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Project Title/Work Order Acceptance Test Report for 241SY Pump Cradle Hydraulic System		EDT No. 609713 ECN No. N/A

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1	1	Cog. Eng. MJ Ostrom	<i>M.J. Ostrom</i>	2/21/95	H5-68		
1	1	Cog. Mgr. CE Hanson	<i>Carl Hanson</i>	2/21/95	H5-09		
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1	1	CE Brewer	<i>Craig Brewer</i>	2/21/95	S3-15		

18. <i>M.J. Ostrom</i> MJ Ostrom Signature of EDT Originator Date: 2-21-95	19. <i>JW Lentsch</i> JW Lentsch Authorized Representative for Receiving Organization Date: 2/21/95	20. <i>Carl Hanson</i> CE Hanson Cognizant Manager Date: 2/21/95	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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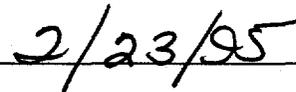
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B.M. Koons 2/21/95
Signature

Organization/Charge Code 5A630

7. Abstract

This Acceptance Test Report (ATR) is for the 241-SY Mitigation Pump Cradle Hydraulic Sytem. This system was installed to aid the cradle and pump uprighting process.

8. RELEASE STAMP

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Hanford Operations and Engineering Contractor
for the U.S. Department of Energy
under Contract No. DE-AC06-87RL10930.

ACCEPTANCE TEST REPORT FOR 241-SY PUMP CRADLE HYDRAULIC SYSTEM

System No. N/A
Equipment No. N/A

Building: 200 W Area, 241SY101
Project: Hydrogen Mitigation Mixing Pump
Impact Level: SQ

Prepared By:

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Date

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2/21/95

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1 Purpose/Scope

The purpose of this ATP is to verify that hydraulic system/cylinder procured to replace the cable/winch system on the 101-SY Mitigation Pump cradle assembly fulfills its functional requirements for raising and lowering the cradle assembly between 70 and 90 degrees, both with and without pump. A system design review was performed on the 101-SY Cradle Hydraulic System by the vendor before shipping (See WHC-SD-WM-DRR-045, **241-SY-101 Cradle Hydraulic System Design Review**). The scope of this plan focuses on verification of the systems ability to rotate the cradle assembly and any load through the required range of motion.

2 References

- 2.1 H-2-83737, Cradle Modifications for Hydraulic Ram, Rev 0
- 2.2 WHC-SD-WM-ATP-094, Acceptance Test Procedure for 241SY Pump Cradle Hydraulic System
- 2.3 ECN 612248, Revision to WHC-SD-WM-ATP-094
- 2.4 WHC-S-0284, Specification for 241-SY Pump Cradle Hydraulic System, Rev 0
- 2.5 ECN 176844, Revision to WHC-S-0284
- 2.6 WHC-SD-WM-DA-167, Cradle Modifications for Hydraulic Ram

3 Responsibilities

The following personnel were involved with the performance of this procedure:

- Person in Charge (PIC): The individual assigned direct responsibility for the performance, preparation, and adequacy of the test.
Assigned PIC: T.R. Law
- Test Director: The engineer assigned shift responsibility for the test.
Assigned TD: B.M. Koons/B.L. Aftanas
- Test Engineer: The engineer assigned to assist and relieve the Test Director during the performance of the test.
Assigned TE: T.C. Mackey
- Quality Assurance: Verify the satisfactory completion of the test steps as described in this procedure.
Assigned QC: L.J. McDougal
- Rigging Specialist: Individual assigned to assist in the directing of hoisting and rigging operations.
Assigned RS: C.E. Brewer/K.M. Best

Only personnel designated by the PIC were allowed to direct testing per the procedure, and perform operating and control functions required to complete the procedure.

One engineer acting as Test Director or one engineer acting as Test Engineer, the PIC, and the Rigging Specialist were required to be present in the field during testing. During testing, any indicated function, or parameter that was not correct or appeared to be malfunctioning, then the Test Director made a determination as to the feasibility of continuing testing. A determination by any of the responsible test personnel of the existence of an unsafe condition would stop the test. A record of all noted deficiencies was kept on an "Exception List", APPENDIX A.

When all testing was completed and all exceptions resolved, approval of the test performance was documented on the "Final Procedure Acceptance Sheet", APPENDIX A.

Changes to this procedure were made as red-line changes by the PIC or The Test Director. All red-line changes were initialed and dated. All changes were formally documented by ECN at the conclusion of this procedure, ECN 612248.

4 Description of the System

The cradle is used to move the 101-SY mitigation pump between the horizontal to vertical position to facilitate pump installation into tank 101-SY. The hydraulic ram, and associated system is used to move the cradle assembly between 70° and 90° (90° being the vertical position). A crane is used to move the cradle assembly between 70° and the horizontal position.

5 Acceptance Test

The test was performed over a period of several days. A dissertation of the test is given below. Refer to the filled out test procedure in APPENDIX A for notes, observations, and exceptions.

5.1 August 30

5.1.1 Operations

The cradle hydraulic system was wired to a portable generator by an electrician.

The ATP was performed through step 6.2.4.3. This portion of testing included check out of equipment and installation, hydraulic power unit and control panel functions, and power unit and snubber system settings.

The test was set to resume the following morning starting with the unloaded lift test.

5.1.2 Anomalies

The air bleeder valve supplied with the telescopic cylinder turned out to be the wrong unit. The cylinder was supplied with a manual bleeder when an automatic bleed valve was anticipated.

5.1.3 Actions

Vendor representative, Pat Schmitt, to provide automatic bleed valve when test resumes in the a.m..

5.2 August 31

5.2.1 Operations

Installed correct bleeder valve on the telescopic cylinder.

The ATP was resumed starting at step 6.3, Unloaded Lift Test.

The ATP was performed through step 6.3.6.2. When the procedure called to switch from low pressure mode to high pressure the power unit did not respond. It was working correctly the previous day so it was determined the control valve may be blocked or malfunctioning.

The cradle was lowered to a safe position using the crane. The solenoid actuated valve was removed from the power unit. Upon inspection the valve appeared to be blocked by a piece of metal. This was removed and the problem appeared to be corrected.

Due to time constraints, the test was set to resume the following morning.

5.2.2 Anomalies

Small piece of metal become lodged in one of the control valves on the power unit. This did not allow the valve to close and transfer the system into high pressure mode. The most likely origin of the foreign material is from the machining of the cylinder or the manifold. The chip had the appearance of a bur from drilling or tapping.

5.2.3 Actions

The valve was removed, inspected, cleaned, and replaced. The system was run to flush out the manifold. The operation was checked and appeared normal.

5.3 September 1

5.3.1 Operations

The ATP was resumed starting at step 6.3, Unloaded Lift Test.

The ATP was performed through step 6.3.9. When the snubber was actuated to begin lowering the cradle it would not hold pressure. Upon inspection it was determined that the snubber had blown a seal and hydraulic fluid was leaking out as the cylinder was being pumped up.

