD), the operator is informed and 1-minute clock is started. After the minute has passed, if the lower zone kilowatt-hour meter reads equal to or greater than 0.09 kilowatt-hours, all the lower zone heaters are assumed energized and the procedure will automatically continue to the next step. If the lower zone kilowatt-hour meter reads greater than 0.07 kilowatt-hours, a message is displayed informing the operator that there is reduced but adequate lower zone heater performance, and the procedure will continue to the next step. If the lower zone kilowatt-hour meter reads equal to or less than 0.07 kilowatt-hours, the operator is informed that there is unsatisfactory lower zone heater performance and the heaters are disabled. The procedure goes into Exception Handling.

Step 03.03.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Heatup"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.02.01.00 using FMS-11 form "D1MAIN" and overlay 33211

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

FRIF is checked to see if the upper zone heaters need to be turned on, as specified by a 3-liter Thorex charge.

Step 03.03.02.01.01 using FMS-11 form "D1DIS1" and overlay 3321

Sensors pertinent to the primary heatup will displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

Various sensors are read and displayed every minute, including the lower zone heater average temperature (TCLDAV). When the temperature is equal to or greater than 150 deg C the operator is prompted to retighten the spider flange at 50 PSIG. When the temperature is 200 deg C the message, "checking lower zone average temperatures", replaces the message to retighten the spider flange. When the temperature is equal to or greater than 300 deg C and a 3-liter THOREX solution is specified for the dissolution, the operator is prompted to turn on the upper zone heaters. When the computer senses that the upper zone heaters are energized, by reading the upper zone heater kilowatt-hour meter (KWHMUP), a 1-minute clock is started. After the minute has passed, if the upper zone kilowatt-hour meter reads equal to or greater than 0.15 kilowatt-hours, all the upper zone heaters are assumed energized. If the upper zone kilowatt-hour meter reads greater than 0.12 kilowatt-hours but less than 0.15 kilowatt-hours, a message is displayed informing the operator that there is reduced but adequate upper zone performance, and the step will continue. If the upper zone kilowatt-hour meter reads equal to or less than 0.12 kilowatt-hours, a message is displayed informing the operator that there is unsatisfactory lower zone heater performance, the heaters are disabled, and the procedure goes into Exception Handling. When the lower zone temperature is equal to or greater than 300 deg C and, if the upper zone is on and the upper zone average temperature (TCUPAV) is equal to or greater than 300 deg C, PCS-00 is energized to reduce the cooling water flow (FM-1) to the dissolver. When the lower zone average temperature is greater than 400 deg C, the upper zone temperature is greater than 375 deg C, if on, and the dissolver pressure (PT-7) is greater than 115 PSIG, the dissolver heatup is complete and the primary dissolution start time is logged. The procedure automatically continues to the next step.

Step 03.04.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "PRIMARY DISSOLUTION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.04.01.00.00 using FMS-11 form "D1DIS2" and overlay 341

Sensors pertinent to the primary dissolution
will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The primary dissolution will last 4 hours. During this time various sensors are read and displayed every minute. If, during the 4 hours, any of the following conditions occur, the heaters will be disabled, PCS-16 energized, an appropriate associated message will be displayed for operator information and/or response, and the procedure will go into Exception Handling:

- lower or upper zone temperature equal to or greater than 575 deg C
- dissolver pressure (PT-7) equal to or greater than 130 PSIG
- annulus pressure (PT-13) equal to or greater than 30 PSIG
- hold tank pressure (PT-9) equal to or greater than 35 PSIG
- condenser water inlet temperature (TC-1) equal to or greater than 40 deg C
- condenser water outlet temperature (TC-3) equal to or greater than 50 deg C
- condenser cooling water delta T (COOLDT) equal to or greater than 20 deg C
- condenser water flow rate (FM-1) less than 0.4 gpm

If the dissolver condenser water pressure (PT-1) is greater than 80 PSIG, the heaters are disabled and the procedure goes into Exception Handling.

If the dissolver pressure (PT-7) is less than 90 PSIG, PCS-00 is energized and the procedure goes into Exception Handling.

If the step goes into Exception Handling, the problem should be fixed and a comment should be entered. The step will then continue on after the operator signs off the comment. At the end of 4 hours, the primary dissolution end time is logged, plot V (list of sensors and their values) is displayed on the GIGI terminal, and the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1FM-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min alarm2 min automatic reading
Alternate alarm minimum set point = 0.400000
Alarm limit minimum set point = 0.600000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1PT-7
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max

alarm2 min automatic reading
Alternate alarm minimum set point = 90.0000
Alternate alarm maximum set point = 130.000
Alarm limit minimum set point = 115.000
Alarm limit maximum set point = 120.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 4 hr., 0 min., 0 sec., 0 ticks.

Step 03.05.00.00.00 using FMS-11 form "D1MAIN" and overlay 00XMMY

Step title: "DISSOLVER COOLDOWN"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.05.01.00.00 using FMS-11 form "D1MAIN" and overlay PIB

At the Dissolver Heater Temperature Control
Panel:

- On TIC1L, set S.P.1 to 85 +/- 5 deg C.
- On TIC1U, set S.P.1 to 0 +/- 5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.08.01.00.00)

Step 03.05.01.01.00 using FMS-11 form "D1MAIN" and overlay SENS14

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Activates 14 sensor criteria alarms.

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1PT-1

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1PT-7

Monitoring status -- turn off: alarm1 min alarm2 min

Monitoring status -- turn on: (none)

Step 03.05.02.00.00 using FMS-11 form "D1MAIN" and overlay 4052

PCS-17 is energized to initiate full cooling water flow to the Dissolver condenser.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.03.01.01 (3311) (except PCS-17 is energized and the operator is prompted to manually start air cooling blower BL-1 for dissolver 1 ONLY)

Step 03.05.03.00.00 using FMS-11 form "D1DIS3" and overlay 351

Sensors pertinent to the primary cooldown will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Various sensors readings are displayed every minute until the lower zone average temperature (TCLDAB) is equal to or less than 95 deg C. The procedure will automatically continue to the next step after displaying P & I diagram B (Dissolver Cooling System) on the GIGI terminal.

Parameter record 1 is a sensor criteria record for sensor D1TC-42

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 40.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-43

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1TC-42
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1TC-43
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 15 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: (none)

Monitoring status -- turn on (none)

Parameter record 16 is a sensor criteria record for sensor D1PT-9
Monitoring status -- turn off: (none)
Monitoring status -- turn on: (none)

Parameter record 17 is a sensor criteria record for sensor D1PT-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 18 is a sensor criteria record for sensor D1FM-1
Monitoring status -- turn off: alarm2 min
Monitoring status -- turn on: (none)

Step 03.05.04.00.00 using FMS-11 form "D1MAIN" and overlay DS1354

PCS-00 is energized to reduce condenser
cooling water flow to the Dissolver.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized. For dissolver 1 ONLY the operator is prompted to turn
off air cooling blower BL-1. After a 5-second delay, P & I diagram D (Off-Gas
System) is displayed on the GIGI terminal and the procedure automatically
continues to the next step.

Step 03.05.05.00.00 using FMS-11 form "D1MAIN" and overlay SENS10
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-5
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-6
Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1PT-1

Monitoring status -- turn off: alarm1 max alarm1 min

Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1PT-3

Monitoring status -- turn off: alarm1 min

Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1PT-7

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1PT-9

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1PT-13

Monitoring status -- turn off: alarm1 max alarm1 min

Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1FM-1

Monitoring status -- turn off: alarm1 min

Monitoring status -- turn on: (none)

Step 03.06.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "OFF-GAS TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.06.01.00.00 using FMS-11 form "D1MAIN" and overlay 361

PCS-06 is energized to pressurize the
Dissolver vessel with dry air to 120 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the dissolver's control valve pressure (PT-11) is read. If the pressure is less than 124 PSIG or greater than 126 PSIG the operator is prompted to manually adjust the pressure. The computer then displays the pressure every 5 seconds until the pressure setting is correct. Then, the 120 PSIG dry air supply pressure (PT-4) is read. If it is less than 118 PSIG or greater than 122 PSIG, the operator is prompted to manually adjust

the pressure. The computer then displays the pressure every 5 seconds until it is 120 +/- 2 PSIG. When the pressure is 120 +/- 2 PSIG, PCS-06 is energized. When PCS-06 is energized, the 120 PSIG dry air supply system pressure and dissolver pressure (PT-7) are read and displayed every five seconds. When the dissolver pressure is greater than 117 PSIG and is equal to the dry air supply pressure +/- 1 PSIG, a 1-minute clock is started. During this minute, the dry air supply pressure and the dissolver pressure are read and displayed every 5 seconds. After the minute has elapsed, the procedure automatically continues to the next step.

Step 03.06.02.00.00 using FMS-11 form "D1MAIN" and overlay 362

PCS-06 is energized to vent the Dissolver
vessel to the Hold Tank until pressures have
equalized to +/- 1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.06.01.01.00)

Step 03.06.02.01.00 using FMS-11 form "D1MAIN" and overlay PIFNO

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.01.04.00.00)

Step 03.06.03.00.00 using FMS-11 form "D1MAIN" and overlay 361

PCS-06 is energized to pressurize the
Dissolver vessel with dry air to 120 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.06.01.00.00)

Step 03.06.04.00.00 using FMS-11 form "D1MAIN" and overlay 362

PCS-08 is energized to vent the Dissolver vessel to the Hold Tank until pressures have equalized to +/-1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.06.01.01.00)

Step 03.06.05.00.00 using FMS-11 form "D1MAIN" and overlay 365

PCS-09 is energized to pump residual gas in the Dissolver vessel to the Hold Tank. OBSERVE PG-7 TO ENSURE THAT PUMP P-3 SHUTS OFF AT LESS THAN 2, BUT BEFORE 0 PSIG. GREEN LIGHT ON CONTROLLER INDICATES P-3 IS ON. USE OUT-OF-CELL PUMP 'OFF' SWITCH IF NECESSARY!

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the hold tank pressure (PT-9) and dissolver pressure (PT-7) are read. If either pressure is greater than 35 PSIG, an appropriate message is displayed informing the operator that PCS-09 will not be energized and the procedure goes into Exception Handling. If both pressures are satisfactory, 5 seconds before PCS-09 is energized, the gas flow rate (FM-3), hold tank pressure (PT-9), and dissolver pressure (PT-7) are displayed. After PCS-09 is energized, the three pressures are read and displayed every second. If the hold tank pressure becomes greater than 35 PSIG, PCS-00 is energized, the operator is informed, and the procedure goes into Exception Handling. When the dissolver pressure is equal to or less than 2 PSIG, the transfer is complete, PCS-00 is energized, and the procedure automatically continues to the next step.

Step 03.07.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "SOLUTION TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.07.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Blend Tank Preparation for Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.07.01.01.00 using FMS-11 form "D1MAIN" and overlay PIE

Step title: "Place the Blend Tank in the TRANSFER WEIGHING CONDITION"

Vacuum line connected to Blend Tank Vacuum Port
Solution fill line connected to Blend Tank fill port
Blend Tank lid valve fully closed
Blend Tank mixing motor in stored position
Cap installed over mixer coupling
(continued in next step)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal. This step is part of an operator sign-off step.

Step 03.07.01.01.01 using FMS-11 form "D1MAIN" and overlay 0PRACK

(continued from previous step)
Internal thermocouple removed from Blend Tank
Lid thermocouple removed from lid holder
Hot plate power cord disconnected from hot plate receptacle
Blend Tank, hot plate, and support plate are free of all other trailing leads, cords, lines, tools, or other foreign objects

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.07.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Solution Transfer to Blend Tank"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.07.02.01.00 using FMS-11 form 'D1SCR3' and overlay 3721

PCS-20 is energized to evacuate the Vacuum Reservoir Tank and the Blend Tank. When pressure in the Blend Tank and the Vacuum Reservoir Tank are equal to or less than -9 PSIG, PCS-00 is energized to stop evacuation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

PCS-20 is energized. (PCS-19 is energized instead of PCS-20 if this step is repeated due to a low percent solution recovery in step 3.7.3.1 (3731)). The blend tank pressure (PT-15) and vacuum reservoir tank pressure (PT-17) are displayed every 5 seconds. If PCS-20 is energized, the blend tank pressure is read until it is equal to or less than -9 PSIG and the vacuum reservoir tank pressure is read until it is equal to or less than -9 PSIG, then PCS-00 is energized, P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal, and the procedure automatically continues to the next step. If PCS-19 is energized, the vacuum reservoir tank pressure is read until it is equal to or less than -9 PSIG, then PCS-00 is energized, P & I diagram E is displayed on the GIGI terminal, and the procedure goes to step 3.7.2.3. (3722).

Step 03.07.02.02.00 using FMS-11 form 'D1SCR1' and overlay 3713

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is prompted to ensure that solenoid switch is deenergized. After a 5 second delay, the balance is automatically lowered, if necessary, by deenergizing solenoid A. The operator is prompted to zero the blend tank balance (BAL-5), if necessary, and then enter 'R' (RETURN) to read the balance. A balance reading is taken, multiplied by the balance calibration factor, and displayed. The tare reading must be 0 +/- 1 g or the step will be repeated automatically. If the tare reading is acceptable, P & I diagram C

(Blend Tank Evacuation System) is displayed on the GIGI terminal and the procedure continues to the next step, after an operator sign-off. The weight of the blend tank assembly before primary dissolution solution transfer is stored for use in step 3.7.3.1 (3731).

Step 03.07.02.03.00 using FMS-11 form 'D1SCR3' and overlay 3722

PCS-04 is energized to begin vacuum transfer of the primary dissolver solution from the Dissolver to the Blend Tank. The transfer is completed and PCS-00 is energized when both tank pressures are greater than -0.5 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

After a 15-second delay the dissolver pressure (PT-7) is read. If the pressure is greater than 5 PSIG, PCS-04 will not be energized and the operator is prompted to correct the problem. When the problem is corrected, a (RETURN) entered by the operator will repeat the step. If the dissolver pressure is equal to or less than 5 PSIG, PCS-04 is energized to begin the transfer of dissolution solution to the blend tank. The blend tank weight (BAL-5), blend tank pressure (PT-15), vacuum reservoir tank pressure (PT-17), and dissolver pressure are read and displayed every 5 seconds. When the blend tank pressure is 0 +/- 0.5 PSIG, the vacuum pressure is 0 +/- 0.5 PSIG, and the dissolver pressure is within -0.5 and +1 PSIG, there is a 10-second delay before a final blend tank weight (BAL-5) is read and displayed. PCS-00 is energized and the procedure continues to the next step, after an operator sign-off.

Step 03.07.03.00.00 using FMS-11 form 'D1MAIN' and overlay 00UMMY

Step title: 'Material Balance Check'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.07.03.01.00 using FMS-11 form 'D1SCR1' and overlay 3731

The weight of the primary dissolver solution transferred from the Dissolver to the Blend Tank is now determined, and a solution material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action 'slave' routine:

The operator is prompted to enter 'R' (RETURN) to read the blend tank balance (BAL-S) readout (weight of the blend tank with the primary dissolution.). The weight is multiplied by the calibration factor and is subtracted from the tare weight from step 3.7.2.2 (3713) to determine the net solution recovered in the blend tank. The input weight is then calculated as follows:

- weight of Thorex reagent added to dissolver in step 3.1.2 (312)
- weight of canned fuel segment from step 2.4.3 (2412) (rounded to the whole number)

- estimated initial weight of hulls from FRIF

The weight of initial solution recovered in the blend tank is divided by the input weight to get a percent recovery. If the percent recovery is 98% or greater, a complete recovery is indicated, the primary dissolution solution transfer weight and the primary dissolution percent solution transferred are logged, and the procedure continues to the next step, after an operator sign-off. If the percent recovery is less than 98%, a message is displayed informing the operator that an incomplete recovery is indicated and step 3.7.2 will be repeated after a 10-minute delay (to allow time for decay of ^{220}Rn). If the step fails a second time, the procedure goes into Exception Handling and a comment regarding the incomplete recovery must be entered. After a comment is entered, the primary dissolution solution transfer weight and the percent primary dissolution solution transferred are logged. The procedure continues to the next step, after an operator sign-off.

Step 03.08.00.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: 'DISSOLVER VESSEL REFLUX RINSING'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.08.01.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: 'Reagent Metering'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.08.01.01.00 using FMS-11 form 'D1MAIN' and overlay 3821

At the Reagent Charging Station in MA-010, add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal. After a 10-second delay, the amount of NITRIC reagent to be added to the charge vessel is displayed. The procedure continues to the next step, after an operator sign-off.

Step 03.08.01.02.00 using FMS-11 form 'D1SCRL' and overlay 3822

After the dilute NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

First, the type of reagent added to the charge vessel must be entered by the operator. The operator has two chances to enter 'NITRIC' in order to proceed to the next entry. If 'NITRIC' is not entered on the second try, step 3.8.1.1 (3821) of the procedure will be repeated automatically. If 'NITRIC' has been entered as the reagent added, the operator is then prompted to enter the batch number. If the batch number entered is left blank or contains more than two digits, the operator is prompted to reenter the batch number. Once the batch number has been accepted, the operator must enter the weight of the reagent added to the charge vessel. If the weight entered is not 759 +/- 5 g, the operator is prompted to reenter the weight. After the correct weight of 'NITRIC' has been entered or the same weight is entered twice in a row, the value is accepted. The reagent type, reagent batch number, and reagent weight are logged, and the procedure continues to the next step, after an operator sign-off.

Step 03.08.02.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: 'Dissolver Rinsing'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.02.01 00 using FMS-11 form "D1MAIN" and overlay 3031

PCS-01 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Dissolver through the Dissolver spray ring per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.01.03.00.00 (313) (except P & I diagram B (Dissolver Cooling System) is displayed on the GIGI terminal at the end of the step).

Step 03.08.03.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY
Step title: "Dissolver Heat-Up"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.08.03.01.00 using FMS-11 form "D1MAIN" and overlay SENS24

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Activates 24 sensor criteria alarms.

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 40.0000
Alarm limit maximum set point = 35.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 50.0000
Alarm limit maximum set point = 45.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-6
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 30.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 4 is a sensor criteria record for sensor D1TC-6
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 25.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 5 is a sensor criteria record for sensor D1TC-13
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 300.000
Alarm limit maximum set point = 275.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 6 is a sensor criteria record for sensor D1TC-15
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 300.000
Alarm limit maximum set point = 275.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 7 is a sensor criteria record for sensor D1TC-17
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 300.000
Alarm limit maximum set point = 275.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 8 is a sensor criteria record for sensor D1TC-19
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
Alternate alarm maximum set point = 300.000
Alarm limit maximum set point = 275.000
New exception receiver queue name is OPRDS1

Frequency of reading set to 1 min. 0 sec. 0 ticks.

```
Monitoring status -- turn on:  alarm1 max  alarm2 max  automatic
reading
```

Alternate alarm maximum set point = 130.000
 Alarm limit maximum set point = 120.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 21 is a sensor criteria record for sensor D1PT-9
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading

Alternate alarm maximum set point = 35.0000
 Alarm limit maximum set point = 30.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 22 is a sensor criteria record for sensor D1PT-11
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
 Alarm limit minimum set point = 123.000
 Alarm limit maximum set point = 120.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 23 is a sensor criteria record for sensor D1PT-13
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
 Alarm limit minimum set point = 2.00000
 Alarm limit maximum set point = 8.00000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 24 is a sensor criteria record for sensor D1FM-1
 Frequency of reading set to 0 min. 30 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 min automatic reading
 Alarm limit minimum set point = 1.00000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 03.00.03.02.00 using FMS-11 form "D1MAIN" and overlay 3311

PCS-16 is energized to initiate full cooling water flow to the Dissolver vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.03.01.01.00)

Step 03.00.03.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the Dissolver Heater Temperature Control Panel:
 On TIC1L, set S.P.1 to 220+/-5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.00.03.04.00 using FMS-11 form "D1DIS1" and overlay 3024

Sensors pertinent to the primary reflux heatup will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Various sensors are read and displayed every minute, including the lower zone average temperature (TCLDAV). When the lower zone average temperature is greater than 210 deg C, the dissolver heatup is complete, the primary dissolution reflux start time is logged, and the procedure automatically continues to the next step.

Step 03.03.04.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Dissolver Reflux"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.04.01.00 using FMS-11 form "D1DIS2" and overlay 3841

Sensors pertinent to the primary reflux will
be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.04.01 (341) (except primary reflux will last 15 minutes and the
lower limit for dissolver pressure (PT-7) is 0 PSIG.

Parameter record 1 is a sensor criteria record for sensor D1FM-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min alarm2 min automatic
reading
Alternate alarm minimum set point = 2.400000
Alarm limit minimum set point = 0.500000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1PT-7
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max
alarm2 min automatic reading
Alternate alarm minimum set point = 0.000000
Alternate alarm maximum set point = 130.000
Alarm limit minimum set point = 1.000000
Alarm limit maximum set point = 120.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 30 min., 0 sec., 0 ticks.

Step 03.03.05.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Dissolver Cooldown"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.03.05.01.00 using FMS-11 form "D1MAIN" and overlay PIB

At the Dissolver Heater Temperature Control
Panel:
On TIC1L, set S.P.1 to 85+/-5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.08.01.00.00)

Step 03.03.05.01.01 using FMS-11 form "D1MAIN" and overlay SENS14

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.05.01.01.00)

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1PT-1
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: alarm1 min alarm2 min
Monitoring status -- turn on: (none)

Step 03.08.05.02.00 using FMS-11 form "D1MAIN" and overlay 4852

PCS-17 is energized to continue full cooling
water to the Dissolver condenser.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.05.02.00.00)

Step 03.08.05.03.00 using FMS-11 form "D1DIS3" and overlay 4053

Sensors pertinent to the primary reflux
cooldown will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Plot A is displayed on the GIGI terminal. Various sensor readings are displayed and updated every minute. When the lower zone average temperature (TCLOAV) is equal to or less than 95 deg C, FCS-00 is energized (and the operator is prompted to manually turn off cooling blower BL-1 for dissolver 1 ONLY). After the operator signs off the step, P & I diagram B (Dissolver Cooling System) is displayed on the GIGI terminal.

Parameter record 1 is a sensor criteria record for sensor D1TC-42
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-43
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1TC-42

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1TC-43

Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 15 is a sensor criteria record for sensor D1PT-7

Monitoring status -- turn off: (none)

Monitoring status -- turn on: (none)

Parameter record 16 is a sensor criteria record for sensor D1PT-9

Monitoring status -- turn off: (none)

Monitoring status -- turn on: (none)

Parameter record 17 is a sensor criteria record for sensor D1PT-13

Monitoring status -- turn off: alarm2 max

Monitoring status -- turn on: (none)

Parameter record 18 is a sensor criteria record for sensor D1FM-1

Monitoring status -- turn off: alarm2 min

Monitoring status -- turn on: alarm1 min

Alarm limit minimum set point = 1.00000

Step 03.09.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "REFLUX SOLUTION TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.01.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Blend Tank Preparation for Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.01.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Step title: "Place the Blend Tank in the TRANSFER WEIGHING CONDITION"

Vacuum line connected to Blend Tank Vacuum
Port
Solution fill line connected to Blend Tank
fill port
Blend Tank lid valve fully closed
Blend Tank mixing motor in stored position
Cap installed over mixer coupling
(continued to next step)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.01.01.01 using FMS-11 form "D1MAIN" and overlay 0PRACK

(continued from previous step)
Internal thermocouple removed from Blend Tank
Lid thermocouple removed from lid holder
Hot plate power cord disconnected from hot
plate receptacle
Blend Tank, hot plate, and support plate are
free of all other trailing leads, cords,
lines, tools, or other foreign objects

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.02.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Rinse Solution Transfer to Blend Tank"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.02.01.00 using FMS-11 form "DISCR1" and overlay 4731

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PCS-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-19 is energized and the vacuum tank pressure (PT-17) is read and displayed every 5 seconds. When the pressure is equal to or less than -9 PSIG, PCS-00 is energized, P & I diagram E (Reagent and Solution Transfer) is displayed, and the procedure automatically continues to the next step.

Step 03.09.02.02.00 using FMS-11 form "DISCR2" and overlay 3813

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.07.02.02. (3713) (except that tare value will be stored for use in a later material balance check).

Step 03.09.02.03.00 using FMS-11 form "DISCR3" and overlay 3042

PCS-04 is energized to begin vacuum transfer of the rinse solution from the Dissolver to the Blend Tank. The transfer is completed and PCS-00 is energized when both tank pressures are greater than -0.5 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.07.02.03.00 (3722).

Step 03.09.03.00.00 using FMS-11 form "D1MAIN" and overlay 0000MY

Step title: "Material Balance Check"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.09.03.01.00 using FMS-11 form "DISCR4" and overlay 3651

The weight of rinse solution transferred from the Dissolver to the Blend Tank is now determined, and a solution material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter 'R' (RETURN) to read the blend tank (BAL-5) readout (the weight of the blend tank with the secondary rinse). This weight is multiplied by the balance calibration factor and is subtracted from the tare weight from step 3.9.2.2 (3813) to determine the net weight of the rinse solution transferred to the blend tank. This weight is divided by the weight of NITRIC reagent added in step 3.8.1.2 (3822) and multiplied by 100 to get the percent recovery. If the percent recovery is equal to or greater than 98%, a complete rinse solution transfer is indicated. The primary reflux solution transfer weight and the percent of the primary reflux solution transferred are logged, and the procedure continues to the next step, after an operator sign-off. If the percent recovery is less than 98%, a message is displayed informing the operator that an incomplete reflux solution transfer is indicated and that step 3.9.2 will be repeated after a 10-minute delay (to allow time for

decay of 220 Rn). If the step fails a second time, the procedure goes into Exception Handling and a comment regarding the incomplete recovery must be entered. The procedure then returns to this step and the primary reflux solution transfer weight and the percent primary reflux solution transferred are logged. The procedure continues to the next step, after an operator sign-off and the blend tank is raised off BAL-5.

Step 03.08.03.02.00 using FMS-11 form "D1MAIN" and overlay PLENUM
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

If a plenum dissolution is specified, the procedure goes to the step specified by the branch number.

Parameter record 1 is a logic branch to step 03.11.00.00.00

Step 03.10.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
Step title: "GAS SAMPLING"
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.10.01.00.00 using FMS-11 form "D1MAIN" and overlay 31001

PCS-12 is energized to recirculate and mix the gases in the Hold Tank. In-cell gas recirculation will last 30 minutes. The gas recirculation rate should be maintained at 25+/-3 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 2.6.2.3 (except PCS-12 will be energized for 30 minutes and PCS-00 will be energized at the end of the step).

Parameter record 1 is a sensor criteria record for sensor D1FM-3
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm max alarm min automatic reading
Alarm limit minimum set point = 22.0000
Alarm limit maximum set point = 28.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3
Monitoring status -- turn off alarm max alarm min
Monitoring status -- turn on. (none)

Step 03.10.02.00.00 using FMS-11 form "D1MAIN" and overlay PID

Check that the out-of-cell Gas Sampling Station in MA-010 has been readied for sampling per the posted procedure at the Gas Sampling Station. ALL CYLINDER VALVES MUST BE FULLY OPENED AND BY-PASS VALVE V-35 CLOSED.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram D (Off-gas System) is displayed on the GIGI terminal. This step is part of an operator sign-off step.

Step 03.10.03.00.00 using FMS-11 form "D1MAIN" and overlay 392

PCS-13 is energized to recirculate Hold Tank gases through the sample cylinders at the out-of-cell Gas Sampling Station. Out-of-cell gas recirculation will last 5 minutes. The gas recirculation rate should be maintained at 20+/-5 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-13 is energized and a 5-minute clock is started. During the 5 minutes, the gas flow rate (FM-3) is read and displayed every 15 seconds. If the gas flow rate is less than 10 PSIG, the operator is informed that the sampling valves are misaligned, PCS-00 has been energized, and the procedure goes into Exception Handling. If the hold tank pressure (PT-9) reading in step 3.10.1 is greater than the current hold tank pressure by more than 3 PSIG, the operator is informed that an off-gas system leak is indicated and PCS-00 is energized. When the leak has been fixed, a <RETURN> entered by the operator will restart the step. If the current hold tank reading is satisfactory, the gas recirculation flow and hold tank pressure reading will be read and displayed every 15 seconds. The 5-minute clock will be updated every minute. When 5 minutes have elapsed, PCS-00 is energized and the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1FM-3
 Frequency of reading set to 0 min. 15 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm max alarm min automatic
 reading
 Alarm limit minimum set point = 15.0000
 Alarm limit maximum set point = 25.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
 Time to next reading set to 0 min. 15 sec. 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1FM-3
 Monitoring status -- turn off: alarm max alarm min
 Monitoring status -- turn on: (none)

Step 03.10.04.00.00 using FMS-11 form "D1MAIN" and overlay 393

PCS-00 is energized to stop out-of-cell gas
 recirculation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized. The procedure will automatically continue to the next
 step.

Step 03.10.05.00.00 using FMS-11 form "D1MAIN" and overlay 394

Isolate and remove the two gas sample
 cylinders from the out-of-cell Gas Sampling
 Station in MA-010 per the posted procedure.
 Record the gas sampling parameters listed
 below in the operations log. Also, include
 the hold tank pressure shown on PG-9.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The hold tank pressure (PT-9), hold tank temperature (TC-11), and time of hold
 tank gas sampling are read and displayed. The hold tank pressure and the hold
 tank temperature are logged. The procedure will continue to the next step,
 after an operator sign-off.

Step 03.10.06.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Off-Gas Sampling is now completed. Leave the
 two gas sampling cylinders in MA-010 until
 ready for transfer to the Gas Mass
 Spectrometer.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.11.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUWAY

Step title: "OFF-GAS RELEASE"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.11.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the exhaust stack radiation-monitoring
 system in MA-001 and MA-101, perform the steps
 outlined in the posted procedure to monitor
 the release of dissolution off-gas. USE STACK
 no.2 FOR OFF-GAS RELEASE.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.11.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Notify the shift supervisor that venting of the Hold Tank and release of the off-gas is ready to begin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.11.03.00.00 using FMS-11 form "D1MAIN" and overlay 3112

PCS-11 is energized to begin a controlled venting of the Hold Tank to the Cell M-1 low-flow (STACK no.2) air exhaust system. Venting is complete when the Hold Tank pressure reaches 1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram D (Off-Gas System) is displayed on the GIGI terminal, PCS-11 is energized, and the off-gas release start time is logged. Thirty seconds after PCS-11 is energized, the hold tank pressure (PT-9) is read. Every 30 seconds thereafter, the hold tank pressure is read and displayed. The time-elapsed clock is updated every minute. The rate of off-gas release is calculated by multiplying the difference between the previous and current hold tank pressures by 2. If the off-gas release rate is greater than 0.7 PSI/min, PCS-00 is energized. The operator is then prompted to manually adjust the metering valve and enter <RETURN> when completed. The step will then continue monitoring. If the off-gas release rate is less than 0.1 PSI/min, the operator is prompted to increase the gas release rate by manually adjusting the hold tank metering valve (V-05). When the hold tank pressure is equal to or less than 1 PSIG (approx. 1.5 to 2.0 hours), the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 03.11.04.00.00 using FMS-11 form "D1MAIN" and overlay 3113

Venting of the Hold Tank to the Cell M-1 low-flow air exhaust system is completed. PCS-00 is energized to shut off all valves.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized and the off-gas release end time is logged. The procedure will continue to the next step, after an operator sign-off.

Step 03.11.05.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the exhaust stack radiation-monitoring system in MA-001 and MA-101, perform the steps outlined in the posted procedure to complete the monitoring of the dissolution off-gas release.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.11.06.00.00 using FMS-11 form "D1MAIN" and overlay 41061

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The heatuplog and plot display programs are aborted.

Step 03.11.06.01.00 using FMS-11 form "D1MAIN" and overlay PLENUM

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.03.02.00)

Parameter record 1 is a logic branch to step 04.08.05.00.00

Step 04.00.00.00.00 using FMS-11 form "D1MAIN" and overlay 001MM?

Step title: "SECONDARY DISSOLUTION SEQUENCE"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.00.00.00 using FMS-11 form "D1MAIN" and overlay 001MM?

Step title: "REAGENT CHARGING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.01.01.00.00 using FMS-11 form "D1MAIN" and overlay 411

Step title: "Reagent Logging and Transfer"

At the Reagent Charging Station in MA-010, add the quantity of THOREX-AL reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The secondary heatuplog is started and P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal. After a 10-second delay, the amount of THOREX-AL reagent to be added to the charge vessel is displayed. The procedure continues to the next step, after an operator sign-off.

Step 04.01.01.01.00 using FMS-11 form "DISCRL" and overlay 412

After the THOREX-AL reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

First, the type of reagent added to the charge vessel must be entered by the operator. The operator has two chances to enter 'THOREX-AL' in order to proceed to the next entry. If 'THOREX-AL' is not entered on the second try, step 4.1.1 of the procedure will be repeated automatically. If 'THOREX-AL' has

been entered as the reagent added, the operator is then prompted to enter the batch number. If the batch number entered is left blank or contains more than two digits, the operator is prompted to reenter the batch number. Once the batch number has been accepted, the operator must enter the weight of the reagent added to the charge vessel. If the weight entered is not 1377+/-5 g, the operator is prompted to reenter the weight. If the amount still is not 1377+/-5 g, the operator is prompted to adjust the amount added to the charge vessel and repeat the step. After the correct amount of THOREX-AL has been entered, the reagent type, reagent batch number, and reagent weight are logged and the procedure continues to the next step, after an operator sign-off.

Step 04.01.01.02.00 using FMS-11 form "D1MAIN" and overlay 413

PCS-02 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Dissolver through the Dissolver drain line (backflushing the solution filter) per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Before energizing PCS-02, the dissolver pressure (PT-7) is checked. If the pressure is greater than 5 PSIG, a message is displayed informing the operator that PCS-02 will not be energized. A message is displayed prompting the operator to enter (RETURN) when the problem is corrected. The dissolver pressure is then checked again. If the dissolver pressure is less than 5 PSIG, PCS-02 is energized. When the operator signs off the step PCS-00 is energized, P & I diagram F (Dissolver Pressurization) is displayed on the GIGI terminal, and the procedure continues to the next step.

Step 04.02.00.00.00 using FMS-11 form "D1MAIN" and overlay 001MM?

Step title: "DISSOLVER PRESSURIZATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.02.01.00.00 using FMS-11 form "D1MAIN" and overlay 421

PCS-07 is energized to pressurize the
Dissolver vessel with dry air to 70 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.02.01.00.00)

Step 04.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "DISSOLVER HEATUP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.01.00.00 using FMS-11 form "D1MAIN" and overlay DS1431

PCS-10 is energized to initiate full cooling
water flow to the Dissolver condenser.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.03.01.01.00 (3311).