The ATP was halted and the cradle lowered using the crane to get it over center. The ATP was set to resume when the snubber was repaired or replaced.

5.3.2 Anomalies

Although the pressure relief valve on the snubber was set at 7100 psi, the pressure obtained when the cradle was raised was noted to be considerably higher. This is most likely due to the valves sensitivity to the flow rate passing through it. The flow rates developed were below the range of accurate control for this valve. Due to the high pressure of the ENERPAK system, valves that will perform at the required flow rates are not readily available. A possible cure for this would be to abandon the pressure relief valve and use the needle valve on the snubber.

The ENERPAK snubber blew a seal. This may have been in part due to the pressures obtained during the cradle raising.

5.3.3 Actions

After discussion with Pat Schmitt of CALKINS, it was determined to replace the snubber and hand pump with a redesigned snubber which would be actuated by the power unit. The new snubber will mount in the same location with minimal modifications. It will have the same capacities but will have an operating pressure much lower than the ENERPAK unit. This will allow it to be operated by the power unit with one control for the snubber and telescopic cylinder, and will allow installation of a relief valve more suited to the flow rate we were experiencing. The price for all this would be comparable to replacing the ENERPAK snubber.

The test will be rescheduled when the snubber modifications are complete.

5.4 November 28

5.4.1 Operations

Test procedure was modified to account for the new snubber. The modifications were incorporated via redlines to the test procedure by the test director. These redlines were later incorporated by ECN 612248.

The power unit was plugged into a permanent power source located near tank 241SY101 central pump pit. This was performed to eliminate problems encountered with portable generator.

A operational checkout was performed to the hydraulic system per section 6.1 of the ATP and under direction of Pat Schmitt of CALKINS.

5.4.2 Anomalies

During the operational check of the new snubber the backflow pressure went to zero as soon as the control valve was opened. The backflow pressure should have been regulated at approximately 1,900 psi. Upon inspection it was determined that the sandwich valve installed to control the snubber contained the wrong reverse check cartridge.

5.4.3 Actions

Vendor representative, Pat Schmitt, ordered correct valve air freight from Seattle. The correct valve will arrive in Yakima this evening and Pat will pick it up and deliver to Hanford in the a.m..

Correct valve will be installed and the test will resume in the morning starting with section 6.3 Unloaded Lift Test.

5.5 November 29

5.5.1 Operations

New sandwich valve installed by vendor. Operation of snubber checked out as directed by CALKINS. Snubber modifications were determined to be performing to the satisfaction of WHC and CALKINS.

Crane operations were suspended due to wind conditions.

5.5.2 Anomalies

Bad weather caused operations to stop for safety concerns.

5.5.3 Actions

Test set to resume tomorrow a.m. starting with section 6.3 Unloaded Lift Test.

5.6 November 30

5.6.1 Operations

Crane operations were suspended due to wind conditions.

5.6.2 Actions

Test to be rescheduled starting with section 6.3 Unloaded Lift Test.

5.7 December 7

5.7.1 Operations

The ATP was performed through step 6.3.13.

At one point in the unloaded lift the cylinder started to exhibit signs of trapped air. The cradle was lowered using the crane and the automatic bleeder cap opened. The lift was continued and the signs of air diminished.

The test was set to resume the following morning starting with section 6.4 Loaded Lift Test.

5.7.2 Anomalies

Air had entered the cylinder during its dormancy from the first lift attempt (September 1, 1994). This may have been air trapped in suspension in the fluid and then collected in mass during the period of no use.

When attempting to start the motor for the first time in the morning, it would only reach approximately 100 rpm. This was due to the cold weather and the viscous characteristics of the hydraulic fluid when temperatures are low. Once warmed up the power unit started normally.

5.7.3 Actions

Cylinder was bled using the automatic bleed valve.

To start the motor when cold it was necessary to open the cylinder isolation valve and activate the crane handling mode prior to starting the pump. This opened the volume of fluid in the cylinder and the hydraulic hose to the low pressure pump allowing a small slug of fluid to be pumped. This was enough to start the pump in the cold weather.

5.8 December 8

5.8.1 Operations

The ATP was performed through step 6.4.15.

It was noted that a puddle of hydraulic fluid had formed beneath the automatic bleed valve. Upon inspection it was found that the valve had been left open over night. During the loaded lift the cylinder started to exhibit signs of trapped air. The cradle was lowered using the crane and the automatic bleeder cap opened. The lift was continued and the signs of air diminished.

The test was completed in its entirety.

5.8.2 Anomalies

A pool of hydraulic fluid had formed beneath the cylinder at the bleeder valve. The valve was not closed after the preceding days operations. This allowed fluid to drip out of the valve over night.

Air had entered the cylinder over night. The most likely explanation of this is that it entered through the open bleed valve.

The pump would not start in the morning due again to the cold weather. The identical cold start procedure used yesterday was employed.

5.8.3 Actions

Cylinder was bled using the automatic bleed valve.

Cold starting procedure was employed.

6 Conclusion

- 6.1 Power unit works as specified in WHC-S-0284
- 6.2 System works adequately in the crane handling mode. The crane can raise and lower the system at will without damaging the cradle structure.
- 6.3 System works adequately in the joystick mode. The cradle can be raised and lowered between 70 degrees and vertical by a single operator.
- 6.4 System works in unison with existing components in the pump cradle without adversely effecting their operation requirements.
- 6.5 Personnel participating in this test are trained to operate the cradle hydraulic system.
- 6.6 The system as described in WHC-SD-WM-DA-167 is functionally and structurally adequate.

7 Recommendations

- 7.1 Note in the procedures to close the automatic air bleeder valve when not in use and open it prior to performing a lift. The open valve does not effect the performance of the cylinder and will only leak a few drops of fluid out while allowing air to escape the cylinder.

This will be addressed in the O&M Manual, WHC-SD-WM-OMM-014.

- 7.2 Provide a cold starting procedure or equipment such as an immersion heater and/or heat tape in the event cold weather operations are required. Allow ample warm up time (10 minutes) for the system to warm up prior to starting lift.

This will be addressed in the O&M Manual, WHC-SD-WM-OMM-014.

- 7.3 Store components inside a facility that will prevent damage from weather. Provide plastic covers for components when installed in the field and not in use.

This will be addressed in the O&M Manual, WHC-SD-WM-OMM-014, and performed under an approved work package.

WHC-SD-WM-ATR-094
Revision 0

APPENDIX A

Acceptance Test Procedure

ACCEPTANCE TEST PROCEDURE FOR
241-SY PUMP CRADLE HYDRAULIC SYSTEM

B. M. Koons
August 1994

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BMK
12/2/94

BMK
8/9/94
BLA
10/4/94

1.0 PURPOSE/SCOPE

The purpose of this ATP is to verify that hydraulic system/cylinder procured to replace the cable/winch system on the 101-SY Mitigation Pump cradle assembly fulfills its functional requirements for raising and lowering the cradle assembly between 70 and 90 degrees, both with and without pump. A system design review was performed on the 101-SY Cradle Hydraulic System by the vendor before shipping (See WHC-SD-WM-DRR-045, 241-SY-101 Cradle Hydraulic System Design Review). The scope of this plan focuses on verification of the systems ability to rotate the cradle assembly and any load through the required range of motion.

2.0 REFERENCES

- 2.1 WHC-SD-WM-DRR-045, 241-SY-101 Cradle Hydraulic System Design Review, Calkins Fluid Power, Drawing WSTG3, Hydraulic System Layout
- 2.2 WHC-SD-WM-DRR-045, 241-SY-101 Cradle Hydraulic System Design Review, Calkins Fluid Power, Drawing WSTG4, Hydraulic Schematic
- 2.3 WHC-SD-WM-DRR-045, 241-SY-101 Cradle Hydraulic System Design Review, Calkins Fluid Power, Drawing WSTG5, Electrical Layout/Schematic
- 2.4 WHC-SD-WM-DA-121, Analysis of the Mixer Pump Cradle Modifications and Cradle Leveling Base for the 101-SY Hydrogen Mitigation Test
- 2.5 ECN 176843, 70 Degree Marker
- 2.6 ECN 176844, Change to WHC-S-0284
- 2.7 ECN 176845, 70 Degree Marker
- 2.8 ECN 176848, Clevis Detail Notes
- 2.9 ECN 177797, General Note Revision
- 2.10 ECN 190820, Pneumatic Schematic Revision
- 2.11 ECN 195006, Relocate Pump & Compressor
- 2.12 ECN 195376, Add Cleaning Note
- 2.13 ECN 195378, Cradle Base Shims
- 2.14 ECN 609782, Transport Cradle Stand Note
- 2.15 ECN 609821, Snubber Modification
- 2.16 H-2-815371, HMT Cradle Hydraulic / Pneumatic System Arrangement, Rev 0
- 2.17 H-2-815391, HMT Cradle Instl and Operating Hydr System Schematic, Rev 0
- 2.18 H-2-83693 Sheets 1 & 5, Transport Cradle Base Plan & Section, Rev 0
- 2.19 H-2-83737, Cradle Modifications for Hydraulic Ram, Rev 0

- 2.20 Mixer Pump Assembly 101 SY Tank Critical Lift Procedure, Rev 5
- 2.21 WHC-CM-4-3, Industrial Safety Manual, Vol 1-3
- 2.22 WHC-CM-4-10, Radiation Protection Manual
- 2.23 WHC-CM-4-15, Radiation Work Requirements and Permits Manual, Vol 2
- 2.24 WHC-CM-4-40, Industrial Hygiene Manual
- 2.25 WHC-S-0284, Specification for 241-SY Pump Cradle Hydraulic System, Rev 0
- 2.26 DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual

3.0 RESPONSIBILITIES

The following personnel will be required for the performance of this procedure:

- Person in Charge (PIC): The individual assigned direct responsibility for the performance, preparation, and adequacy of the test.
Assigned PIC: T.R. LAW ^{TR LAW} (To be assigned by Operations)
- Test Director: The engineer ^{SMK 8/30/94} assigned shift responsibility for the test.
Assigned TD: B.M. Koons OR B.L. Attanas ^{7RL 10-11-94}
- Test Engineer: The engineer assigned to ~~assist~~ and relieve the Test Director during the performance of the test.
Assigned TE: T.C. Mackey
- Quality Assurance: Verify the satisfactory completion of the test steps as described in this procedure.
Assigned QC: L.J. McDougal
- Rigging Specialist: Individual assigned to assist in the directing of hoisting and rigging operations.
Assigned RS: C.E. Brewer or Keith Best

Only personnel designated by the PIC are allowed to direct testing per this procedure, and perform operating and control functions required to complete this test procedure.

One engineer acting as Test Director or one engineer acting as Test Engineer, the PIC, and the Rigging Specialist are required to be present in the field during testing. If, during testing, any indicated function, or parameter is not correct or appears to be malfunctioning, then the Test Director shall make a determination as to the feasibility of continuing testing. A determination by any of the responsible test personnel of the existence of an unsafe condition shall stop the test. A record of all noted deficiencies will be kept on Attachment 1. "Exception List".

When all testing is completed and all exceptions have been resolved, approval of the test performance will be documented on Attachment 2. "Final Procedure Acceptance Sheet".

Changes to this procedure may be made as red-line changes by the PIC or The Test Director. All red-line changes will be initialed and dated. All changes will be formally documented by ECN at the conclusion of this procedure.

4.0 DESCRIPTION OF THE SYSTEM

The cradle is used to move the 101-SY mitigation pump between the horizontal to vertical position to facilitate pump installation into tank 101-SY. The hydraulic ram, and associated system is used to move the cradle assembly between 70° and 90° (90° being the vertical position). A crane is used to move the cradle assembly between 70° and the horizontal position.

5.0 TEST CONDITIONS AND EQUIPMENT REQUIRED

5.1 The work performed under this procedure shall be performed under the provisions of the following manuals:

- WHC-CM-4-3, Industrial Safety Manual, Vols 1-3
- WHC-CM-4-10, Radiation Protection Manual
- ~~WHC-CM-4-15, Radiation Work Requirements and Permits Manual, Vol 2~~
- WHC-CM-4-40, Industrial Hygiene Manual
- DOE-RL-92-36, Hanford Site Hoisting and Rigging Manual

CM-1-6
BMK
8-8-94

5.2 Prior to initiation of testing, the following items shall be verified:

5.2.1 The cradle base hydraulics are properly installed and the pump has sufficient hydraulic fluid and fuel. ~~See drawing H-2-815371.~~

Verified by: BMK ^{BMK 12-7-94} 8/30/94
(Test Director) Date

BMK
8-8-94

5.2.2 The cradle assembly is properly installed with the NW and NE pivot pins extended, and the SW and SE latch pins retracted. Clean and lubricate latch and pivot pins per ECN 195376. Disconnect one hose from each ~~latch pin and~~ pivot pin at the valve panel to prevent inadvertent extension/retraction. See drawings H-2-815391 and H-2-83693 sheet 5.

Verified by: BMK ^{BMK 12-7-94} 8/30/94
(Test Director) Date

BMK
8/30/94

5.2.3 The four 17,000 pound counter weights are in place per drawing H-2-83693 sheet 1.

Verified by: BMK ^{BMK 12-7-94} 8/30/94
(Test Director) Date

- 5.2.4 The 5-stage hydraulic cylinder is mounted in position beneath the cradle and the rod ends are adequately lubricated. See drawing H-2-83737. The cylinder rod ends have grease fittings, grease should be visible at both ends of rod end if properly lubricated.