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 40.0000
Alarm limit maximum set point = 35.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 50.0000
Alarm limit maximum set point = 45.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-5
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 30.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 4 is a sensor criteria record for sensor D1TC-6
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 25.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 5 is a sensor criteria record for sensor D1TC-13
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 6 is a sensor criteria record for sensor D1TC-15
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 7 is a sensor criteria record for sensor D1TC-17
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.


```
Parameter record 0 is a sensor criteria record for sensor D1TC-19
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 9 is a sensor criteria record for sensor D1TC-21
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is QPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 10 is a sensor criteria record for sensor D1TC-23
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 11 is a sensor criteria record for sensor D1TC-25
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on:  alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 12 is a sensor criteria record for sensor DITC-27
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on:  alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 625.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

Parameter record 13 is a sensor criteria record for sensor D1TC-29
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic

```

reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is 0PRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

```

```
Parameter record 14 is a sensor criteria record for sensor D1TC-31
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading
Alternate alarm maximum set point = 600.000
Alarm limit maximum set point = 525.000
New exception receiver queue name is 0PRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

Parameter record 15 is a sensor criteria record for sensor D1TCL0AV
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: automatic reading
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 5 ticks.

```
Parameter record 16 is a sensor criteria record for sensor D1TCUPAV
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: automatic reading
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 17 is a sensor criteria record for sensor D1PT-1
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on:  alarm1 max  alarm1 min  alarm2 max
automatic reading
Alternate alarm maximum set point = 30.0000
Alarm limit minimum set point = 10.0000
Alarm limit maximum set point = 50.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.
```

```
Parameter record 18 is a sensor criteria record for sensor DIPT-3
Frequency of reading set to 2 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 10.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 ticks.
```

```
Parameter record 19 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
```

New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 20 is a sensor criteria record for sensor D1PT-7
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading

Alternate alarm maximum set point = 130.000
Alarm limit maximum set point = 120.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 21 is a sensor criteria record for sensor D1PT-9
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm2 max automatic reading

Alternate alarm maximum set point = 35.0000
Alarm limit maximum set point = 30.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 22 is a sensor criteria record for sensor D1PT-11
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
Alarm limit minimum set point = 123.000
Alarm limit maximum set point = 120.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 23 is a sensor criteria record for sensor D1PT-13
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min automatic reading
Alarm limit minimum set point = 2.00000
Alarm limit maximum set point = 0.00000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 24 is a sensor criteria record for sensor D1FM-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 1.00000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.03.01.01.00 using FMS-11 form "D1MAIN" and overlay NOBLNK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 04.03.02.00.03

Step 04.03.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At Dissolver Heater Power Supply Cabinet PE1:
position disconnect switch to 'ON',
reset kilowatt-hour meter PI1L and PI1U to zero.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the Dissolver Heater Temperature Control Panel:
position panel power switch S1 to 'ON'
(if not already on)
position control power switch S5 to 'ON'
and silence alarm
position temperature controller TIC1L and TIC1U power switches to 'ON'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.01.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

On TIC1L:
set S.P.1 to 450+/-5 deg C
set S.P.2 to 600+/-5 deg C
depress Limit Reset switch.
On TIC1U:
set S.P.1 to 0+/-5 deg C
set S.P.2 to 600+/-5 deg C
depress Limit Reset switch.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.01.05.00 using FMS-11 form 'D1MAIN' and overlay 3315

Depress Heater Reset switch S2 to energize the Dissolver 1 lower zone heaters.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 03.03.01.05.00)

Step 04.03.01.06.00 using FMS-11 form 'D1MAIN' and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.03.03.00.00

Step 04.03.02.00.00 using FMS-11 form 'D1MAIN' and overlay 0PRACK

At the Dissolver Heater Temperature Control Panel:
On TIC1L, set S.P.1 to 450+/-5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.03.00.00 using FMS-11 form 'D1DIS1' and overlay 4321

Sensors pertinent to the secondary heatup will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

Plot A (temperature) is displayed on the GIGI terminal. Various sensors are read and displayed every minute, including the lower zone average temperature (TCL0AV) and dissolver pressure (PT-7). When the lower zone average temperature is greater than 300 deg C, PCS-00 is energized to reduce the cooling water flow (FM-1) to the dissolver. When the lower zone average temperature is greater than 400 deg C and the dissolver pressure is greater than 115 PSIG, the dissolver heatup is complete and the secondary dissolution start time is logged. The procedure automatically continues to the next step.

Step 04.04.00.00.00 using FMS-11 form 'D1MAIN' and overlay 0DUWY

Step title: 'SECONDARY DISSOLUTION'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.04.01.00.00 using FMS-11 form 'D1DIS2' and overlay 441

Sensors pertinent to the secondary dissolution will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

See step 03.04.01.00.00 (341) (except secondary dissolution will last 3 hours).

Parameter record 1 is a sensor criteria record for sensor D1FM-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min alarm2 min automatic

reading
 Alternate alarm minimum set point = 0.400000
 Alarm limit minimum set point = 0.500000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1PT-7
 Frequency of reading set to 0 min. 15 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max
 alarm2 min automatic reading
 Alternate alarm minimum set point = 90.0000
 Alternate alarm maximum set point = 130.000
 Alarm limit minimum set point = 115.000
 Alarm limit maximum set point = 120.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 3 hr., 0 min., 0 sec., 0 ticks.

Step 04.05.00.00.00 using FMS-11 form "D1MAIN" and overlay DDUMMY
 Step title: "DISSOLVER COOLDOWN"
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.05.01.00.00 using FMS-11 form "D1MAIN" and overlay PIB

At the Dissolver Heater Temperature Control
 Panel:
 On temperature controller TIC1L, adjust
 S.P.1 to 95+/-5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.00.01.00.00)

Step 04.05.01.01.00 using FMS-11 form "D1MAIN" and overlay SENS14
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.05.01.01.00)

Parameter record 1 is a sensor criteria record for sensor D1TC-1
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3

Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-13
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1PT-1
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1PT-7
 Monitoring status -- turn off: alarm1 min alarm2 min
 Monitoring status -- turn on: (none)

Step 04.05.02.00.00 using FMS-11 form "D1MAIN" and overlay 4052

PCS-17 is energized to initiate full cooling
water flow to the Dissolver condenser

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 03.05.02.00.00)

Step 04.05.03.00.00 using FMS-11 form "D1DIS3" and overlay 451

Sensors pertinent to the secondary cooldown
will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

See step 03.05.03.00.00 (351).

Parameter record 1 is a sensor criteria record for sensor D1TC-42
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-43
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-13

Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1TC-42
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1TC-43
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 15 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: (none)
Monitoring status -- turn on: (none)

Parameter record 16 is a sensor criteria record for sensor D1PT-9
Monitoring status -- turn off: (none)
Monitoring status -- turn on: (none)

Parameter record 17 is a sensor criteria record for sensor D1PT-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 18 is a sensor criteria record for sensor D1FM-1
Monitoring status -- turn off: alarm2 min
Monitoring status -- turn on: (none)

Step 04.05.04.00.00 using FMS-11 form "D1MAIN" and overlay DS1450

PCS-00 is energized to reduce condenser
cooling water flow to the Dissolver.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram F (Dissolver Pressurization) is displayed on the GIGI terminal
and PCS-00 is energized. The procedure automatically continues to the next
step.

Step 04.05.05.00.00 using FMS-11 form "D1MAIN" and overlay SENS10
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-5
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-6
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1PT-1
Monitoring status -- turn off: alarm1 max alarm1 min
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1PT-3
Monitoring status -- turn off: alarm1 min
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1PT-9
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1PT-13
Monitoring status -- turn off: alarm1 max alarm1 min
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1FM-1
Monitoring status -- turn off: alarm1 min
Monitoring status -- turn on: (none)

Step 04.05.05.01.00 using FMS-11 form "D1MAIN" and overlay NOBLKK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 04.06.00.00.00

Step 04.05.06.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the Dissolver Heater Temperature Control
Panel:
turn control power switch S5 to 'OFF'
turn temperature controller TIC1L and TIC1U
power switches to 'OFF'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.05.07.00.00 using FMS-11 form "D1MAIN" and overlay PIB

At Dissolver Heater Power Supply Cabinet PE1:
position disconnect to 'OFF'.
Enter kilowatt-hour information into the
Dissolver Heater Usage Log after the heaters
are deenergized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine.

(See step 02.09.01.00.00)

Step 04.05.09.00.00 using FMS-11 form "D1MAIN" and overlay NOBLNK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 04.06.00.00.00

Step 04.05.09.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn off cooling water pump P-1, and close
cooling water bulkhead valve V-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.06.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "OFF-GAS TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.06.01.00.00 using FMS-11 form "D1MAIN" and overlay 361

PCS-08 is energized to pressurize the
Dissolver vessel with dry air to 120 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.06.01.00.00)

Step 04.06.02.00.00 using FMS-11 form "D1MAIN" and overlay 362

PCS-08 is energized to vent the Dissolver
vessel to the Hold Tank until pressures have
equalized to +/-1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.06.01.01.00)

Step 04.06.03.00.00 using FMS-11 form "D1MAIN" and overlay 365

PCS-09 is energized to pump residual gas in
the Dissolver vessel to the Hold Tank. OBSERVE
PG-7 TO ENSURE THAT PUMP P-3 SHUTS OFF AT LESS
THAN 2, BUT BEFORE 0 PSIG. GREEN LIGHT ON
CONTROLLER INDICATES P-3 IS ON. USE
OUT-OF-CELL PUMP 'OFF' SWITCH IF NECESSARY!

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.06.05.00.00)

Step 04.06.04.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.07.02.02.00

Step 04.07.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "SOLUTION SAMPLING AND TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UNMY

Step title: "Solution Sampling Preparation"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.01.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert and fasten the tubing-union end of a clean, secondary dissolution sampling line into the sample port connection on control valve CV-13. Fasten the union to the sample port using a 7/16 in. wrench on the smaller nut while pushing (with the wrench) the union toward the port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the two 'DS' sample bottles in the middle two slots of the bottle clamp fixture, in order (1 to 2) from left to right. Clamp the bottles by energizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the cap from each sample bottle and set the cap in the clamp fixture recess in front of the bottle. DO NOT MIX UP THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.01.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the stopper end of the sampling line into sample bottle no. 1, and press the stopper firmly into the bottle. Then connect the free tubing end from sample pump P-5 to the plastic hose fitting in the stopper.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UNMY

Step title: "Blend Tank Preparation for Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.02.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Step title: "Place the Blend Tank in TRANSFER WEIGHING CONDITION"

Vacuum line connected to Blend Tank vacuum port
Solution fill line connected to Blend Tank fill port
Blend Tank lid valve fully closed
Blend Tank mixing motor in stored position
Cap installed over mixer coupling
(continued to next step)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.02.01.01 using FMS-11 form "D1MAIN" and overlay OPRACK

(continued from previous step)
Internal thermocouple removed from Blend Tank
Lid thermocouple removed from lid holder
Hot Plate power cord disconnected from hot plate receptacle
Blend Tank, hot plate, and support plate are free of all other trailing leads, cords, lines, tools, or other foreign objects

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.02.02.00 using FMS-11 form "DISCR" and overlay 4723

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.07.02.02.00 (3713) (except step weight is stored for use in step 4.7.7.1 (4771)).

Step 04.07.03.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Secondary Solution Transfer to Blend Tank"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.03.01.00 using FMS-11 form "D1SCL" and overlay 4731

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PCS-00 is energized to stop evacuation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.01.00)

Step 04.07.03.01.01 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.07.05.00.00

Step 04.07.03.02.00 using FMS-11 form "D1MAIN" and overlay 4732

PCS-04 is energized to begin vacuum transfer of the secondary dissolution from the Dissolver to the Blend Tank. After at least 500 g of solution has been transferred, PCS-05 is energized to automatically stop the transfer to allow for sampling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the dissolver pressure (PT-7) is read. If the pressure is greater than 5 PSIG, PCS-04 will not be energized, and the operator is prompted to correct the problem. When the problem is corrected, a <RETURN> entered by the operator will repeat the step. If the dissolver pressure is equal to or less than 5 PSIG, PCS-04 is energized. The blend tank pressure (PT-15), blend tank weight (BAL-5), vacuum reservoir tank pressure (PT-17), and dissolver pressure are read and displayed every 5 seconds. When the blend tank weight times the calibration factor is greater than 500 g, PCS-05 is energized. The blend tank weight is then updated and displayed. The initial solution transfer is complete, and the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm in automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS:
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.07.04.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Secondary Dissolution Solution Sampling"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.04.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set sample pump P-5 directional switch to the 'FORWARD' position and begin slowly draining a solution from the Dissolver to the first sample bottle. When the solution level in the bottle is at the red line, stop the pump.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.04.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set sample pump P-5 directional switch to the 'REVERSE' position and begin to slowly backflush residual solution in the sample bottle and sampling line into the Dissolver. Stop the pump when the line is clear.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.04.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Repeat the sampling procedure to fill the remaining sample bottle. Turn off pump P-5 when sampling is completed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.04.04.00 using FMS-11 form "D1MAIN" and overlay 4747

Gently remove the free tubing end from sample pump P-5 from the plastic hose fitting in the stopper. Gently remove the stopper assembly from the last sample bottle and set aside in the drip pan. Carefully cap each filled 'DS' sample bottle. DO NOT MIX UP THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized. The procedure continues to the next step, after an operator sign-off. P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal.

Step 04.07.05.00.00 using FMS-11 form "D1MAIN" and overlay 600MMY

Step title: "Completion of Solution Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.05.01.00 using FMS-11 form "D1SCR3" and overlay 4751

PCS-04 is reenergized to complete the transfer of the secondary dissolution from the Dissolver to the Blend Tank. The transfer is completed and PCS-00 is energized when both tank pressures are greater than -0.5 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 15-second delay, the dissolver pressure (PT-7) is read. If the pressure is greater than 5 PSIG, PCS-04 will not be energized, and the operator is prompted to correct the problem. When the problem has been corrected, a <RETURN> entered by the operator will repeat the step. If the dissolver pressure is equal to or less than 5 PSIG, the vacuum reservoir tank pressure (PT-17) is checked. (If this step is repeated due to an incomplete recovery the vacuum reservoir tank pressure is not checked.) If it is greater than -7.5 PSIG, there is insufficient pressure to proceed. The operator is informed that PCS-19 will be energized after a 10-minute delay. When PCS-19 is energized, the vacuum reservoir tank pressure is updated and displayed every 5 seconds. When the vacuum reservoir tank pressure is less than -9 PSIG, or if

the vacuum pressure was originally less than -7.5 PSIG, the step continues on to energize PCS-04. After PCS-04 is energized the blend tank weight (BAL-5), blend tank pressure (PF-15), vacuum reservoir tank pressure (PT-17), and dissolver pressure are read and displayed every 5 seconds. When the blend tank pressure and the vacuum tank pressure are greater than -0.5 PSIG, PCS-00 is energized. After a 10-second delay, the blend tank weight is read and displayed. The secondary dissolution transfer is terminated and the procedure continues to the next step, after an operator sign-off.

Parameter record 1 is a sensor criteria record for sensor DIPT-6
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm min automatic reading
 Alarm limit minimum set point = 95.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.07.05.02.00 using FMS-11 form "D1MAIN" and overlay BLANK
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.07.07.00.00

Step 04.07.06.00.00 using FMS-11 form "D1MAIN" and overlay DDUMMY
 Step title: "Sample Bottle Weighing"
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.06.01.00 using FMS-11 form "D1MAIN" and overlay SUP

Recheck that each sample bottle cap is properly seated and FULLY TIGHTENED. Unclamp the secondary dissolution sample bottles by deenergizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After executing the instructions in the step description, the operator enters his initials and then the shift supervisor enters his initials. The procedure then continues to the next step.

Step 04.07.06.02.00 using FMS-11 form "DISCRL" and overlay PSEDTT

Weigh the two 'DS' sample bottles.
 Type 'R' <RETURN> to take a balance reading.
 Type 'B' <RETURN> to repeat the previous balance reading.
 After weighing, place each bottle in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter the in-cell balance number that the solution sample bottles will be weighed on. The balance number entered must be 7 or 8 or the operator is again prompted to enter the balance number. BALCC is then automatically run on the balance designated by the operator. If BALCC passes, the sample bottles are weighed. If BALCC fails, BALQA will run. If BALQA passes, the sample bottles can be weighed. If BALQA fails, the procedure goes into Exception Handling and the operator must enter a comment before proceeding with weighing the bottles (or take some other appropriate action). The weighing of the two sample bottles consists of taking a tare reading, a sample bottle weight, and tare reading for each bottle. First, the operator is prompted to tare, then read the balance by entering 'R' <RETURN>. The tare reading must be 0/-0.005 g or the operator is prompted to retare the balance. The operator then weighs the bottle and cap by placing them on the balance and entering 'R' <RETURN>. A final tare reading is then taken, after removing the bottle and cap, by entering 'R' <RETURN>. The full bottle weight is calculated by subtracting from the bottle and cap weight the average of the tare readings. The following values are displayed to the operator:

weight of the empty sample bottle
 weight of the filled sample bottle
 net solution sample weight.

The following values are stored in the file P0:[4,7]BTTLEx.DAT, where x designates the rod letter:

sample bottle identification
 out-of-cell empty bottle weight
 in-cell empty bottle w/cap weight
 difference between empty bottle weights
 in-cell filled bottle weight
 net solution sample.

The filled bottle weight and the net sample weight are also logged. The remaining bottle is weighed in the same manner. When both bottles are weighed, the sum of the dissolver (DS) net sample weights is logged and the procedure continues to the next step, after an operator sign-off.