Verified by: B.M. Koen ^{DMK 12-7-94} 8/30/94
(Test Director) Date

- 5.2.5 The hydraulic power unit and control pedestal are properly connected to the 5-stage cylinder and the reservoir has an adequate amount of fluid. See CALKINS Dwg WSTG3, WSTG4 & WSTG5. ^{DMK 8/19/94}

Verified by: B.M. Koen ^{DMK 12-7-94} 8/30/94
(Test Director) Date

- 5.2.6 The hydraulic power unit is properly wired to the generator and the generator has an adequate supply of fuel. See CALKINS Dwg WSTG5.

See Exception 5
DMK 12-7-94

Verified by: B.M. Koen 8/30/94
(Test Director) Date

- 5.2.7 The ambient temperature is in the range of 0 to 120 degrees fahrenheit and the wind velocity is below 15 mph.

Verified by: B.M. Koen ^{DMK 12-7-94} 8/30/94
(Test Director) Date

- 5.3 Prior to initiation of testing, the following equipment shall be available and ready for use:

- 5.3.1 Two cranes, 150-ton 518 Link-Belt, and 75-ton Lima.
- 5.3.2 Mock-up mixer pump, 20 ton (SWL) lifting yoke, 1 ea. 2" dia. x 10' sling (SWL 64,000 lbs).
- 5.3.3 2 ea. 17-ton shackles, 2 ea. 1 1/2"x10' slings (minimum)
- 5.3.4 Load cell (100,000 lbs. minimum capacity)
- 5.3.5 40 KW generator for hydraulic system (minimum requirement).
- 5.3.6 Approximately 250 feet of power cable for hydraulic power unit.
- 5.3.7 Machinist levels for leveling base frame.
- 5.3.8 Rigging equipment for loading mock-up pump into cradle as determined by rigging specialist.
- 5.3.9 Extension ladder as required.
- 5.3.10 3 ea. 1 3/8" dia. x 6" long hex head bolts and spacers, and socket for mounting.
- 5.3.11 Other tools and equipment as necessary.

6.0 ACCEPTANCE TEST

6.1 Power Unit Operational Check

- 6.1.1 Turn the panel and mode selector switches on the remote control panel, and the panel switch on the hydraulic power unit panel to the OFF position.
Verified by: BMK ^{12/7/94} Date 8/30/94
- 6.1.2 Close the hydraulic isolation valve on the hydraulic power unit and open both suction isolation valves.
Verified by: BMK ^{BK 12/7/94} Date 8/30/94
- 6.1.3 Start the generator to supply power to the hydraulic power unit.
Verified by: BMK ^{12/7/94} Date 8/30/94
- 6.1.4 Verify that the hydraulic power unit panel is functioning properly.
- 6.1.4.1 ✓ Turn the panel switch on the hydraulic power unit panel to the ON position and press the HYDRAULIC PUMP START button.
Verified by: BMK ^{12/7/94} Date 8/30/94
- 6.1.4.2 ✓ Verify that the hydraulic power unit motor is running in the correct direction.
Verified by: BMK Date 8/30/94
- 6.1.4.3 ✓ Verify that the HYDRAULIC PUMP START indication lights are illuminated on both the hydraulic power unit panel and the remote control panel.
Verified by: BMK Date 8/30/94
- 6.1.4.4 ✓ Depress the HYDRAULIC PUMP STOP button and verify that the hydraulic power unit motor has stopped and the indication lights on the hydraulic power unit and remote control panels are off.
Verified by: BMK Date 8/30/94
- 6.1.4.5 ✓ Depress the HYDRAULIC PUMP START button on the hydraulic power unit panel to start the hydraulic pump motor.
Verified by: BMK Date 8/30/94

- 6.1.4.6 Depress the EMERGENCY STOP button on the hydraulic power unit panel and verify that the hydraulic pump motor has stopped.
Verified by: BMK Date 8/30/94
- 6.1.4.7 Reset the EMERGENCY STOP button on the hydraulic power unit panel and turn the panel switch to the OFF position.
Verified by: BMK Date 8/30/94
- 6.1.5 Verify that the remote control panel is functioning properly.
- 6.1.5.1 Turn the panel switch on the remote control panel to the ON position and press the HYDRAULIC PUMP START button.
Verified by: BMK Date 8/30/94
- 6.1.5.2 Verify that the hydraulic power unit motor is running in the correct direction.
Verified by: BMK Date 8/30/94
- 6.1.5.3 Verify that the HYDRAULIC PUMP START indication lights are illuminated on both the hydraulic power unit panel and the remote control panel.
Verified by: BMK Date 8/30/94
- 6.1.5.4 Depress the HYDRAULIC PUMP STOP button on the remote control panel and verify that the hydraulic power unit motor has stopped and the indication lights on the panels are off.
Verified by: BMK Date 8/30/94
- 6.1.5.5 Depress the HYDRAULIC PUMP START button on the remote control panel to start the hydraulic pump motor.
Verified by: BMK Date 8/30/94
- 6.1.5.6 Depress the EMERGENCY STOP button on the remote control panel and verify that the hydraulic pump motor has stopped.
Verified by: BMK Date 8/30/94
- 6.1.5.7 Reset the EMERGENCY STOP button on the hydraulic power unit panel.
Verified by: BMK Date 8/30/94

6.1.5.8 ✓ Turn the mode selector switch on the remote control panel to the CRANE HANDLING MODE position and depress the CRANE HANDLING MODE - ENABLE button.

Verified by: BMK Date 8/30/94

6.1.5.9 ✓ Verify that the CRANE HANDLING MODE indication lights are illuminated on both the hydraulic power unit panel and the remote control panel.

Verified by: BMK Date 8/30/94

6.1.5.10 ✓ Turn the mode selector switch on the remote control panel to the JOYSTICK OPERATOR MODE position and depress the JOYSTICK MODE - ENABLE button.

Verified by: BMK Date 8/30/94

6.1.5.11 ✓ Verify that the JOYSTICK OPERATOR MODE indication lights are illuminated on both the hydraulic power unit panel and the remote control panel.

Verified by: BMK Date 8/30/94

6.1.5.12 Turn the mode selector switch and the panel switch on the remote control panel to the OFF position.

Verified by: BMK Date 8/30/94

6.1.6 Verify that the hydraulic power unit pressure settings are correct.

6.1.6.1 ✓ Turn the panel switch on the remote control panel to the ON position.

Verified by: BMK Date 8/30/94

6.1.6.2 ✓ Depress the HYDRAULIC PUMP START button.

Verified by: BMK Date 8/30/94

6.1.6.3 ✓ Turn the selector switch on the remote control panel to the JOYSTICK OPERATOR MODE and press the JOYSTICK MODE - ENABLE button.

Verified by: BMK Date 8/30/94

6.1.6.4 ✓ Record the pressure reading obtained from the pressure gage at the high pressure pump and verify that the reading is between 1800 psi and 2000 psi.
pressure: ~~1800~~ 1980 psig

Verified by: BMK Date 8/30/94

6.1.6.5 ✓ Move the joystick control to the full UP position and hold.

Verified by: BMK Date 8/30/94

6.1.6.6 ✓ With the joystick in the full UP position, record the pressure reading obtained from the digital display at the remote control panel and verify that the reading is within 10 percent of the pressure obtained in Step

BMK
8/9/94

6.1.6.3.4
pressure: 1900 psig

Verified by: BMK Date 8/30/94

6.1.6.7 ✓ Return the joystick to the neutral position, turn the selector switch to the CRANE HANDLING MODE position, and press the CRANE HANDLING MODE - ENABLE button.

Verified by: BMK Date 8/30/94

6.1.6.8 ✓ Record the pressure reading obtained from the digital display at the remote control panel and verify that the reading is between 25 psi and 75 psi.
pressure: 50 psig

Verified by: BMK Date 8/30/94

6.1.6.9 ✓ Turn the selector switch and the panel switch on the remote control panel to the OFF position.

Verified by: BMK Date 8/30/94

Testing as directed by this procedure section 6.1 has been completed and discrepancies, if any, have been listed on Attachment 1. Exception List.

Test Director Brian M. Koen Date: 8/30/94

Brian M. Koen 12/7/94

6.2 Snubber Modification Operational Check

6.2.1 Install the snubber modification on the hand pump in the reverse direction.

6.2.1.1 Verify that the snubber ram is fully retracted and the hydraulic hose is properly connected.

Verified by: BMK Date 8/30/94

6.2.1.2 On the snubber modification (ECN 609821), move the male coupler to the inlet, and move the female coupler to the outlet.

Verified by: BMK Date 8/30/94

6.2.1.3 Install the modification between the hand pump and the hose connected to the snubber ram.

Verified by: BMK Date 8/30/94

6.2.2 Operate the hand pump until the hydraulic ram raises a few inches.

Verified by: BMK Date 8/30/94

Note: Full extension of the snubber ram is 10 1/4". Do not fully extend the snubber ram.

6.2.3 Record the maximum pressure reading on the pressure gage at the snubber modification and verify that it is between 6700 psi and 7300 psi.
pressure: 7100 psig

Verified by: BMK Date 8/30/94

6.2.4 Return the snubber system to the standard configuration.

6.2.4.1 Remove the modification from between the hand pump and the hose connected to the snubber ram.

Verified by: BMK Date 8/30/94

6.2.4.2 Move the male coupler to the outlet, and move the female coupler to the inlet.

Verified by: BMK Date 8/30/94

6.2.4.3 Verify that the snubber ram is fully retracted and the hydraulic hose is properly connected.

Verified by: BMK Date 8/30/94

Testing as directed by this procedure section 6.2 has been completed and discrepancies, if any, have been listed on Attachment I. Exception List.

Test Director: Brian M. Lee Date: 8/30/94

Exception 6 9
BMK 12-7-94

6.3 Unloaded Lift Test

6.3.1 Prepare the snubber system.

6.3.1.1 ~~Verify that the snubber modifications are properly installed per ECN 609821.~~

BMK 12/2/94
CNI file 22604 and *BLA Exception 1 10/11/94*
Verified by: BMK Date 8/31/94

6.3.1.2 ~~Use the hand pump to pump the snubber to the fully extended position. See Exception 2 for new paragraph 6.3.1.2.~~

BLA 10/11/94
Verified by: BMK Date 8/31/94

6.3.1.3 ~~Verify that the needle valve and the release valve on the hand pump are fully open. See Dwg H-2-815371.~~

See Exception 3 for new paragraph 6.3.1.3.
BLA 10/11/94
Verified by: BMK Date 8/31/94 *H-2-81536 BMK 8/9/94*

6.3.2 Prepare the cradle base.

6.3.2.1 Using the valves labeled "Leveling Jack" on the hydraulic control panel, fully retract all 8 leveling jacks until the cradle base shims are resting on the concrete. See Dwg H-2-815371 and H-2-815367.

BMK 12/2/94
Verified by: BMK Date 8/31/94 *BMK 8/9/94*

6.3.2.2 Use the leveling jack valves and pressure gauges at the control panel to pressurize the jacks to approx. 800 psi. This will remove most of the load from the cradle base shims. See Dwg H-2-815371 and H-2-815367.

BMK 12/2/94
Verified by: BMK Date 8/31/94 *BMK 8/9/94*

Note: Use the needle valve located at the hydraulic pump to control the jack speed.

6.3.2.3 Verify that the cradle base is level and that the shims have not risen off the concrete.

BMK 12/2/94
Verified by: BMK Date 8/31/94

6.3.3 Prepare cradle and rigging.

6.3.3.1 Position Linkbelt crane as required. See attachment 20.

BMK 12/2/94
Verified by: BMK Date 8/9/94

- 6.3.3.2 Attach 2 ea. 17-ton shackles and 2 ea. 1 1/2"x10' slings (minimum) to the two lifting lugs located at the top of the cradle. See attachment 20, para. 9.7.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.3.3 Verify that the dummy pump is not loaded in the cradle and that the cradle door is closed.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.3.4 Verify that there are no loose bolts, fittings, attachments, or other items on the cradle or rigging that might pose a possible safety hazard as the cradle is raised.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.4 Prepare the hydraulic system for raising.
- 6.3.4.1 Verify that the panel and mode selector switches on the remote control panel, and the panel switch on the hydraulic power unit panel are in the OFF position.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.4.2 Open the hydraulic isolation valve on the hydraulic power unit and open both suction isolation valves.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.4.3 Start the generator to supply power to the hydraulic power unit. *see Exception 5*
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.4.4 Turn the panel switch on the remote control panel to the ON position and press the HYDRAULIC PUMP START button.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.4.5 Verify that the hydraulic power unit motor is running.
Verified by: BMK ^{BMK 12/7/94} Date 8/31/94
- 6.3.5 Raise the cradle to the 70 degree mark using the crane.
- 6.3.5.1 Turn the selector switch on the remote control panel to the CRANE HANDLING MODE position, and press the CRANE HANDLING MODE - ENABLE button.
Verified by: DMK ^{BMK 12/7/94} Date 8/31/94

6.3.5.2 Verify that the CRANE HANDLING MODE - ENABLE light is illuminated.

^{BMK 12/7/94}
Verified by: BMK Date 8/31/94

6.3.5.3 Use the crane to raise the cradle until the 70 degree marks are aligned, see ECN 176843 and ECN 176845. The crane operator must exercise care not to side load the cradle. Monitor base jack pressures to see that jack loads are evenly distributed.

^{BMK 12/7/94}
Verified by: BMK Date 8/31/94

Note: If the cylinder pressure goes below 10 psi, notify the crane operator to reduce the raising speed.