Step 04.07.07.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

Step title: "Material Balance Check"

MENU TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.07.07.01.02

Step 04.07.07.01.00 using FMS-11 form "DISCRL" and overlay 4771

The weight of the secondary dissolution
transferred from the Dissolver to the Blend
Tank is now determined, and a solution
material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter 'R' <RETURN> to read the blend tank (BAL-5) readout (the weight of the blend tank with the secondary dissolver solution). This weight is multiplied by the balance calibration factor and is subtracted from the tare weight from step 4.7.2.2 (4723) to determine the weight of solution transferred. This weight is added to the net weight of solution in the solution sample bottles DS-1 and DS-2 and is divided by the THOREX-AL reagent weight from step 4.1.1.1 (412). This value is then multiplied by 100 to get the percent recovery. If the percent recovery is equal to or greater than 98%, a complete solution recovery is indicated. The secondary dissolution solution transfer weight and the percent of secondary dissolution solution transferred are logged, and the procedure continues to the next step, after an operator sign-off. If the percent recovery is less than 98%, a message is displayed informing the operator that an incomplete secondary dissolution solution transfer is indicated and that step 4.7.5.1 (4751) will be repeated, after a 10-minute delay (to allow time for decay of 220 Rn). If this step fails a second time, the procedure goes into Exception Handling and a comment regarding the incomplete recovery must be entered. The procedure then returns to this step and the secondary dissolution solution transfer weight and secondary dissolution solution transferred are logged. The procedure continues to the next step, after an operator sign-off.

Step 04.07.07.01.01 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend
Tank Assembly by means of the pneumatic
elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 04.07.07.01.02 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 04.08.00.00.00

Step 04.07.07.01.03 using FMS-11 form "DISCRL" and overlay 47711

The weight of the secondary dissolution
transferred from the Dissolver to the Blend
Tank is now determined, and a solution
material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.07.07.01.04 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend
Tank Assembly by means of the pneumatic
elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.02.02.01.01)

Step 04.07.07.01.05 using FMS-11 form 'D1MAIN' and overlay BLANK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 04.10.00.00.00

Step 04.08.00.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY
Step title: 'DISSOLVER VESSEL REFLUX RINSING'
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.01.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY
Step title: 'Reagent Metering'
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.01.01.00 using FMS-11 form 'D1MAIN' and overlay 4821

At the Reagent Charging Station in MA-010 add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

See step 03.08.01.01.00 (3821).

Step 04.00.01.02.00 using FMS-11 form 'DISCR1' and overlay 4022

After the dilute NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action 'slave' routine:

See step 03.08.01.02.00 (3822) (except NITRIC weight is 202+/-5)

Step 04.08.02.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY
Step title: 'Dissolver Rinsing'
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 04.08.02.01.00 using FMS-11 form 'D1MAIN' and overlay 313

PCS-01 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Dissolver through the Dissolver spray ring per the 'Reagent Charging Procedure' posted at the charging station

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action 'slave' routine:

(See step 03.01.03.00.00)

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.08.03.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Dissolver Heat-Up"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.03.01.00 using FMS-11 form "D1MAIN" and overlay PIBNO

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram B (Dissolver Cooling System) is displayed on the GIGI terminal.
This step is not part of an operator sign-off step.

Step 04.08.03.01.01 using FMS-11 form "D1MAIN" and overlay SENS24

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.08.03.01.00)

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 40.0000

Alarm limit maximum set point = 35.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-3

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 50.0000

Alarm limit maximum set point = 45.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-5

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 30.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 4 is a sensor criteria record for sensor D1TC-6

Frequency of reading set to 0 min. 30 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max automatic reading

Alarm limit maximum set point = 25.0000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 5 is a sensor criteria record for sensor D1TC-13

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 300.000

Alarm limit maximum set point = 275.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 6 is a sensor criteria record for sensor D1TC-15

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 300.000

Alarm limit maximum set point = 275.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 7 is a sensor criteria record for sensor D1TC-17

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 300.000

Alarm limit maximum set point = 275.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 8 is a sensor criteria record for sensor D1TC-19

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 300.000

Alarm limit maximum set point = 275.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 9 is a sensor criteria record for sensor D1TC-21

Frequency of reading set to 1 min. 0 sec. 0 ticks.

Monitoring status -- turn off: (none)

Monitoring status -- turn on: alarm1 max alarm2 max automatic
reading

Alternate alarm maximum set point = 300.000

Alarm limit maximum set point = 275.000

New exception receiver queue name is OPRDS1

Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 10 is a sensor criteria record for sensor D1TC-23
 Frequency of reading set to 1 min. 0 sec. 0 ticks
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 300.000
 Alarm limit maximum set point = 275.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 11 is a sensor criteria record for sensor D1TC-25
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 300.000
 Alarm limit maximum set point = 275.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 12 is a sensor criteria record for sensor D1TC-27
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 300.000
 Alarm limit maximum set point = 275.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 13 is a sensor criteria record for sensor D1TC-29
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 300.000
 Alarm limit maximum set point = 275.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 14 is a sensor criteria record for sensor D1TC-31
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 300.000
 Alarm limit maximum set point = 275.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 15 is a sensor criteria record for sensor D1TCLOAV
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)

Monitoring status -- turn on: automatic reading
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 16 is a sensor criteria record for sensor D1TCUPAV
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: automatic reading
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 17 is a sensor criteria record for sensor D1PT-1
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max automatic reading
 Alternate alarm maximum set point = 80.0000
 Alarm limit minimum set point = 10.0000
 Alarm limit maximum set point = 50.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks

Parameter record 18 is a sensor criteria record for sensor D1PT-3
 Frequency of reading set to 2 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 min automatic reading
 Alarm limit minimum set point = 10.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 19 is a sensor criteria record for sensor D1PT-6
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 min automatic reading
 Alarm limit minimum set point = 95.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 20 is a sensor criteria record for sensor D1PT-7
 Frequency of reading set to 0 min. 15 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 130.000
 Alarm limit maximum set point = 120.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 21 is a sensor criteria record for sensor D1PT-9
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm1 max alarm2 max automatic reading
 Alternate alarm maximum set point = 35.0000

Alarm limit maximum set point = 30.0000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks

Parameter record 22 is a sensor criteria record for sensor D1PT-11
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm max alarm min automatic reading
 Alarm limit minimum set point = 123.000
 Alarm limit maximum set point = 128.000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 23 is a sensor criteria record for sensor D1PT-13
 Frequency of reading set to 1 min. 0 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm max alarm min automatic reading
 Alarm limit minimum set point = 2.00000
 Alarm limit maximum set point = 8.00000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 24 is a sensor criteria record for sensor D1FW-1
 Frequency of reading set to 0 min. 30 sec. 0 ticks.
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: alarm min automatic reading
 Alarm limit minimum set point = 1.00000
 New exception receiver queue name is OPRDS1
 Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.08.03.02.00 using FMS-11 form "D1MAIN" and overlay 3311

PCS-16 is energized to initiate full cooling water flow to the Dissolver vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 03.03.01.01.00)

Step 04.08.03.03.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

At the Dissolver Heater Temperature Control Panel:
 On TIC1L, set S P.1 to 220 +/- 5 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.03.04.00 using FMS-11 form "D1DIS1" and overlay 4835

Sensors pertinent to the secondary reflux heatup will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

Various sensors are read and displayed every minute, including the lower zone average temperature (TCLOAV). When the lower zone average temperature is greater than 210 deg C, the dissolver heatup is complete, the secondary dissolution reflux start time is logged, and the procedure automatically continues to the next step.

Step 04.08.04.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Dissolver Reflux"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.03.04.01.03 using FMS-11 form "D1DIS2" and overlay 4041

Sensors pertinent to the secondary reflux will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

See step 03.04.01.00.00 (341) (except secondary reflux will last 30 minutes and alarm for PT-7 low dissolver pressure is 0 PSIG).

Parameter record 1 is a sensor criteria record for sensor D1FM-1
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min alarm2 min automatic reading
Alternate alarm minimum set point = 0.400000
Alarm limit minimum set point = 0.500000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1PT-7
Frequency of reading set to 0 min. 15 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max alarm1 min alarm2 max alarm2 min automatic reading
Alternate alarm minimum set point = 0.000000
Alternate alarm maximum set point = 130.000
Alarm limit minimum set point = 1.00000
Alarm limit maximum set point = 120.000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 30 min., 0 sec., 0 ticks.

Step 04.08.05.01.01 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Dissolver Cooldown"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.05.01.03 using FMS-11 form "D1MAIN" and overlay 0PRACK

At the Dissolver Heater Temperature Control Panel:
turn control power switch S5 to 'OFF'
turn temperature controller TIC1L and TIC1U power switches to 'OFF'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 04.08.05.01.01 using FMS-11 form "D1MAIN" and overlay SENS14

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 03.05.01.01.00)

Parameter record 1 is a sensor criteria record for sensor D1TC-1
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-3
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1PT-1
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: alarm1 min alarm2 min
Monitoring status -- turn on: (none)

Step 04.00.05.02.00 using FMS-11 form "D1MAIN" and overlay PIB

At Dissolver Heater Power Supply Cabinet PE1:
position disconnect to 'OFF'.
Enter kilowatt-hour information into the
Dissolver Heater Usage Log after the heaters
are deenergized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.00.01.00.00)

Step 04.00.05.02.01 using FMS-11 form "D1MAIN" and overlay PLENUM

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.03.02.00)

Parameter record 1 is a logic branch to step 04.00.05.05.02

Step 04.00.05.03.00 using FMS-11 form "D1MAIN" and overlay 4052

PCS-17 is energized to continue full cooling
water to the Dissolver condenser.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.05.02.00.00)

Step 04.00.05.04.00 using FMS-11 form "D1DIS3" and overlay 4053

Sensors pertinent to the secondary reflux
cooldown will be displayed at this step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.00.05.03.00)

Parameter record 1 is a sensor criteria record for sensor D1TC-42
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 2 is a sensor criteria record for sensor D1TC-43
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 max automatic reading
Alarm limit maximum set point = 40.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Parameter record 3 is a sensor criteria record for sensor D1TC-13
Monitoring status -- turn off: alarm1 max

Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-15
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-17
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-19
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-21
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-23
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-25
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-27
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-29
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-31
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1TC-42
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1TC-43
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 15 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: (none)
Monitoring status -- turn on: (none)

Parameter record 16 is a sensor criteria record for sensor D1PT-9
Monitoring status -- turn off: (none)
Monitoring status -- turn on: (none)

Parameter record 17 is a sensor criteria record for sensor D1PT-13
Monitoring status -- turn off: alarm2 max
Monitoring status -- turn on: (none)

Parameter record 18 is a sensor criteria record for sensor D1FM-1
Monitoring status -- turn off: alarm1 min alarm2 min
Monitoring status -- turn on: (none)

Step 04.08.05.04.01 using FMS-11 form "D1MAIN" and overlay SENS1
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

Activates 1 sensor criteria alarm.

Parameter record 1 is a sensor criteria record for sensor D1PT-1
Monitoring status -- turn off: alarm1 min
Monitoring status -- turn on: (none)

Step 04.08.05.05.00 using FMS-11 form "D1MAIN" and overlay PC0

PCS-00 is energized to close condenser cooling
water valves to the Dissolver.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized and the operator is prompted to execute the instructions
in the step description. The procedure continues to the next step after an
operator sign-off.

Step 04.08.05.05.01 using FMS-11 form "D1MAIN" and overlay NOPLE1
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

If a plenum dissolution is not specified, the procedure goes to the step
specified by the branch number.

Parameter record 1 is a logic branch to step 04.08.05.06.00

Step 04.08.05.05.02 using FMS-11 form "D1MAIN" and overlay SENS17
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Activates 17 sensor criteria alarms.

Parameter record 1 is a sensor criteria record for sensor D1TC-13
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1TC-15
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1TC-17
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 4 is a sensor criteria record for sensor D1TC-19
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 5 is a sensor criteria record for sensor D1TC-21
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 6 is a sensor criteria record for sensor D1TC-23
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 7 is a sensor criteria record for sensor D1TC-25
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 8 is a sensor criteria record for sensor D1TC-27
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 9 is a sensor criteria record for sensor D1TC-29
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 10 is a sensor criteria record for sensor D1TC-31
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 11 is a sensor criteria record for sensor D1TC-42
 Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 12 is a sensor criteria record for sensor D1TC-43

Monitoring status -- turn off: alarm1 max
 Monitoring status -- turn on: (none)

Parameter record 13 is a sensor criteria record for sensor D1PT-7
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: (none)

Parameter record 14 is a sensor criteria record for sensor D1PT-9
 Monitoring status -- turn off: (none)
 Monitoring status -- turn on: (none)

Parameter record 15 is a sensor criteria record for sensor D1PT-13
 Monitoring status -- turn off: alarm2 max
 Monitoring status -- turn on: (none)

Parameter record 16 is a sensor criteria record for sensor D1FM-1
 Monitoring status -- turn off: alarm1 min alarm2 min
 Monitoring status -- turn on: (none)

Parameter record 17 is a sensor criteria record for sensor D1PT-1
 Monitoring status -- turn off: alarm1 min
 Monitoring status -- turn on: (none)

Step 04.08.05.06.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn off cooling water pump P-1, and close
 cooling water bulkhead valve V-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.08.06.00.00 using FMS-11 form "D1MAIN" and overlay PLENUM
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.03.02.00)

Parameter record 1 is a logic branch to step 04.10.00.00.00

Step 04.09.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
 Step title: "REFLUX SOLUTION TRANSFER"
 MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
 /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.01.09.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Blend Tank Preparation for Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.01.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Step title: "Place the Blend Tank in the TRANSFER WEIGHING CONDITION"

Vacuum line connected to Blend Tank Vacuum Port
Solution fill line connected to Blend Tank fill port
Blend Tank lid valve fully closed
Blend Tank mixing motor in stored position
Cap installed over mixer coupling
(continued to next step)

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.01.01.01 using FMS-11 form "D1MAIN" and overlay 0FRACK

(continued from previous step)
Internal thermocouple removed from Blend Tank
Lid thermocouple removed from lid holder
Hot plate power cord disconnected from hot plate receptacle
Blend Tank, hot plate, and support plate are free of all other trailing leads, cords, lines, tools, or other foreign objects

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.02.05.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Rinse Solution Transfer to Blend Tank"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.02.01.00 using FMS-11 form "D1SCRL" and overlay 4731

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PSC-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.01.00)

Step 04.09.02.02.00 using FMS-11 form "D1SCRL" and overlay 3013

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.02.00)

Step 04.09.02.03.00 using FMS-11 form "D1SCR3" and overlay 3042

PCS-04 is energized to begin vacuum transfer of the rinse solution from the Dissolver to the Blend Tank. When the transfer is completed, PCS-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.03.00)

Step 04.09.03.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Material Balance Check"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.09.03.01.00 using FMS-11 form "DISCRL" and overlay 4051

The weight of rinse solution transferred from the Dissolver to the Blend Tank is now determined, and a solution material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter 'R' (RETURN) to read the blend tank (BAL-5) readout (the weight of the blend tank with the secondary reflux rinse). This weight is multiplied by the balance calibration factor and is subtracted from the tare from step 4.9.2.2 (3813) to determine the net weight of the reflux rinse solution transferred to the blend tank. This weight is divided by the amount of NITRIC reagent added in step 4.8.1.2 (4822) and multiplied by 100 to get the percent recovery. If the percent recovery is equal to or greater than 98%, a complete rinse solution transfer is indicated. The secondary reflux solution transfer weight and the percent secondary reflux solution transferred are logged, and the procedure continues to the next step, after an operator sign-off. If the percent recovery is less than 98%, a message is displayed informing the operator that an incomplete reflux solution transfer is indicated, and that step 4.9.2 will be repeated, after a 10-minute delay. If the step fails a second time, the procedure goes into Exception Handling and a comment regarding the incomplete recovery must be entered. After the comment is entered, the secondary reflux solution transfer weight and the percent secondary reflux solution transferred are logged. The procedure continues to the next step, after an operator sign-off.

Step 04.10.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "DISSOLVER VESSEL RINSING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.10.01.00.00 using FMS-11 form "DISCRL" and overlay 3013

Step title: "Blend Tank Preparation For Transfer"

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.02.00)

Step 04.10.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Reagent Metering"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 04.10.02.01.00 using FMS-11 form "D1MAIN" and overlay 41021

At the Reagent Charging Station in MA-010 add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram E (Reagent and Solution Transfer) is displayed on the GIGI terminal. After a 15-second delay the amount of NITRIC reagent added to the charge vessel is displayed. The procedure continues to the next step, after an operator sign-off.

Step 04.10.02.02.00 using FMS-11 form "DISCR1" and overlay 41022

After the dilute NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.08.01.02.00 (except if 'NITRIC' is not entered on second try step 4.10.2.1 will be repeated and amount of 'NITRIC' is 253+/-5 g).

Step 04.10.03.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Dissolver Rinsing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.10.03.01.00 using FMS-11 form "D1MAIN" and overlay 313

PCS-01 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Dissolver through the Dissolver spray ring per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.01.03.00.00)

Parameter record 1 is a sensor criteria record for sensor D1PT-6
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 04.10.04.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Rinse Solution Transfer to Blend Tank"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 04.10.04.01.00 using FMS-11 form "D1MAIN" and overlay PIC

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

P & I diagram C (Blend Tank Evacuation System) is displayed on the GIGI terminal. This step is not part of an operator sign-off step.

Step 04.10.04.01.01 using FMS-11 form "DISCR1" and overlay 4731

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PSC-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.01.00)

Step 04.10.04.02.00 using FMS-11 form "D1SCR3" and overlay 3842

PCS-04 is energized to begin vacuum transfer of the rinse solution from the Dissolver to the Blend Tank. The transfer is completed and PCS-00 is energized when both tank pressures are greater than -0.5 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.09.02.03.00)

Step 04.10.05.02.00 using FMS-11 form "D1MAIN" and overlay 00UMNY

Step title: "Material Balance Check"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 04.10.05.01.00 using FMS-11 form "DISCRL" and overlay 41051

The weight of rinse solution transferred from the Dissolver to the Blend Tank is now determined, and a solution material balance check calculation is made.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter 'R' (RETURN) to read the blend tank (BAL-5) readout (the weight of the blend tank with the secondary dissolution cold rinse). This weight is multiplied by the calibration factor and is subtracted from the tare reading from step 4.10.1 (3813). This weight is divided by the weight of the NITRIC reagent added in step 4.10.2.2 (41022) and multiplied by 100 to get the percent recovery. If the percent recovery is equal to or greater than 98%, a complete cold rinse solution transfer is indicated. The secondary dissolution cold rinse transfer weight and the percent of the secondary dissolution cold rinse transferred are logged, and the procedure continues to the next step, after an operator sign-off. If the percent recovery is less than 98%, a message is displayed informing the operator that an incomplete rinse solution transfer is indicated and step 4.10.4 will be repeated, after a 10-minute delay (to allow time for decay of 220 Rn). If this step fails a second time, the procedure goes into Exception Handling and a comment regarding the incomplete recovery must be entered. The procedure then returns to this step and the secondary dissolution cold rinse transfer weight and the secondary dissolution percent cold rinse transferred are logged and the procedure continues to the next step, after an operator sign-off.

Step 04.10.05.02.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine.

(See step 02.02.02.01.01)

Step 04.10.08.00.00 using FMS-11 form "D1MAIN" and overlay SENS03

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine.

Activates 3 sensor criteria alarms.

Parameter record 1 is a sensor criteria record for sensor D1PT-7
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 2 is a sensor criteria record for sensor D1PT-9
Monitoring status -- turn off: alarm1 max
Monitoring status -- turn on: (none)

Parameter record 3 is a sensor criteria record for sensor D1PT-11
Monitoring status -- turn off: alarm1 max alarm1 min
Monitoring status -- turn on: (none)

Step 04.10.06.01.00 using FMS-11 form "D1MAIN" and overlay 41061

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.11.06.00.00)

Step 05.00.00.00.00 using FMS-11 form "D1MAIN" and overlay SBGRPH

Step title: "BLEND TANK OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The Blend Tank operation HEATUPLUG is started on the GIGI terminal that corresponds to the dissolver procedure being run.

Step 05.01.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "UNSPIKED SOLUTION BLENDING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Check Balance Performance"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.01.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions posted at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.02.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.02.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.02.02.00 using FMS-11 form "D1SCRL" and overlay 0121

The Blend Tank Assembly is now weighed automatically. Ensure the the assembly is free of foreign objects during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0 +/- 1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with unspiked, unmixed, unsampled solution is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0 +/- 1 g or the step goes into Exception Handling. The corrected weight of the unspiked, unmixed, unsampled solution is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (\text{T}_1 + \text{T}_2)/2] * \text{CALF}$$

This weight is displayed and logged. The weight of unspiked, unmixed, unsampled solution is calculated by subtracting the weight of the blend tank assembly with unspiked, unmixed, unsampled solution from the weight of the empty blend tank assembly logged in step 2.2.2.1.7 (2215). This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 05.01.03.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Solution Blending"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.03.01.00 using FMS-11 form "D1MAIN" and overlay PIC

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.10.04.01.00)

Step 05.01.03.01.01 using FMS-11 form "D1MAIN" and overlay 6131

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PCS-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-19 is energized and the vacuum reservoir tank pressure (PT-17) is read and displayed every 5 seconds. When the tank pressure is equal to or less than -9 PSIG, PCS-00 is energized and a final vacuum reservoir tank pressure is displayed. The procedure continues to the next step, after an operator sign-off.

Step 05.01.03.02.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Connect the vacuum line to the Blend Tank vacuum connection port. Remove the Blend Tank cap and set it on the lid thermocouple holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.03.03.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Position the Blend Tank mixing motor M-1 over the Blend Tank and engage the mixer coupling. With the mixing coupling engaged, turn on Blend Tank mixing motor M-1 to begin mixing the unspiked Blend Tank solution. Set the mixing motor speed control to setting '4'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.03.04.00 using FMS-11 form "D1MAIN" and overlay PC10

PCS-18 is energized to begin a slow evacuation of the Blend Tank headspace gas.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-18 is energized to evacuate the blend tank. After a 5-second delay, the procedure automatically continues to the next step.

Step 05.01.03.05.00 using FMS-11 form "D1MAIN" and overlay 6137

The Blend Tank unspiked solution is mixed for 30 minutes. Periodically observe the mixer coupling to verify mixer operation.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The blend tank unspiked solution is mixed for 30 minutes. During the 30 minutes, the elapsed mixing time, remaining mixing time, vacuum reservoir tank pressure (PT-17), vacuum reservoir tank pressure increase rate, and blend tank pressure (PT-15) are read and displayed every 30 seconds. When the 30 minutes has elapsed, the procedure automatically continues to the next step.

Step 05.01.03.06.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Mixing of the Blend Tank unspiked solution is completed. Turn off mixing motor M-1 and return the motor to its stored position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.03.07.00 using FMS-11 form "D1MAIN" and overlay PC0

PCS-00 is energized to stop Blend Tank he: space evacuation. Disconnect the vacuum line from the Blend Tank vacuum connection port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.00.05.05.00)

Step 05.01.04.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.04.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions posted at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.04.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.01.04.03.00 using FMS-11 form "D1SCRL" and overlay 6142

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0/-1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with unspiked, mixed, unsampled solution is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0/-1 g or the step goes into Exception Handling. This weighing procedure is repeated 3 times. The corrected weight of the unspiked, mixed, unsampled solution is calculated as follows:

$$\text{corrected wt.} = [(R1 + R2 + R3)/3 - (T1 + T2 + T3 + T4)/2] * CALF$$

This weight is displayed and logged. The weight of unspiked, mixed, unsampled solution is calculated by subtracting the weight of the blend tank assembly with unspiked, mixed, unsampled solution from the weight of the empty blend tank assembly logged in step 2.2.2.1.7 (22215). This weight is displayed and logged. The weight of solution loss during mixing is calculated by subtracting the weight of the unspiked, mixed, unsampled solution from the weight of the unspiked, unmixed, unsampled solution logged in step 5.1.2.2 (6121). This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 05.02.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY
Step title: "UNSPIKED SOLUTION SAMPLING"
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.00.00 using FMS-11 form "D1MAIN" and overlay BLANK
Step title: "Solution Sampling"
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 05.02.01.01.02

Step 05.02.01.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the four 'UB' sample bottles in the bottle clamp fixture, in order (1 to 4) from left to right. Clamp the bottles by energizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.01.01 using FMS-11 form "D1MAIN" and overlay NOBLNK
MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 05.02.01.02.00

Step 05.02.01.01.02 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the two 'UB' sample bottles in the bottle clamp fixture, in order (1 to 2) from left to right. Clamp the bottles by energizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the cap from each sample bottle, and set the cap from each bottle in the clamp fixture recess in front of the bottle. DO NOT MIX THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the Blend Tank cap and set it on the lid thermocouple holder. Position Blend Tank mixing motor M-1 over the Blend Tank and engage the mixer coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Open Blend Tank lid valve V-37 and insert a clean disposable polyethylene sampling tube into the valve orifice. Then, slightly close the valve to lock the sampling tube in place.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.05.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on Blend Tank mixing motor M-1 to start solution mixing. Set the mixing motor speed control to setting '4'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.06.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the stopper end of a clean, unused sampling line into sample bottle no. 1 and press the stopper firmly into the bottle. Then connect the free tubing end from sample pump P-5 to the plastic hose fitting in the stopper.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.07.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the long tubing end of the sampling line into the Blend Tank through the rigid sampling tube in the lid valve. Insert the line through the sampling tube up to the stopper, which will suspend the line at the bottom of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.08.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set the sample pump P-5 directional switch to the 'FORWARD' position and begin slowly drawing a solution from the Blend Tank to the first sample bottle. When the solution level reaches the red line on the bottle, stop the pump.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set sample pump P-5 directional switch to the 'REVERSE' position and begin to slowly backflush residual solution in the sample bottle and sampling line into the Blend Tank. Stop the pump when the line is clear.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.09.01 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 05.02.01.10.00

Step 05.02.01.09.02 using FMS-11 form "D1MAIN" and overlay OPRACK

Repeat the sampling procedure to fill the remaining sample bottle. Turn off pump P-5 when sampling is completed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.09.03 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 05.02.01.11.02

Step 05.02.01.10.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Repeat the sampling procedure to fill the remaining sample bottles, in order, through sample bottle no. 4. Turn off pump P-5 when sampling is completed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.11.00 using FMS-11 form "D1MAIN" and overlay 4747

Gently remove the free tubing end from sample pump P-5 from the plastic hose fitting in the stopper. Gently remove the stopper assembly from the last sample bottle and set aside in the drip pan. Carefully cap the four filled 'UB' sample bottles. DO NOT MIX UP THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 04.07.04.04.00)

Step 05.02.01.11.01 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 05.02.01.12.00

Step 05.02.01.11.02 using FMS-11 form "D1MAIN" and overlay 4747

Gently remove the free tubing end from sample pump P-5 from the plastic hose fitting in the stopper. Gently remove the stopper assembly from the last sample bottle and set aside in the drip pan. Carefully cap the two filled 'UB' sample bottles. DO NOT MIX UP THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 04.07.04.04.00)

Step 05.02.01.12.00 using FMS-11 form "D1MAIN" and overlay OPRACK

When all unspiked solution samples have been withdrawn, remove the sampling line from the Blend Tank. Shake any excess liquid on or in the line into the tank as the line is withdrawn. Dispose of the sampling line in the in-cell waste can.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.13.00 using FMS-11 form "D1MAIN" and overlay PLNBK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 05.02.01.13.02

Parameter record 2 is a logic branch to step 05.02.01.13.02

Step 05.02.01.13.01 using FMS-11 form "D1MAIN" and overlay NOPLN

Remove the polyethylene sampling tube from lid valve V-37 and close the valve.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.03.01.01)

Parameter record 1 is a logic branch to step 05.02.01.14.00

Step 05.02.01.13.02 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the polyethylene sampling tube from lid valve V-37 and dispose of it in the in-cell waste can. Close valve V-37.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.14.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn off mixing motor M-1 and return the motor to its stored position. Replace the Blend Tank cap over the motor coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.01.15.00 using FMS-11 form "D1MAIN" and overlay SUP

Recheck that each sample bottle cap is properly seated and FULLY TIGHTENED. Then, unclamp the unspiked solution sample bottles by deenergizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

(See step 04.07.06.01.00)

Step 05.02.02.00.00 using FMS-11 form "D1MAIN" and overlay BLANK

Step title: "Sample Bottle Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 05.02.02.03.00

Step 05.02.02.01.00 using FMS-11 form "D1SCRL" and overlay D6222

Weigh the four 'UB' sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous balance reading.
After weighing, place each bottle in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 04.07.06.02.00 (PSBOTT) (except 4 unspiked blend tank samples (UB) are weighed).

Step 05.02.02.02.00 using FMS-11 form "D1MAIN" and overlay NOBLNK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 05.02.03.00.00

Step 05.02.03.00 using FMS-11 form "DISCR1" and overlay 06222

Weigh the two 'UB' sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous balance reading.
After weighing, place both bottles in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 04.07.06.02.00 (PSB07T) (except 2 dissolution samples (DS) are weighed).

Step 05.02.03.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.03.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions posted at the shielding windows).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.03.02.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.02.03.03.00 using FMS-11 form "DISCR1" and overlay 0232

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine.

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0+/-1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with unspiked, mixed, sampled solution is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0+/-1 g or the step goes into Exception Handling. The corrected weight of the unspiked, mixed, sampled solution is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (\text{T1} + \text{T2})/2] \div \text{CALF}$$

This weight is displayed. The weight of unspiked, mixed, sampled solution is calculated by subtracting the weight of the blend tank assembly with unspiked, mixed, sampled solution from the weight of the empty blend tank assembly logged in step 2.2.2.1.7 (22215). This weight is displayed. The weight of solution lost from sampling is calculated by subtracting the weight of the unspiked, mixed, sampled solution from the weight of the unspiked, mixed, unsampled solution logged in step 5.1.4.3 (6142). The sum of the net solution sample weights logged in step 5.2.2 (06222) is then displayed. The difference between the weight of solution lost during sampling the unspiked blend tank and the sum of the net solution sample weights is displayed. The difference must be equal to or less than 2 g or the step is repeated. If this step fails for a second time, the procedure goes into Exception Handling and a comment should be entered. If the weight difference is acceptable or the step has repeated twice, the weight of the blend tank assembly with unspiked, mixed, sampled solution, the weight of unspiked, mixed, sampled solution, the weight of solution loss from sampling, and the weight difference are logged. The procedure continues to the next step, after an operator sign-off.

Step 05.02.03.04.00 using FMS-11 form "D1MAIN" and overlay PLNBK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.01.01.00)

Parameter record 1 is a logic branch to step 05.04.03.04.00

Parameter record 2 is a logic branch to step 05.04.03.04.00

Step 05.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "SOLUTION SPIKING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "Spike Charging"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.01.00 using FMS-11 form "D1MAIN" and overlay 6311

Obtain from the shift supervisor the NBS-950A spike to be used to spike the dissolved fuel segment. The spike assigned to this segment is displayed below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The NBS 950A spike specified for use with the fuel segment, according to FRIF, is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 05.03.01.02.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Transfer the NBS-950A spike, in its bottle, into the cell. Place the bottle next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.03.00 using FMS-11 form "D1SCRL" and overlay 0313

Weigh the NBS-950A spike, in its bottle, on balance BAL-7.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous balance reading.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to tare, then read BAL-7 by entering 'R' <RETURN>. The tare reading must be 0+/-1 g or the operator is prompted to retare the balance. The operator then weighs the bottle containing the spike by placing it on the balance and entering 'R' <RETURN>. The bottle is removed and a final tare reading must be 0+/-1 g or the step will be repeated. The weight of the bottle containing the spike is calculated by subtracting from the bottle weight the average of the tare readings and multiplying that by the balance calibration factor. The NBS spike weight recorded by ACL is displayed and compared to the in-cell weight just calculated. If the weight difference is equal to or less than 0.1 g, the spike weight is logged and the procedure continues to the next step, after an operator sign-off. If the weight difference is greater than 0.1 g, the spike weight is unacceptable and the step is repeated. If after two tries the weight difference is still unacceptable, the operator is instructed to notify the shift supervisor and the procedure goes into Exception Handling; a comment must be entered and the step may be repeated.

Step 05.03.01.04.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Open Blend Tank lid valve V-37

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.05.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Uncap the spike bottle but do not remove the NBS-950A spike.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.06.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. Note the weight of the Blend Tank Assembly prior to the addition of the NBS 950A spike.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is deenergized. The procedure continues to the next step, after an operator sign-off.

Step 05.03.01.07.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Charge the NBS-950A spike to the Blend Tank by carefully 'pouring' the spike capsule out of the bottle into the funnel in the tank lid valve.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.08.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Using a mirror positioned over the Blend Tank lid valve, verify that the spike capsule has passed through the lid valve and into the tank. Note increase in the Blend Tank Assembly weight to verify spike addition.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Replace the cap on the spike bottle and place the bottle in the wire storage rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.01.10.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 05.03.01.11.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Close Blend Tank lid valve V-37.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 05.03.02.09.00 using FMS-11 form "D1MAIN" and overlay DDUMMY

Step title: "Spike Dissolution"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.01.00 using FMS-11 form "D1MAIN" and overlay PIC

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.10.04.01.00)

Step 05.03.02.01.01 using FMS-11 form "D1MAIN" and overlay 0131

PCS-19 is energized to evacuate the Vacuum Reservoir Tank. When tank pressure is equal to or less than -9 PSIG, PCS-00 is energized.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 05.01.03.01.01)

Step 05.03.02.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Connect the vacuum line to the Blend Tank vacuum connection port. Remove the Blend Tank cap and set it on lid thermocouple holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Position the Blend Tank mixing motor M-1 over the Blend Tank and engage the mixer coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert thermocouple TC-7 into the sheath tube in the Blend Tank lid and check that it is fully inserted.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.05.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Plug the power cord of Blend Tank heater HP-1 into the heater receptacle on the secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.06.00 using FMS-11 form "D1MAIN" and overlay PC18

PCS-18 is energized to begin a slow evacuation of the Blend Tank headspace gas.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 05.01.03.04.00)

Step 05.03.02.07.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place temperature controller HP-1 thermocouple TC-9 in annulus between Blend Tank and secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.08.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on Blend Tank mixing motor M-1 to begin mixing the Blend Tank solution. Set the motor speed control to setting '4'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Plug in Blend Tank heater temperature controller HP-1, and set the controller to 70 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.10.00 using FMS-11 form "D1MAIN" and overlay 63210

Heating of the Blend Tank solution is in progress. When the solution temperature reaches 95 deg C, the NBS 950A spike dissolution will begin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The time the blend tank heater is turned on and a list of commands that can be issued by the operator are displayed. The commands, which can be issued at any time, are: EXIT, which allows the operator to exit the step and the procedure to automatically continue to the next step. SILENT, which silences the bell that is sounded when a high blend tank pressure (PT-15) occurs. ALARM, which turns the bell back on. The default command which is ALARM. The blend tank solution temperature (TC-7), vacuum reservoir tank pressure (PT-17), blend tank pressure, and portable probe temperature (TC-9) are read and displayed every 30 seconds. The solution heatup rate and the pressure increase rate are

calculated and displayed every 30 seconds. If the pressure increase rate is less than 0.1 PSI/min or greater than 0.2 PSI/min, an alarm sounds and an appropriate message is displayed prompting the operator to adjust the heatup rate. When the blend tank solution temperature is equal to or greater than 95 deg C, the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1TC-7
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm max automatic reading
Alarm limit maximum set point = 85.0000
New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 05.03.02.11.00 using FMS-11 form "D1MAIN" and overlay 63211

Dissolution of the NBS 950A spike is in progress. Monitor solution temperature to ensure that it does not exceed 105 deg C. The solution will be mixed and heated for 60 minutes to ensure complete dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The time the spike dissolution began and a list of commands that can be issued by the operator are displayed. The commands, which can be issued at any time, are: EXIT, which allows the operator to exit the step and the procedure automatically continues to the next step. SILENT, which silences the bell that is sounded when the blend tank solution temperature (TC-7) or the vacuum reservoir tank pressure (PT-17) rate of increase is too high or too low. ALARM, which turns the bell back on. The default command which is ALARM. The blend tank solution temperature, vacuum reservoir tank pressure, blend tank pressure (PT-15), and portable probe temperature (TC-9) are read and displayed every 30 seconds. While the blend tank heater cycles to maintain the temperature, the solution heatup rate and the pressure increase rate are calculated and displayed every 30 seconds. If the pressure increase rate is less than 1 PSI/min or greater than 0.3 PSI/min, an appropriate message is displayed prompting the operator to adjust the heatup rate. If the blend tank solution temperature is greater than 103 deg C, a message is displayed to the operator. When 60 minutes has elapsed, the procedure automatically continues to the next step.