6.3.5.4 Record the minimum pressure reading obtained in step 6.3.5.3 from the digital display at the remote control panel.

^{55 BMK 12/7/94 BMK}
min pressure: 42 psig

Verified by: BMK Date 9/1/94

6.3.5.5 Turn the selector switch on the remote control panel to the OFF position.

^{BMK 12/7/94}
Verified by: BMK Date 9/1/94

6.3.6 Raise the cradle to the vertical position using the cylinder.

6.3.6.1 Turn the selector switch on the remote control panel to the JOYSTICK CONTROL MODE position, and press the JOYSTICK CONTROL - ENABLE button.

^{BMK 12/7/94}
Verified by: BMK Date 9/1/94

6.3.6.2 Verify that the JOYSTICK CONTROL - ENABLE light is illuminated.

^{BMK 12/7/94}
Verified by: BMK Date 9/1/94

6.3.6.3 Use the JOYSTICK CONTROL to raise the cradle with the crane following.

Verified by: BMK Date 12/7/94

Note: As the cylinder approaches the snubber, visually verify that the snubber contacts the cradle at the reinforced pad.

6.3.6.4 When the cradle is seated into position deploy the cradle base latch pins.

Verified by: BMK Date 12/7/94

Note: The cradle is seated when an increase in cylinder pressure occurs.

6.3.6.5 Turn the selector switch on the remote control panel to the OFF position, and press the HYDRAULIC PUMP STOP button.

Verified by: BMK Date 12/7/94

6.3.6.6 Turn the remote control panel switch to the OFF position.

Verified by: BMK Date 12/7/94

6.3.6.7 Close the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/7/94

~~6.3.7 Prepare Snubber for lowering.
See exception 4 to delete paragraph
6.3.7.1 ^{BMK 10/11/94} verify that the snubber needle valve is open and the
see exception 3 snubber return valve is closed. See drawing H-2
to delete paragraph 815371 H-2-815367.~~

BLA
10/11/94

BMK
8/9/94

BL4
10/11/94

N/A see Exception 7)

Verified by: _____ Date _____

6.3.8 Prepare the hydraulic system for lowering.

6.3.8.1 Verify that the panel and mode selector switches on the remote control panel, and the panel switch on the hydraulic power unit panel are in the OFF position.

Verified by: BMK Date 12/7/94

6.3.8.2 Open the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/7/94

6.3.8.3 If not running, start the generator, and supply power to the hydraulic power unit.

Verified by: N/A see exception 5
Date _____

6.3.8.4 Turn the panel switch on the remote control panel to the ON position.

Verified by: BMK Date 12/7/94

6.3.9 Lower the cradle to the 70 degree mark.

6.3.9.1 Turn the selector switch on the remote control panel to the JOYSTICK CONTROL MODE position, and press the JOYSTICK CONTROL - ENABLE button.

Verified by: BMK Date 12/7/94

6.3.9.2 Verify that the JOYSTICK CONTROL - ENABLE light is illuminated.

Verified by: BMK Date 12/7/94

6.3.9.3 Use the JOYSTICK CONTROL ~~and the snubber jack~~ ~~simultaneously~~ to lower the cradle until the 70 degree marks are aligned, see ECN 176843 and ECN 176845.

See exception 8 (BLA) to remove from paragraph 10/10/94

Verified by: BMK Date 12/7/94

6.3.9.4 Turn the selector switch on the remote control panel to the OFF position.

This step was moved to after 6.3.10.2
BMK 12/7/94

Verified by: BMK Date 12/7/94

6.3.10 Lower the cradle to the horizontal position.

6.3.10.1 Instruct the crane operator to position crane for lowering and to remove slack from rigging. Do not exert more than 5000 lbs with the crane as determined from the load cell.

Verified by: BMK Date 12/7/94

Note: Do not attempt to lower cradle until the following three steps are completed.

6.3.10.2 Move the joystick control to the DOWN position to load the crane and release the pressure on the cylinder.

Verified by: BMK Date 12/7/94

6.3.10.3 Turn the selector switch on the remote control panel to the CRANE HANDLE MODE position, and press the CRANE HANDLE MODE - ENABLE button.

Verified by: BMK Date 12/7/94

6.3.10.4 Verify that the CRANE HANDLE MODE - ENABLE light is illuminated.

Verified by: BMK Date 12/7/94

6.3.10.5 Use the crane to lower the cradle to the horizontal position. ✓

Verified by: BMK Date 12/7/94

Note: If the cylinder pressure goes above 70 psi, notify the crane operator to reduce the lowering speed.

6.3.10.6 Record the maximum pressure reading obtained in step ~~6.3.10.5~~ ~~6.3.10.3~~ from the digital display at the remote control panel. ✓

BMK
8/9/94 max pressure: 68 psig

Verified by: BMK Date 12/7/94

6.3.10.7 Verify that the cradle is fully horizontal and turn the selector switch on the remote control panel to the OFF position.

Verified by: BMK Date 12/7/94

6.3.11 Turn the remote control panel switch to the OFF position.

Verified by: BMK Date 12/7/94

6.3.12 Close the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/7/94

6.3.13 Disconnect the crane rigging from the ^{cradle} cylinder. BMK 12/7/94

Verified by: BMK Date 12/7/94

Testing as directed by this procedure section 6.3 has been completed and discrepancies, if any, have been listed on Attachment 1. Exception List.

Test Director: Brian Fisher Date: 12/7/94

6.4 Loaded Lift Test

6.4.1 Load the mitigation mock-up pump into the cradle. ✓

6.4.1.1 Load mock-up pump into the cradle as directed by rigging specialist.

Verified by: BMK Date 12/6/94

6.4.1.2 Install the three new assembly head bolts and spacers using the turn of nut method, and install the two pins into the guide pins.

Verified by: BMK Date 12/8/94

Note: Turn of nut method is snug tight plus 1/3 turn.

6.4.1.3 Verify that the cradle door is closed.

Verified by: BMK Date 12/8/94

6.4.2 Prepare the snubber system.

6.4.2.1 Verify that the snubber modifications are properly installed per ECN 609821.

^{BLA} Exception 1
CVI file 22604 and 10/11/94
Verified by: BMK Date 12/8/94

6.4.2.2 ~~Use the hand pump to pump the snubber to the fully extended position. See Exception 2 for new paragraph 6.4.2.2~~

^{BLA}
10/11/94
Verified by: BMK Date 12/8/94

6.4.2.3 ~~Verify that the needle valve and the release valve on the hand pump are fully open.~~

~~See Exception 3 for new paragraph 6.4.2.3.~~ ^{BMK} 12/2/94
Verified by: N/A Date _____

^{BLA}
10/11/94

6.4.3 Prepare the cradle base.

6.4.3.1 Using the valves labeled "Leveling Jack" on the hydraulic control panel, fully retract all 8 leveling jacks until the cradle base shims are resting on the concrete. See Dwg H-2-815371, H-2-815367.