Parameter record 1 is a sensor criteria record for sensor D1TC-7
Frequency of reading set to 0 min. 30 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm max automatic reading
Alarm limit maximum set point = 95.0000

New exception receiver queue name is OPRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks

Step 05.03.02.12.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the end of the one-hour spike dissolution, unplug Blend Tank heater temperature controller HP-1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 05.03.02.13.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn off Blend Tank mixing motor M-1 and return the motor to its stored position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.02.14.00 using FMS-11 form "D1MAIN" and overlay PIC

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.10.04.01.00)

Step 05.03.02.14.01 using FMS-11 form "D1MAIN" and overlay 63214

PCS-00 is energized to stop Blend Tank head space evacuation. Disconnect the vacuum line from the Blend Tank vacuum connection port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After a 10-second delay, PCS-00 is energized. The operator is then prompted to execute the instructions in the step description. The procedure continues to the next step, after an operator sign-off.

Step 05.03.03.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.03.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions posted at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.03.02.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.03.03.03.00 using FMS-11 form "D1SCRL" and overlay 0332

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0/-1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with spiked, mixed, unsampled solution is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0/-1 g or the step goes into Exception Handling. The corrected weight of the spiked, mixed, unsampled solution is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (T1 + T2)/2] * \text{CALF}$$

This weight is displayed and logged. The weight of spiked, mixed, unsampled solution is calculated by subtracting the weight of the blend tank assembly with spiked, mixed, unsampled solution from the weight of the empty blend tank assembly logged in step 2.2.2.1.7 (22215). This weight is displayed and logged. The weight of solution lost during spiking is calculated by subtracting the weight of the spiked, mixed, unsampled solution from the weight of the unspiked, mixed, sampled solution from step 5.2.3.3 (6232). This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 05.04.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "SPIKED SOLUTION SAMPLING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Solution Sampling"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05 04 01 01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the four 'SQ' sample bottles in the bottle clamp fixture in order (1 to 4) from left to right. Clamp the bottles by energizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05 04 01 02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the cap from each sample bottle and set the cap from each bottle in the clamp fixture recess in front of the bottle. DO NOT MIX THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05 04 01 03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the Blend Tank cap and set it over the lid thermocouple holder. Position Blend Tank mixing motor M-1 over the Blend Tank and engage the mixer coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05 04 01 04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Open Blend Tank lid valve V-37 and insert a clean polyethylene sampling tube into the valve orifice. Then, slightly close the valve to lock the sampling tube in place.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 05 04 01 05.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on Blend Tank mixing motor M-1 to start solution mixing. Set the mixing motor speed control to setting '4'.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 05 04 01 06.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the stopper end of a clean, unused sampling line into sample bottle no. 1 and press the stopper firmly into the bottle. Then connect the free tubing end from sample pump P-5 to the plastic hose fitting in the stopper.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.07.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the long tubing end of the sampling line into the Blend Tank through the rigid sampling tube in the lid valve. Insert the line through the sampling tube up to the stopper, which will suspend the line at the bottom of the tank

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set the sample pump P-5 directional switch to the 'FORWARD' position and begin slowly drawing a solution from the Blend Tank to the first sample bottle. When the solution level reaches the red line on the bottle, stop the pump.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Set sample pump P-5 directional switch to the 'REVERSE' position and begin to slowly backflush residual solution in the sample bottle and sampling line into the Blend Tank. Stop the pump when the line is clear.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.10.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Repeat the sampling procedure to fill the remaining sample bottles, in order, through sample bottle no. 4. Turn off pump P-5 when sampling is completed

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.11.00 using FMS-11 form "D1MAIN" and overlay 4747

Gently remove the free tubing end from sample pump P-5 from the plastic hose fitting in the stopper. Gently remove the stopper assembly from the last sample bottle and set aside in the drip pan. Carefully cap the four filled 'SB' sample bottles. DO NOT MIX UP THE BOTTLE CAPS.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.07.04.04.00)

Step 05.04.01.12.00 using FMS-11 form "D1MAIN" and overlay OPRACK

When all spiked solution samples have been withdrawn, remove the sampling line from the Blend Tank. Shake any excess liquid on or in the line into the tank as the line is withdrawn. Dispose of the sampling line in the in-cell waste can.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.13.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn off mixing motor M-1, and return the motor to its stored position. Replace the Blend Tank cap over the motor coupling.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.14.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove the polyethylene sampling tube from lid valve V-37 and close the valve.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.15.00 using FMS-11 form "D1MAIN" and overlay SUP

Recheck that each sample bottle cap is properly seated and FULLY TIGHTENED. Then, unclamp the spiked solution sample bottles by deenergizing solenoid C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 04.07.06.01.00)

Step 05.04.02.00.00 using FMS-11 form "DISCRL" and overlay D0422
Step title: "Sample Weighing"

Weigh the four 'SB' sample bottles.
Type 'R' <RETURN> to take a balance reading.
Type 'B' <RETURN> to repeat the previous balance reading.
After weighing, place each bottle in the wire rack next to balance BAL-7.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 04.07.06.02.00 (except 4 spiked blend tank samples (SB) are weighed).

Step 05.04.03.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY
Step title: "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.03.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to the instructions posted at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.03.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.04.03.03.00 using FMS-11 form "DISCR1" and overlay 6432

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0 +/- 1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with spiked, mixed, sampled solution is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0 +/- 1 g or the step goes into Exception Handling. The corrected weight of the spiked, mixed, sampled solution is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (T1 + T2)/2] * \text{CALF}$$

This weight is displayed. The weight of spiked, mixed, sampled solution is calculated by subtracting the weight of the blend tank assembly with spiked, mixed, sampled solution from the weight of the empty blend tank assembly logged in step 2.2.2.1.7 (22215). This weight is displayed. The weight of solution lost during sampling is calculated by subtracting the weight of the spiked, mixed, sampled solution from the weight of the spiked, mixed, unsampled solution logged in step 5.3.3.3 (6332). The sum of the net solution sample weights logged in step 5.4.2 (06422) is then displayed. The difference between the weight of solution lost from sampling the spiked blend tank and the sum of the net solution sample weights is displayed. The difference must be equal to or less than 2 g or the step is repeated. If this step fails for a second time, the procedure goes into Exception Handling and a comment should be entered. If the weight difference is acceptable or the step has repeated twice, the weight of the blend tank assembly with spiked, mixed, sampled solution, the weight of spiked, mixed, sampled solution, the weight of solution loss from sampling, and the weight difference is logged. The procedure continues to the next step, after an operator sign-off.

Step 05.04.03.04.00 using FMS-11 form "D1MAIN" and overlay 41061

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.11.06.00.00)

Step 06.00.00.00.00 using FMS-11 form "D1MAIN" and overlay SHGRPH

Step title: "POST-DISSOLUTION OPERATIONS"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

The Hold Tank HEATUPLUG is started on the GIGI terminal that corresponds to the dissolver procedure being run.

Step 06.01.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DLWMY

Step title: "SOLUTION COOLING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert thermocouple TC-7 into the sheath tube in the Blend Tank lid and check that it is fully inserted.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.01.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Attach the cooling air supply line to the Blend Tank secondary vessel. Energize solenoid D to begin air cooling the Blend Tank solution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.00.00.00 using FMS-11 form "D1MAIN" and overlay 0DLWMY

Step title: "OFF-GAS SYSTEM VENTING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.01.00.00 using FMS-11 form "D1MAIN" and overlay 00JMMY

Step title: "Off-Gas Release"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.01.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

At the exhaust stack radiation-monitoring system in MA-001 and MA-101, perform the steps outlined in the posted procedure to monitor the release of dissolution off-gas. USE STACK no.2 FOR OFF-GAS RELEASE.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.01.02.00 using FMS-11 form "D1MAIN" and overlay PID

Notify the shift supervisor that venting of the Hold Tank and release of the off-gas is ready to begin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.10.02.00.00)

Step 06.02.01.03.00 using FMS-11 form "D1MAIN" and overlay 7312

PCS-11 is energized to begin a controlled venting of the Hold Tank to the Cell M-1 low-flow (STACK no.2) air exhaust system. Venting rate should be maintained between 0.1 and 0.5 PSI/min. Venting is completed when Hold Tank pressure is less than 1.0 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.11.03.00.00. (3112) (except there are no P & I diagrams).

Parameter record 1 is a sensor criteria record for sensor D1PT-8
Frequency of reading set to 1 min. 0 sec. 0 ticks.
Monitoring status -- turn off: (none)
Monitoring status -- turn on: alarm1 min automatic reading
Alarm limit minimum set point = 95.0000
New exception receiver queue name is 0PRDS1
Duration of reading set to 0 days, 0 hr., 0 min., 0 sec., 0 ticks.

Step 06.02.01.04.00 using FMS-11 form "D1MAIN" and overlay 7313

Venting of the Hold Tank to the Cell M-1 low-flow (STACK no.2) air exhaust system is completed. PCS-00 is energized to shut off all valves.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-00 is energized and the off-gas release end time is logged. The procedure will continue to the next step, after an operator sign-off.

Step 06.02.02.00.00 using FMS-11 form "D1MAIN" and overlay 00JMMY

Step title: "Off-Gas System Flushing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.02.01.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

At the out-of-cell Gas Sampling Station in MA-010, open sample cylinder bypass valve V-35.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.02.02.02.00 using FMS-11 form "D1MAIN" and overlay 7322

Turn off out-of-cell bulkhead valve V-59 (located below shielding window). After PCS-15 is energized to begin flushing the off-gas system with dry air, throttle air flow using valve V-59 (align white lines) to keep Dissolver and Hold Tank pressure below 10 PSIG.
System flushing will last 30 minutes.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-15 is energized to begin flushing the off-gas system with dry air. A 30-minute clock is updated and displayed every minute. During the 30 minutes, the hold tank pressure (PT-9) and dissolver pressure (PT-7) are displayed every 15 seconds. If the hold tank pressure exceeds 25 PSIG, PCS-10 will energize to release the hold tank pressure. The pressure is then read every 15 seconds until it is equal to or less than 1 PSIG. PCS-00 is energized and the procedure continues to the next step, after an operator sign-off. If 30 minutes passes without the hold tank pressure exceeding 25 PSIG, PCS-00 will be issued and the procedure will automatically continue to the next step.

Step 06.02.02.03.00 using FMS-11 form "D1MAIN" and overlay 365

PCS-09 is energized to pump residual gas in the Dissolver vessel to the Hold Tank. OBSERVE PG-7 TO ENSURE THAT PUMP P-3 SHUTS OFF AT LESS THAN 2, BUT BEFORE 0 PSIG. GREEN LIGHT ON CONTROLLER INDICATES P-3 IS ON. USE OUT-OF-CELL PUMP 'OFF' SWITCH IF NECESSARY!

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 03.06.05.00.00)

Step 06.02.02.04.00 using FMS-11 form "D1MAIN" and overlay 7323

PCS-10 is energized to vent residual pressure to the Cell M-1 low-flow (STACK no.2) air exhaust system until pressure is equal to or less than 1 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

After PCS-10 is energized, the hold tank pressure (PT-9) is read every 15 seconds. When the hold tank pressure is equal to or less than 1 PSIG, the procedure continues to the next step.

Step 06.02.02.05.00 using FMS-11 form "D1MAIN" and overlay 7324

PCS-14 is energized to pump down the Hold Tank to -7 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

PCS-14 is energized to pump down the hold tank. Every 5 seconds the hold tank pressure (PT-9) and the gas flow rate (FM-3) are read and displayed. When the hold tank pressure is equal to or less than -7 PSIG the procedure automatically continues to the next step.

Step 00.02.02.00.00 using FMS-11 form "D1MAIN" and overlay 7325

PCS-00 is energized to stop Hold Tank evacuation and to equalize the Dissolver and Hold Tank pressures to less than 2 PSIG.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

After PCS-00 is energized, the hold tank pressure (PT-9) and dissolver pressure (PT-7) are read every 5 seconds. When the hold tank pressure and dissolver pressure are less than 2 PSIG and the difference between the two pressures is less than 1 PSIG, PCS-00 is energized and the procedure automatically continues to the next step.

Step 00.02.02.07.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Off-Gas System flushing is now completed. Open fully the out-of-cell bulkhead valve V-59 (located below the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.02.02.08.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the exhaust stack radiation-monitoring system in MA-001 and MA-101, perform the steps outlined in the posted procedure to complete the monitoring of the dissolution off-gas release.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 000000

Step title: "FULL RECOVERY"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.01.00.00 using FMS-11 form "D1MAIN" and overlay 7211

Verify that the Dissolver pressure is less than 5 PSIG before unbolting the spider flange.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Loosen the four swing bolt nuts, using the impact wrench, and pivot the bolts to the side.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 00.03.02.01.00 using FMS-11 form "D1MAIN" and overlay BLANK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.03.07.00.00)

Parameter record 1 is a logic branch to step 00.04.00.00.00

Step 06.03.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Raise the spider flange and basket out of the Dissolver. If the basket appears wet, let it hang in place to air dry. When dry, proceed to next step.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.03.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Bring the spider flange and sample basket to the cell shielding window. Carefully remove the basket's locking collar, and remove basket from its support.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.03.05.00.00 using FMS-11 form "DISCRL" and overlay 7235

Pour the hulls from the basket into the plastic tray. Inspect the hulls for foreign matter or unusual appearance, and enter comments below if needed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter a comment regarding anything that might appear unusual about the hulls. A <RETURN> is to be entered if no comment is necessary. The procedure will continue to the next step, after an operator sign-off.

Step 06.03.06.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Replace the spider flange and sample basket support into the Dissolver. (If the next run is to be a blank, attach the basket to the support.) Leave the used gasket in place to prevent damaging the flange. CAUTION: LOWER THE BASKET COLLAR BEFORE REINSTALLING IN DISSOLVER.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.03.07.00.00 using FMS-11 form "DISCRL" and overlay 7231

Place the beaker used to weigh the hulls on the 300g balance selected, and tare the balance. The cabinet display must read '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter the balance number that the beaker will be weighed on (7 and 8 are the only acceptable balance numbers). The tare value of the empty plastic beaker is read, displayed, and stored. If the tare is greater than +/-0.005 g, the step is repeated automatically. If the tare reading is within specification, the procedure automatically continues to the next step.

Step 06.03.08.00.00 using FMS-11 form "DISCRL" and overlay 7236

Remove the beaker from the balance. Transfer the hulls from the tray into the beaker, counting them as they are put into the beaker. When done, enter below the number of hulls found.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine.

The operator is prompted to enter the number of hulls recovered from the dissolver. If the number of hulls entered is equal to the number of hulls generated during shearing, the numbers are logged and the procedure continues to the next step, after a operator sign-off. If the number of hulls recovered from the dissolver is not equal to the number of hulls generated during shearing then the operator is instructed to recount the hulls, and the number of hulls is to be reentered. If the numbers are still not equal, the number of hulls recovered from the shear is displayed and the procedure goes into Exception Handling and a comment must be entered. After the comment has been entered, the number of hulls recovered from the dissolver and the number of hulls from the shear will be logged. The procedure will continue after an operator sign-off.