^{BMK} 2/9/94
Verified by: DMK Date 12/8/94

6.4.3.2 Use the leveling jack valves and pressure gauges at the control panel to pressurize the jacks to approx. 800 psi. This will remove most of the load from the cradle base shims. See Dwg H-2-815371, H-2-815367.

^{BMK} 8/9/94
Verified by: DMK Date 12/8/94

Note: Use the needle valve located at the hydraulic pump to control the jack speed.

6.4.3.3 Verify that the cradle base is level and that the shims have not risen off the concrete.

Verified by: DMK Date 12/8/94

- 6.4.4 Prepare cradle and rigging.
- 6.4.3.1 Position Linkbelt crane as required. See attachment 20.
Verified by: Bmk Date 12/8/94
- 6.4.3.2 Attach the rigging to the 20-ton (SWL) lifting yoke as directed by rigging specialist. See attachment 20.
Verified by: Bmk Date 12/8/94
- 6.4.3.3 Verify that there are no loose bolts, fittings, attachments, or other items on the cradle or rigging that might pose a possible safety hazard as the cradle is raised.
Verified by: Bmk Date 12/8/94
- 6.4.5 Prepare the hydraulic system for raising.
- 6.4.5.1 Verify that the panel and mode selector switches on the remote control panel, and the panel switch on the hydraulic power unit panel are in the OFF position.
Verified by: Bmk Date 12/8/94
- 6.4.5.2 Open the hydraulic isolation valve on the hydraulic power unit and open both suction isolation valves.
Verified by: Bmk Date 12/8/94
- 6.4.5.3 Start the generator to supply power to the hydraulic power unit. *N/A Exception 5*
Verified by: Date
- 6.4.5.4 Turn the panel switch on the remote control panel to the ON position and press the HYDRAULIC PUMP START button.
Verified by: Bmk Date 12/8/94
- 6.4.5.5 Verify that the hydraulic power unit motor is running.
Verified by: Bmk Date 12/8/94

- 6.4.6 Raise the cradle to the 70 degree mark using the crane.
- 6.4.6.1 Turn the selector switch on the remote control panel to the CRANE HANDLING MODE position, and press the CRANE HANDLING MODE - ENABLE button.
Verified by: Bmk Date 12/8/94
- 6.4.6.2 Verify that the CRANE HANDLING MODE - ENABLE light is illuminated.
Verified by: Bmk Date 12/8/94
- 6.4.6.3 Use the crane to raise the cradle until the 70 degree marks are aligned, see ECN 176843 and ECN 176845. The crane operator must exercise care not to side load the cradle. Monitor base jack pressures to see that jack loads are evenly distributed.
Verified by: Bmk Date 12/8/94

Note: If the cylinder pressure goes below 10 psi, notify the crane operator to reduce the raising speed.

- 6.4.6.4 Record the minimum pressure reading obtained in step 6.4.6.3 from the digital display at the remote control panel.
min pressure: 52 psig
Verified by: Bmk Date 12/8/94
- 6.4.6.5 Turn the selector switch on the remote control panel to the OFF position.
Verified by: Bmk Date 12/8/94
- 6.4.7 Raise the cradle to the vertical position using the cylinder.
- 6.4.7.1 Turn the selector switch on the remote control panel to the JOYSTICK CONTROL MODE position, and press the JOYSTICK CONTROL - ENABLE button.
Verified by: Bmk Date 12/8/94
- 6.4.7.2 Verify that the JOYSTICK CONTROL - ENABLE light is illuminated.
Verified by: Bmk Date 12/8/94

6.4.7.3 Use the JOYSTICK CONTROL to raise the cradle with the crane following.

Verified by: BMK Date 12/8/94

Note: As the cylinder approaches the snubber, visually verify that the snubber contacts the cradle at the reinforced pad.

6.4.7.4 When the cradle is seated into position deploy the cradle base latch pins.

Not done performed in 6.3.6.4
Verified by: _____ Date BMK 12/8/94

Note: The cradle is seated when an increase in cylinder pressure occurs.

6.4.7.5 Turn the selector switch on the remote control panel to the OFF position, and press the HYDRAULIC PUMP STOP button.

Verified by: BMK Date 12/8/94

6.4.7.6 Turn the remote control panel switch to the OFF position.

Verified by: BMK Date 12/8/94

6.4.7.7 Close the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/8/94

~~6.4.8 Prepare Snubber for lowering~~ BLA 10/11/94
see exception 6 to delete paragraph.

~~6.4.8.1 Verify that the snubber needle valve is open and the snubber return valve is closed. See Dwg H-2-815371x H-2-815367.~~

see exception 7
to delete paragraph. BLA 10/11/94 BMK 8/9/94

Verified by: _____ Date _____
N/A Exception 7

6.4.9 Prepare the hydraulic system for lowering.

6.4.9.1 Verify that the panel and mode selector switches on the remote control panel, and the panel switch on the hydraulic power unit panel are in the OFF position.

Verified by: BMK Date 12/8/94

6.4.9.2 Open the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/8/94

6.4.9.3 If not running, start the generator and supply power to the hydraulic power unit. *N/A Exception 5*

Verified by: _____ Date _____

6.4.9.4 Turn the panel switch on the remote control panel to the ON position.

Verified by: BMK Date 12/8/94

6.4.10 Lower the cradle to the 70 degree mark.

6.4.10.1 Turn the selector switch on the remote control panel to the JOYSTICK CONTROL MODE position, and press the JOYSTICK CONTROL - ENABLE button.

Verified by: BMK Date 12/8/94

6.4.10.2 Verify that the JOYSTICK CONTROL - ENABLE light is illuminated.

Verified by: BMK Date 12/8/94

6.4.10.3 Use the JOYSTICK CONTROL ~~and the snubber jack simultaneously~~ to lower the cradle until the 70 degree marks are aligned, see ECN 176843 and ECN 176845.

See exception 8 to removal paragraph. 10/11/94

Verified by: BMK Date 12/8/94

6.4.10.4 Turn the selector switch on the remote control panel to the OFF position.

Verified by: BMK Date 12/8/94

Performed after step 6.4.11.2

6.4.11 Lower the cradle to the horizontal position.

6.4.11.1 Instruct the crane operator to position crane for lowering and to remove slack from rigging. Do not exert more than 5000 lbs with the crane as determined from the load cell.

Verified by: BMK Date 12/8/94

Note: Do not attempt to lower cradle until the following three steps are completed.

6.4.11.2 Move the joystick control to the DOWN position to load the crane and release the pressure on the cylinder.

Verified by: BMK Date 12/8/94

6.4.11.3 Turn the selector switch on the remote control panel to the CRANE HANDLE MODE position, and press the CRANE HANDLE MODE - ENABLE button.