Step 06.03.09.00.00 using FMS-11 form 'DISCR1' and overlay 7233

Place the beaker with the hulls back on the balance to determine the net hull weight.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is prompted to place the plastic beaker containing the segment hulls on the PK-300 balance (BAL-7 or BAL-8) pan and type 'R' (RETURN) to obtain the weight of recovered hulls. The following calculations are then made and displayed:

net wt. of recovered hulls =
(wt. of recovered hulls * CALF) - tare reading (6.3.7)

original estimated wt. of hulls =
as recorded in FRIF

wt. of cladding dissolved =
original estimated wt. of hulls - net wt. of recovered hulls

Step 06.03.10.00.00 using FMS-11 form 'D1MAIN' and overlay 0PRACK

Remove the beaker with the hulls from the balance and set aside for disposal in the hull collection can (ECL ROD HULLS FOR K-1).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.04.00.00.00 using FMS-11 form 'D1MAIN' and overlay 0DUMY

Step title: 'BLEND TANK SOLUTION DISPOSAL'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.04.01.00.00 using FMS-11 form 'D1MAIN' and overlay 0DUMY

Step title: 'Solution Cooling'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.04.01.01.00 using FMS-11 form 'D1MAIN' and overlay 6514

Monitor the temperature of the Blend Tank solution as indicated by TC-7. Continue air cooling of the Blend Tank until solution temperature is equal to or less than 60 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action 'slave' routine:

The blend tank solution temperature (TC-7) is read and displayed every 30 seconds. When the blend tank solution temperature is equal to or less than 40 deg C, the procedure automatically continues to the next step,

Step 05.04.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

When the Blend Tank solution is equal to or less than 60 deg C turn cooling air off by deenergizing solenoid D. Disconnect the cooling air supply line from the Blend Tank secondary vessel. Set the air supply line clear of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Remove thermocouple TC-7 from the Blend Tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.02.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "Solution Transfer"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.02.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Open Blend Tank lid valve V-37 and insert the Blend Tank PVC drain line fully into the Blend Tank through the valve.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.04.02.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin, tilt the vessel forward and secure it in the forward position by reseating the lock-pin.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.04.02.03.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine.

(See step 05.03.01.06.00)

Step 06.04.02.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Obtain the waste transfer pump P-11 switch key from the shift supervisor and enable the waste transfer pump and valves.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03.04.02.05.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Position the waste solution transfer control valves to drain the Blend Tank by depressing BT-1 on the waste solution transfer system control panel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 05.04.02.05.00 using FMS-11 form "D1MAIN" and overlay 6526

Position the waste solution transfer control to pump the Blend Tank solution to the waste tank designated below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to transfer the blend tank solution to the assigned waste tank, according to FRIF. The procedure continues to the next step after an operator sign-off.

Step 05.04.02.07.00 using FMS-11 form "D1MAIN" and overlay 6523

Read the level indicators for the two Waste Tanks and two Feed Tanks from the Waste Solution Transfer Control System Panel and enter their values below. Enter the requested information in the Fissile Material (FM) Inventory logbook.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter the liquid waste level of waste storage tank 1. The tank number and level are displayed. The same procedure is followed for the liquid waste levels of waste storage tank 2, waste feed tank 1, and waste feed tank 2. The waste tank levels are logged. The procedure continues to the next step, after an operator sign-off.

Step 06.04.02.08.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on waste transfer pump P-11 to begin solution transfer. During transfer, monitor pump discharge pressure as indicated by PG-19 and the weight of solution transferred as indicated by the BAL-5 remote cabinet display. When the Blend Tank is fully drained, turn off waste transfer pump P-11.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.04.02.09.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 06.04.02.10.00 using FMS-11 form "D1MAIN" and overlay OPRACK

While slowly removing the FVC tank drain line from the Blend Tank, gently shake the line to allow residual solution to drip into the tank. Lay the line on a clean towel and wipe off residual solution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.04.02.11.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin, return the Blend Tank to the upright position, and reset the lock-pin to secure the assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.04.02.12.00 using FMS-11 form "D1MAIN" and overlay 6529

Read the level indicators for the two Waste Tanks and two Feed Tanks from the Waste Solution Transfer Control System Panel and enter their values below. Changes in waste solution levels are calculated and displayed below. Enter the requested information in the Fissile Material (FM) Inventory logbook.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter the final liquid waste level of waste storage tank 1. The waste tank number and the initial, final, and change in liquid waste level are displayed. The same procedure is followed for the liquid waste levels of waste storage tank 2, waste feed tank 1, and waste feed tank 2. The final tank levels and the tank level changes are logged. The procedure continues to the next step, after an operator sign-off.

Step 06.05.00.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "BLEND TANK CLEAN-UP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.01.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "Preparation for Blend Tank Rinsing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.01.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Connect the free end of the solution transfer line to the CAJON fitting on the Blend Tank fill connection port, and tighten using the manipulator. DO NOT BEND BLEND TANK CONNECTION PORT TUBE.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.01.02.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 05.03.01.00.00)

Step 06.05.01.03.00 using FMS-11 form "D1MAIN" and overlay 0FRACK

Zero the Blend Tank balance by depressing the tare button on the BAL-5 remote cabinet. The control display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.02.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Reagent Metering"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.02.01.00 using FMS-11 form "D1MAIN" and overlay 73321

At the Reagent Charging Station in MA-010, add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The amount of dilute NITRIC reagent to be added to the charge vessel is displayed. The procedure continues to the next step, after an operator sign-off.

Step 06.05.02.02.00 using FMS-11 form "D1SCRL" and overlay 73322

After the NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

See step 03.00.01.02.00 (except if 'NITRIC' is not entered on second try step 6.5.2.1 will be repeated and amount of 'NITRIC' is 202 +/- 5 g).

Step 06.05.03.00.00 using FMS-11 form "D1MAIN" and overlay 0DUMMY

Step title: "Blend Tank Rinsing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.05.03.01.00 using FMS-11 form "D1MAIN" and overlay 73331

PCS-03 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Blend Tank per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

PCS-03 is energized. After the operator has executed the instructions in the step description and signs off the step, PCS-00 is energized. The procedure then continues to the next step.

Step 06.05.03.02.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 03 05 03 03 00 using FMS-11 form "D1MAIN" and overlay OPRACK

Disconnect the solution transfer line from the Blend Tank fill port and lay aside in the drip pan

MENU TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06 05 03 04 00 using FMS-11 form "D1MAIN" and overlay OPRACK

While holding the Blend Tank secondary vessel lock-pin in the retracted position with one manipulator, tilt the Blend Tank back and forth to rinse the tank's inner surfaces with the dilute NITRIC acid

MENU TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06 05 03 05 00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the Blend Tank PVC drain line fully into the Blend Tank through lid valve V-37.

MENU TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06 05 03 06 00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin, tilt the vessel forward and secure the vessel in the forward position by reseating the lock-pin

MENU TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06 05 03 07 00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

(See step 05.03.01 06 00)

Step 06 05 03 08 00 using FMS-11 form "D1MAIN" and overlay 6523

Read the level indicators for the two Waste Tanks and two Feed Tanks from the Waste Solution Transfer System Control Panel and enter their values below. Enter the requested information in the Fissile Material (FM) Inventory logbook.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 06.04.02.07.00)

Step 06.05.03.09.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Position the waste solution transfer control valves to drain the Blend Tank by depressing BT-1 on the Waste Solution Transfer System Control Panel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.03.10.00 using FMS-11 form "D1MAIN" and overlay 6526

Position the waste solution transfer control valves to pump the Blend Tank solution to the waste tank designated below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 06.04.02.06.00)

Step 06.05.03.11.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on waste transfer pump P-11 to begin solution transfer. Monitor the weight of solution transferred as indicated by the balance BAL-5 remote cabinet display. When the Blend Tank is fully drained, turn off waste transfer pump P-11.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.03.12.00 using FMS-11 form "D1MAIN" and overlay OPRACK

When the Blend Tank is fully drained, as indicated by a loss of pump discharge pressure and an unchanging Blend Tank weight, turn off waste transfer pump P-11. Return the pump P-11 switch key to the shift supervisor.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.03.13.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 06.05.03.14.00 using FMS-11 form "D1MAIN" and overlay OPRACK

While slowly removing the PVC tank drain line from the Blend Tank, gently shake the line to allow residual solution to drip into the tank. After wiping off residual solution with a clean paper towel, return the PVC line to its holder.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 03 05 03 15 00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin, return the Blend Tank to the upright position, and reset the lock-pin to secure the vessel

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06 05 03 16 00 using FMS-11 form "D1MAIN" and overlay 6529

Read the level indicators for the two Waste Tanks and two Feed Tanks from the Waste Solution Transfer Control System Panel and enter their values below. Changes in waste solution levels are calculated and displayed below. Enter the requested information in the Fissile Material (FM) Inventory logbook.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 06.04.02.12.00)

Step 06.05.04.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title "Blend Tank Weighing"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06.05.04.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the Blend Tank Assembly in the Standard Weighing Condition, if not already so (refer to instructions at the shielding window).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 06 05.04.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 06.05.04.03.00 using FMS-11 form "D1SCRL" and overlay 6542

The Blend Tank Assembly is now weighed automatically. Ensure that the assembly is free of foreign objects during weighing

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine.

Solenoid A is energized to raise the blend tank assembly off the blend tank balance (BAL-5). After a 15-second delay, a tare is read and displayed. The tare must be 0 +/- 1 g or the procedure goes into Exception Handling. Next, solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the weight of the blend tank assembly with empty blend tank is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is again energized to raise the blend tank assembly off BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be 0 +/- 1 g or the step goes into Exception Handling. The corrected weight of the blend tank assembly with empty blend tank is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (\text{T1} + \text{T2})/2] * \text{CALF}$$

This weight is displayed and logged. The weight of solution remaining in the blend tank after draining is calculated by subtracting the weight of the blend tank assembly with empty blend tank at the end of dissolution from the weight of the blend tank assembly with empty blend tank at the start of dissolution logged in step 2.2.2.1.7 (2215). This weight is displayed. If the weight of solution remaining after draining is greater than 20 g the procedure goes to step 6.5.3.4. If the solution weight is equal to or less than 20 g the weight is logged. The empty blend tank weight is then calculated by subtracting the blend tank assembly with empty blend tank weight from the weight of the blend tank assembly. This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 07.03.03.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "POST-DISSOLUTION CLEAN-UP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.01.03.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "CONTAMINATED BLEND TANK STORAGE"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.01.01.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Using the Blend Tank lifting sling and the in-coll bridge crane, lift the rinsed, contaminated Blend Tank free of its support assembly. Transfer the tank to the M-1-C work area for storage until it is to be decontaminated.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.02.00.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "SOLUTION FILTER REMOVAL"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.02.01.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Remove the installed solution filter assembly from CV-7 and CV-9 using a 1-in. open-end wrench.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.02.02.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Replace the end caps on the filter assembly and tighten manipulator tight.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 07.02.03.00.00 using FMS-11 form "D1MAIN" and overlay 0PRACK

Transfer the filter assembly to, and store it in the plastic tray at shielding window M-1-C until time to remove millipore filter paper for analysis, and housing decontamination.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.02.03.01.00 using FMS-11 form "D1MAIN" and overlay 0PLNBLK

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.01 01.00)

Parameter record 1 is a logic branch to step 07.04.05.00.00

Parameter record 2 is a logic branch to step 07.04.05.00.00

Step 07.03.00.00.00 using FMS-11 form "D1MAIN" and overlay 00DUMMY

Step title: "HOLD TANK DRAINING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.03.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retrieve the 250-ml polyethylene bottle labeled "HT-1 DRAINAGE" from its storage area. Zero BAL-7, then weigh the empty bottle (with cap) on BAL-7. Record the bottle weight in the DS1 operations log.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.03.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the system Hold Tank, hold the 250-ml bottle under the tank's drain line, then open the drain valve to empty the tank's contents into the bottle. When the tank has been emptied, close the drain valve and cap the bottle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.03.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero BAL-7, then weigh the 250-ml bottle on BAL-7 to determine the amount of solution recovered from HT-1. Record the information in the DS1 operations log.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.03.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

If no solution is recovered, return the bottle to its storage area so as to be available for the next segment dissolution. If solution has been recovered, move the 250-ml bottle to work station M-1-C for later transfer to ACL.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.00.00.00 using FMS-11 form "D1MAIN" and overlay ODDUMMY

Step title: "SAMPLE LINE RINSING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retrieve the used sampling lines for rinsing at workstation M-1-A.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the rubber adapter stopper into the 4-L 'DECON COLLECT BOTTLE'. Into the adapter, insert the sampling line rubber stopper that contains the sample pump-attachment fitting.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the other end of the sampling line into a supply of clean, distilled water. Turn on the sample pump to evacuate the 4-L bottle and draw clean water through the line to the collection bottle. After rinsing the line for 10 seconds, turn off the pump and remove all lines.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Repeat the rinsing operation for all used sampling lines not yet rinsed.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.05.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Search the in-cell work area at shielding window M-1-A for items to be disposed of. All used sampling lines, funnels, gaskets, plastic bags, unusable sample bottles, or other materials should be discarded in the in-cell waste container.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 07.04.06.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Arrange all tools, lines, cords, and other equipment in an orderly fashion in preparation for the next fuel segment dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 07.04.07.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Using clean distilled water and kleenex, thoroughly wash all areas of the stainless steel drip pan. Collect wet wipes in a labeled plastic bag. Leave bag open to allow to dry. Store bag at rear of drip pan until time for disposal.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 07.04.08.00.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. After Blend Tank is lowered, MANUALLY switch solenoid A 'ON' to raise Blend Tank Assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 05.03.01.00.00)

Step 07.04.09.00.00 using FMS-11 form "D1MAIN" and overlay DISEND

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The HEATUPLOG is aborted and the dissolution procedure is ended. The end time and date for the dissolution are logged as is the total processing time.

Step 11.00.00.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: 'GAS SAMPLING CYLINDER PURGE'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 11.01.00.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: 'GAS CYLINDER PREPARATION'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 11.01.01.00.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

Install at the Gas Sampling Station in MA-010 those previously used gas sampling cylinders selected for air purging, per the posted procedure at the Gas Sampling Station. When installation is completed, return to the operations terminal to initiate the air purge.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 11.01.02.00.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

At the exhaust stack radiation-monitoring system in MA-001, perform the steps outlined in the posted procedure to monitor the release of dissolution off-gas. USE STACK no.2 FOR OFF-GAS RELEASE.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 11.01.03.00.00 using FMS-11 form 'DISCR1' and overlay PD112

Enter below the number of gas sampling cylinders to be purged and the cylinder identification number of each.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is prompted to enter the number of gas sampling cylinders to be purged. The number entered must be less than 5 or the operator will be prompted to reenter the number. Once the number is accepted, the operator must enter the cylinder(s) identification. If the number of sampling cylinder(s) entered does not agree with the number of gas sampling cylinder(s) identification numbers entered the step is repeated. Otherwise, the procedure continues to the next step, after an operator sign-off.

Step 11.01.04.00.00 using FMS-11 form 'D1MAIN' and overlay PD113

PCS-22 is energized to begin a 5 minute air circulation through the out-of-cell gas sampling cylinders. The air circulation rate should be maintained at 12-13 L/min by adjusting pump P-3.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

PCS-22 is energized to begin a 5-minute air circulation through the out-of-cell gas sampling cylinders. The time elapsed and time remaining are displayed and updated every minute. The air circulation flow rate (FM-3) is read and displayed every 15 seconds. If the air circulation flow rate is less than 9 L/min or greater than 15 L/min, the operator is prompted to adjust the off-gas recirculation pump (P-3) speed. After 5 minutes, the gas cylinder purge is complete, PCS-00 is energized, and the procedure will continue to the next step, after an operator sign-off.

Step 11.01.05.00.00 using FMS-11 form "D1MAIN" and overlay PD2114

With the purging of the gas sampling cylinders completed, return to the Gas Sampling Station to complete the posted procedures

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

The operator executes the instructions in the step description. When the step is signed off the ids of the cylinders that were purged are written to the appropriate historical log file along with the date of purging and the initials of the operator who purged them. The gas sampling cylinder ids are also logged.

Step 11.01.06.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

At the exhaust stack radiation-monitoring system in MA-001 perform the steps outlined in the posted procedure to complete the monitoring of the dissolution off-gas release.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 11.01.07.00.00 using FMS-11 form "D1MAIN" and overlay PD115

Verify that the gas sampling cylinders shown below have been satisfactorily purged.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine.

The gas sampling cylinder identification number(s) entered at the start of the gas sampling cylinder purge (PD112) are displayed. The operator verifies that gas sampling cylinder(s) are clean by signing the step off, after which the procedure continues to the next step.

Step 11.01.08.00.00 using FMS-11 form "D1MAIN" and overlay PUREND

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

This overlay ends the sample cylinder purge procedure.

Step 12.00.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "BLEND TANK DECONTAMINATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 12.01.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "MATERIAL AND EQUIPMENT PREPARATION"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 12.01.01.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "Assemble Solution Transfer Materials"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.01.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

From the Project Materials Stock Cabinet in MA-001 obtain:
one Blend Tank sampling assembly,
one 250-ml polyethylene bottle.
Label the bottle with a black permanent ink marker to include the rod, segment, and decontamination number (e.g. x-xx-TK-x).

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.01.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Place the sampling lines and sample bottle in a plastic bag and transfer them into Cell M-1 via the transfer tunnel. In cell, place them in the drip pan at the solution sampling station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.02.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "Blend Tank Installation"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.02.01.00 using FMS-11 form "D1SCL" and overlay PD2121

From the stock of contaminated Blend Tanks, select the tank for decontamination that corresponds to the previously entered rod-segment. Enter the tank identification number below.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.02.02.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Using the Blend Tank lifting sling and in-cell bridge crane, move the designated Blend Tank from storage and position it on the Blend Tank base heater. Store bridge crane over the waste storage tanks when not in use.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.02.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Connect the solution transfer line (attached to CV-11) to the Blend Tank fill port and tighten manipulator tight

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 12.01.02.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Open Blend Tank lid valve V-37.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.01.02.05.00 using FMS-11 form "D1SCL" and overlay PD2126

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is deenergized. When the assembly is down and the balance readout is zero the operator signs the step off and the procedure continues to the next step.

Step 12.02.00.00.00 using FMS-11 form "D1MAIN" and overlay SDGRPH

Step title: "REAGENT CHARGING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The post dissolution HEATUPLOG is started on the GIGI terminal that corresponds to the dissolver procedure being run.

Step 12.02.01.00.00 using FMS-11 form 'D1MAIN' and overlay PD221

At the Reagent Charging Station in MA-010 add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The amount of NITRIC reagent to be added to the charge vessel is displayed. The procedure continues to the next step, after an operator sign-off.

Step 12.02.02.00.00 using FMS-11 form 'D1SCRL' and overlay PD222

After the dilute NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

See step 03.00.01.02.00 (except if 'NITRIC' is not entered on second try, step 12.2.1 will be repeated; also the amount of 'NITRIC' is 202+/-5 g).

Step 12.02.03.00.00 using FMS-11 form 'D1MAIN' and overlay PD223

PCS-03 is energized to position in-coil valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Blend Tank per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action 'slave' routine:

If the dissolver pressure (PT-7) is greater than 5 PSIG, the pressure is too high to energize PCS-03 and the operator is instructed to correct the problem. When the problem is corrected, the operator is prompted to enter a <RETURN> to recheck the dissolver pressure. If the dissolver pressure is equal to or less than 5 PSIG, PCS-03 is energized. After the operator has executed the instructions in the step description, the procedure is signed off and PCS-00 is energized. After a 15 second delay, plot A (Temperature) is displayed on the GIGI terminal and the procedure continues to the next step.

Step 12.03.00.00.00 using FMS-11 form 'D1MAIN' and overlay 000000

Step title: 'BLEND TANK HEATUP'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.03.01.00.00 using FMS-11 form 'D1MAIN' and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 02.02.02.01.01)

Step 12.03.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert thermocouple TC-7 into the sheath tube in the Blend Tank lid and check that it is fully inserted.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.03.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert temperature controller HP-1 thermocouple TC-9 in the annulus between the Blend Tank and the secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.03.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Plug the power cord of Blend Tank heater HP-1 into the heater receptacle on the secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.03.05.00.00 using FMS-11 form "D1MAIN" and overlay PLOTA

Plug in Blend Tank heater temperature controller HP-1, and set the controller to 75 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Plot A (Temperature) is displayed on the GIGI terminal. This step is part of an operator sign-off step.

Step 12.03.06.00.00 using FMS-11 form "D1MAIN" and overlay PD234

Heatup of the Blend Tank solution is underway, and will continue until the solution reaches 95 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The blend tank solution temperature (TC-7) and the blend tank lid (TC-9) temperature are read and displayed every 5 seconds until the blend tank solution temperature is greater than 95 deg C. The procedure automatically continues to the next step.

Step 12.04.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "BLEND TANK COOLDOWN"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.04.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Unplug the Blend Tank heater temperature controller.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.04.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Attach the cooling air supply line to the Blend Tank secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.04.03.00.00 using FMS-11 form "D1MAIN" and overlay PD254

Energize Solenoid D to begin the cooling of the Blend Tank to at least 70 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The operator is prompted to enter (RETURN) when energize Solenoid D has been manually energized. When Solenoid D has been energized, the blend tank solution temperature (TC-7) and the blend tank lid temperature (TC-9) are read and updated every 5 seconds. When the blend tank solution is equal to or less than 70 deg C, the blend tank solution cooldown is complete and the operator is prompted to deenergize solenoid D deenergized. The procedure continues to the next step, after an operator sign-off.

Step 12.04.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Deenergize Solenoid D and disconnect the cooling air supply line from the Blend Tank secondary vessel. Set the air supply line clear of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 12.05.00.00.00 using FMS-11 form "D1MAIN" and overlay CDDMY

Step title: "PRIMARY DECONTAMINATION SOLUTION TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Step 12.05.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the rigid PVC sample line extension marked '1' through the Blend Tank funnel to the bottom of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin and tilt the Blend Tank forward. Reset the lock-pin to hold the Blend Tank in the forward position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the long tubing end of the reusable sampling line into the F/C sample line extension, and feed the tubing to the bottom of the Blend Tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert a sample line stopper assembly into the Blend Tank decontamination solution collection bottle (four liter bottle labeled 'BT DECON COLLECT') and press the stopper firmly into the bottle. Then, connect the free tubing end from sample pump P-5 to the plastic hose fitting in the stopper.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.05.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Use a manipulator to hold the sample bottle, then lock the manipulator to immobilize the bottle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.06.00.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP

Documentation for step action "slave" routine:

(See step 05.03.01.06.00)

Step 12.05.07.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on sample pump P-5 and slowly increase the speed of the pump to begin drawing the first Blend Tank decontamination solution into the collection bottle. When the transfer is complete, as indicated by an unchanging Blend Tank weight, stop pump P-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.08.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Carefully remove the sample pump line from the stopper assembly and the stopper assembly from the collection bottle. Set the stopper assembly on clean paper toweling in the drip pan.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.09.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Carefully cap the collection bottle, ENSURE THAT THE CAP IS PROPERLY SEATED AND FULLY TIGHTENED.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.10.00.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 12.05.11.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

While slowly removing the sampling line and PVC extension '1' from the Blend Tank, shake excess liquid on or in the line into the tank as the line is withdrawn. Set the sampling assembly on clean paper toweling. Return the PVC line to storage.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.12.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the secondary vessel lock-pin, return the Blend Tank to the upright position, and reset the lock-pin to secure the vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.05.13.00.00 using FMS-11 form "D1SCR1" and overlay PD2126

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. When the Blend Tank assembly is down, zero the BAL-5 remote cabinet.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.01.02.05.00)

Step 12.06.00.00.00 using FMS-11 form "D1MAIN" and overlay 00UMMY

Step title: "REAGENT CHARGING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.06.01.00.00 using FMS-11 form "D1MAIN" and overlay PD221

At the Reagent Charging Station in MA-010 add the quantity of dilute NITRIC reagent specified below to the charge vessel per the 'Reagent Metering Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.02.01.00.00)

Step 12.06.02.00.00 using FMS-11 form "DISCRL" and overlay PD222

After the dilute NITRIC reagent has been added to the charge vessel, verify that reagent specifications have been met by entering below the reagent type, batch number, and amount added.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.02.02.00.00)

Step 12.06.03.00.00 using FMS-11 form "D1MAIN" and overlay PD223

PCS-03 is energized to position in-cell valves for reagent charging. Return to the Reagent Charging Station to charge the reagent to the Blend Tank per the 'Reagent Charging Procedure' posted at the charging station.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.02.03.00.00)

Step 12.07.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "BLEND TANK HEATUP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.07.01.00.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 12.07.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Disconnect the solution transfer line from the Blend Tank fill port and lay aside in the drip pan.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.07.03.00.00 using FMS-11 form "D1MAIN" and overlay PLOTA

Plug in Blend Tank heater temperature controller HP-1 and set the controller to 75 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.03.05.00.00)

Step 12.07.04.00.00 using FMS-11 form "D1MAIN" and overlay PD234

Heatup of the Blend Tank is underway and will continue until the solution reaches 95 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.03.06.00.00)

Step 12.08.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "BLEND TANK COOLDOWN"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.08.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Unplug the Blend Tank heater temperature controller HP-1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.08.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Attach the cooling air supply line to the Blend Tank secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.08.03.00.00 using FMS-11 form "D1MAIN" and overlay PD254

Energize Solenoid D to begin the cooling of the Blend Tank to at least 70 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 12.04.03.00.00)

Step 12.08.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Disconnect the cooling air supply line from the Blend Tank secondary vessel. Set the air supply line clear of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "SECONDARY DECONTAMINATION SOLUTION TRANSFER"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the rigid PVC sample line extension marked '2' through the Blend Tank funnel to the bottom of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the Blend Tank secondary vessel lock-pin and tilt the Blend Tank forward. Reset the lock-pin to hold the Blend Tank in the forward position.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert the long tubing end of an unused sampling line into the PVC sample line extension, and feed the tubing to the bottom of the Blend Tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.04.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Insert a clean sample line stopper assembly into the plastic decontamination solution sample bottle and press the stopper firmly into the bottle. Then, connect the free tubing end from sample pump P-5 to the plastic hose fitting in the stopper.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.05.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Use a manipulator to hold the sample bottle, then lock the manipulator to immobilize the bottle.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.06.00.00 using FMS-11 form "D1MAIN" and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 05.03.01.00.00)

Step 12.09.07.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Turn on sample pump P-5 and slowly increase the speed of the pump to begin drawing the Blend Tank decontamination solution to the sample bottle. When the transfer is complete, as indicated by an unchanging Blend Tank weight, stop pump P-5.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.08.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Carefully remove the sample pump line from the stopper assembly and the stopper assembly from the sample bottle. Set the stopper assembly on clean paper toweling in the drip pan.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.09.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Carefully cap the filled sample bottle, ENSURE THAT THE CAP IS PROPERLY SEATED AND FULLY TIGHTENED.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.10.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

While removing the sampling line and PVC extension '2' from the Blend Tank, shake excess liquid on or in the line into the tank as the line is withdrawn. Set the sampling assembly on clean paper toweling. Return the PVC line to storage.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.09.11.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Retract the secondary vessel lock-pin, return the Blend Tank to the upright position, and reset the lock-pin to secure the vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.10.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMAY

Step title: "BLEND TANK DRYING"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.10.01.00.00 using FMS-11 form "D1MAIN" and overlay PD2143

Solenoid A is energized to raise the Blend Tank Assembly by means of the pneumatic elevator.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

(See step 02.02.02.01.01)

Step 12.10.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Attach the cooling air supply line to the Blend Tank vacuum port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.10.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Plug in Blend Tank heater temperature controller HP-1, and set the controller to 75 deg C, if necessary.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.10.04.00.00 using FMS-11 form "D1MAIN" and overlay PD2127

Heat-up of the Blend Tank is underway. When the tank interior temperature (TC-7) is at least 120 deg C, energize Solenoid D to flush vapor from the tank, then turn off Solenoid D. Cycle Solenoid D as necessary until tank is free of vapor. Drying will proceed for 30 minutes.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

The blend tank solution temperature (TC-7) and the blend tank lid temperature (TC-9) are read and displayed every 5 seconds. When the blend tank solution temperature is equal to or greater than 120 deg C, the operator is prompted to manually energize solenoid D to begin a 30-minute air purge of the blend tank. The time elapsed and time remaining are displayed and updated every 15 seconds. After 30 minutes has elapsed, the operator is prompted to deenergize Solenoid D and proceed to the next step after an operator sign-off.

Step 12.11.00.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "BLEND TANK COOLDOWN"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.11.01.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Unplug the Blend Tank heater temperature controller HP-1.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.11.02.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Disconnect the Blend Tank heater power cord from the heater receptacle on the secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.11.03.00.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Attach the cooling air supply line to the Blend Tank secondary vessel.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.11.04.00.00 using FMS-11 form *D1MAIN* and overlay PD2115

Energize Solenoid D to begin the cooling of the Blend Tank to at least 60 deg C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is prompted to enter <RETURN> when energize Solenoid D has been manually energized. When Solenoid D has been energized, the blend tank solution temperature (TC-7) and the blend tank lid temperature (TC-9) are read and updated every 5 seconds. When the blend tank solution is equal to or less than 60 deg C, the blend tank solution cooldown is complete and the operator is prompted to deenergize solenoid D deenergized. The procedure continues to the next step, after an operator sign-off.

Step 12.11.05.00.00 using FMS-11 form *D1MAIN* and overlay OPRACK

Disconnect the cooling air supply line from the Blend Tank secondary vessel. Set the air supply line clear of the tank.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.11.06.00.00 using FMS-11 form *D1MAIN* and overlay OPRACK

At the Blend Tank:
remove thermocouple TC-7 and TC-9,
ensure that the lid cap is in place over
the mixing motor coupling,
close lid valve V-37.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.00.00.00 using FMS-11 form *D1MAIN* and overlay ODUMMY

Step title: *RESTOCK DECONTAMINATED BLEND TANK*

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.01.00.00 using FMS-11 form *D1MAIN* and overlay ODUMMY

Step title: *Blend Tank Weight Verification*

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.01.01.00 using FMS-11 form *D1SCRL* and overlay PD1212

With the Blend Tank Assembly in the raised position and free of all lines, cords, etc., zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet display must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The operator is prompted to press 'R' <RETURN> to read the blend tank balance (BAL-5) tare. The tare reading is taken, multiplied by the calibration factor, and displayed. If the tare is 0/-1 g the procedure continues to the next step, after an operator sign-off. If the tare reading is less than -1 g or greater than +1 g the step is repeated.

Step 12.12.01.02.00 using FMS-11 form *D1SCRL* and overlay PD2141

The Blend Tank Assembly is now weighed automatically.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

Solenoid A is deenergized to lower the blend tank assembly onto BAL-5. After a 15-second delay, the blend tank support weight is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is then energized to raise the blend tank assembly off

BAL-5. After a 15-second delay, the tare is read and displayed. The tare must be ± 1 g of the step goes into Exception Handling. The corrected blend tank support weight is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (T1 (\text{from step 12.12.01.01}) + T2)/2] * \text{CALF}$$

This weight is displayed and logged. The procedure continues to the next step, after an operator sign-off.

Step 12.12.01.03.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Using the Blend Tank lifting sling and the in-cell bridge crane, lift the decontaminated Blend Tank free of its support assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.01.04.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Zero the Blend Tank balance by depressing the tare pushbutton on the BAL-5 remote cabinet. The cabinet must be '0' before proceeding.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.01.05.00 using FMS-11 form "D1SCRL" and overlay PD2146

The Blend Tank secondary vessel and support pan are now weighed automatically.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action "slave" routine:

Solenoid A is deenergized to lower the blend tank assembly onto the blend tank balance (BAL-5). After a 15-second delay the blend tank support weight is read and displayed. The weight must be greater than 1 g or the procedure will go into Exception Handling. Solenoid A is then energized to raise the blend tank assembly off BAL-5. After a 15 second delay, the tare is read and displayed. The tare must be ± 1 g of the step goes into Exception Handling. The corrected blend tank support weight is calculated as follows:

$$\text{corrected wt.} = [\text{B.T. wt.} - (T1 + T2)/2] * \text{CALF}$$

The weight of the blend tank support with blend tank, blend tank support weight, and the decontaminated blend tank weight are displayed. If the weight of the decontaminated blend tank is less than the weight of the blend tank at the beginning of the dissolver procedure, step 2.2.2.1.7 (22215), plus 3 grams, the blend tank is acceptable for storage and the procedure continues to the next step, after an operator sign-off. If the decontaminated blend tank weight is equal to or greater than the blend tank weight logged at the beginning of the dissolver procedure, the operator is informed that the tank is not acceptable for storage. The weight of the blend tank at the beginning of the dissolver procedure is displayed and the procedure goes into Exception Handling.

Step 12.12.02.00.00 using FMS-11 form "D1MAIN" and overlay ODUMMY

Step title: "Blend Tank Storage"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.02.01.00 using FMS-11 form "D1MAIN" and overlay OPRACK

Transport the decontaminated Blend Tank to the in-cell storage area near shielding window M-1-C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.02.02.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

At the M-1-C shielding window, replace the Viton O-ring in the Cajon fitting of the Blend Tank fill port.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.02.03.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

Transfer the Blend Tank decontamination sample to the storage area at shielding window M-1-C.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.12.02.04.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

Store the overhead bridge crane in an out-of-the-way location. Turn off the controller.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.13.00.00.00 using FMS-11 form 'D1MAIN' and overlay ODUMMY

Step title: "POST-DISSOLUTION CLEAN-UP"

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12 13.01.00.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

Search the in-cell work area at shielding window M-1-A for items to be disposed of. All used sampling lines, funnels, gaskets, plastic bags, unusable sample bottles, or other materials should be discarded in the in-cell waste container.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.13.02.00.00 using FMS-11 form 'D1MAIN' and overlay OPRACK

Arrange all tools, lines, cords, and other equipment in an orderly fashion in preparation for the next fuel segment dissolution.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 12.13.03.00.00 using FMS-11 form 'D1MAIN' and overlay PD2125

Solenoid A is deenergized to lower the Blend Tank Assembly, by means of the pneumatic elevator, onto balance BAL-5. After Blend Tank is lowered, MANUALLY switch solenoid A 'ON' to raise Blend Tank Assembly.

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

(See step 05.03.01.00.00)

Step 12.13.04.00.00 using FMS-11 form 'D1MAIN' and overlay DECEND

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE; /HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Documentation for step action 'slave' routine:

The HEATUPLOG is aborted and the blend tank decontamination procedure is ended.

Step 99.99.99.99.99 using FMS-11 form 'D1MAIN' and overlay QGOTO

Step title: 'TEST PRELIMINARY OPERATIONS'

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Parameter record 1 is a logic branch to step 99.99.99.99.99

Step 99.98.99.99.99 using FMS-11 form 'D1MAIN' and overlay TEST1

Step title: 'TESTING OF OVERLAY WITH D1MAIN'

Test

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 99.98.99.99.99 using FMS-11 form 'DISCRL' and overlay TEST2

Step title: 'TESTING OF OVERLAY WITH DISCRL'

Test

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

Step 99.99.99.99.99 using FMS-11 form 'D1MAIN' and overlay DDUMMY

MENU: TYPE INITIALS TO SIGN OFF STEP; /EX FOR EXCEPTION HANDLING; /PA TO PAUSE;
/HA TO SEE HANGING STEPS; /QU TO QUIT; /SK TO SKIP (HANG) STEP.

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