Verified by: BMK Date 12/8/94

6.4.11.4 Verify that the CRANE HANDLE MODE - ENABLE light is illuminated.

Verified by: BMK Date 12/8/94

6.4.11.5 Use the crane to lower the cradle to the horizontal position.

Verified by: BMK Date 12/8/94

Note: If the cylinder pressure goes above 70 psi, notify the crane operator to reduce the lowering speed.

6.4.11.6 Record the maximum pressure reading obtained in step ~~6.4.11.5~~ from the digital display at the remote control panel.

BMK
8/9/94

max pressure: 65 psig

Verified by: BMK Date 12/8/94

6.4.11.7 Verify that the cradle is fully horizontal and turn the selector switch on the remote control panel to the OFF position.

Verified by: BMK Date 12/8/94

6.4.12 Turn the remote control panel switch to the OFF position.

Verified by: BMK Date 12/8/94

6.4.13 Close the hydraulic isolation valve on the hydraulic power unit.

Verified by: BMK Date 12/8/94

6.4.14 Disconnect power leads to hydraulic power unit.

Verified by: BMK Date 12/8/94

6.4.15 Unload the mitigation mock-up pump from the cradle.

Verified by: BMK Date 12/8/94

Testing as directed by this procedure section 6.4 has been completed and discrepancies, if any, have been listed on Attachment 1. Exception List.

Test Director: Bin Ma Date: 12/8/94

7.0 EXCEPTIONS TO ACCEPTANCE TEST SECTION

Exceptions to the test shall be disposition and agreed to by the test engineer and quality assurance representative. Actions taken regarding dispositioned shall be noted on the exception sheet (Attachment 1).

- 1) 6.3.1.1 Verify the new snubber is properly installed per ECN 613623 & 612228 and CVI # 22604. Verify the cylinder Isolation valve is closed.
BMK 12/2/94
Verified: BMK Date: 12/7/94
- 2) 6.3.1.2 From the Remote Panel, start pump and activate the Joystick mode. Hold the Joystick in the lower position until the snubber is fully extended and full pressure (2000psi approx) builds up on the snubber pressure gage.
BMK 12/2/94
Verified: BMK Date: 12/7/94
- 3) 6.3.1.3 Hold the Joystick in the raise position and record the pressure on the snubber pressure gage. Pressure: 1850 Verified: BMK Date: 12/7/94
Verify above pressure is between 1800psi and 1900psi.
Verified: BMK Date: 12/7/94
- 4) Air winch pulley may interfere w/ snubber breather. The pulleys were tied. They will be removed. BMK 12/7/94
- 5) ~~Lower cradle into rigging.~~ The hydraulic Power Unit was supplied by on-site service, located over 1015Y Tank. No generator was used. BMK 12/7/94
- 6) Section 6.2 does not apply with the snubber replacement/mods. The functional check for the new snubber was picked up in Section 6.3, see exceptions 1, 2, and 3 above.
- 7) No snubber preparations required for lowering cradle.
- 8) Hand pump for snubber is no longer used. The snubber is actuated from the hydraulic power unit.

8.0 ATTACHMENTS

101-SY POST PUMP-INSTALLATION ACCEPTANCE TEST PROCEDURE

EXCEPTION	STEP NUMBER	EXCEPTION DESCRIPTION	EXCEPTION RESOLUTION	RESOLUTION APPROVED BY:	DATE RESOLVED
1	6.3.1.1.1	Add reference to CVI file	CVI file attached to useas reference. Attachment 22	BMK see DRS 22	12/7/94
	6.4.2.1	# 22604			
2	6.3.1.2	Close the cylinder isolation valve and start the hydraulic power unit motor. In the joystick control mode, extend the snubber fully by moving the joystick to the Down position.	Old sections deleted in entirety. New sections added.	BMK	12/7/94
	6.4.2.2				
3	6.3.1.3	Take the power unit out of joystick control mode, and then open the cylinder isolation valve.	Old sections deleted in entirety. New sections added.	BMK	12/7/94
	6.4.2.3				
4	6.3.7	Delete paragraph.	Paragraph deleted.	BMK	12/7/94

Attachment 1: EXCEPTION LIST

101-SY POST PUMP-INSTALLATION ACCEPTANCE TEST PROCEDURE

EXCEPTION	STEP NUMBER	EXCEPTION DESCRIPTION	EXCEPTION RESOLUTION	RESOLUTION APPROVED BY:	DATE RESOLVED
5	6.3.7.1	Delete paragraph	Paragraph deleted.	BMK	12/7/94
6	6.4.8	Delete paragraph.	Paragraph deleted.	BMK	12/7/94
7	6.4.8.1	Delete paragraph	Paragraph deleted	BMK	12/7/94
8	6.3.9.3 6.4.10.3	Remove "and the snubber jack simultaneously" The pulley system on the cradle will interfere w/ breather on the snubber.	Removed from paragraph.	BMK	12/7/94
9	General		ECN will remove pulleys. They are no longer needed.	BMK	12/8/94
10	General	No Generator was used for IHT tests.	On site power by S101 Pump Pit was used	BMK	12/8/94

Completion of this procedure has demonstrated that:

- The cradle hydraulic system is installed correctly and that all controls function as desired.
- The cradle hydraulic system has the capability to facilitate the safe raising and lowering of the pump cradle with or without the mitigation pump loaded.
- A record of all noted deficiencies were kept on Attachment 1, Exception List, and all recorded exceptions have been resolved and the resolutions approved.

Approved by:



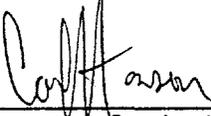
T.R. Lewis, Person In Charge
DATE 12/8/94

12-8-94
Date



B. M. Koons, Test Director

12/8/94
Date



C. E. Hanson, Project Manager

1/11/94
Date

Attachment 2: FINAL PROCEDURE ACCEPTANCE SHEET

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APPENDIX B

PIC Notes

Ch Code
N 119
N 226

J-5 CRAFT/RESOURCE USAGE LOG AND MAINTENANCE RECORD 1. Document Number 211-94-01061711m

Date	Turnover, Problem Description, Action Taken	Name	Craft/Resource Type	hours
11-29	CRANE WORK SUSPENDED DUE TO WINDS. VENDOR SUPPLIED NEW VALVE OPERATION OF SNUBBER ACCEPTABLE. READY TO PROCEED WITH ATP.			
11-30	Shut down DUE TO WIND CONDITIONS TR2			
12-7-94	Scheduled to start ATP. MECHANICS TO WORK ON CRANE THIS A.M. - START ATP. UN-LOADED PORTION OF TEST COMPLETE. STAGED CRANES + Mock Pump in FARM FOR LOADED PORTION OF TEST. Will RESUME WITH TEST 12-8-94 TOMORROW.			
12-8-94	LOADED PORTION OF TEST COMPLETE. THIS COMPLETES ATP OF CRADLE HYDRAULIC MECHS.			
12/13/94	Ops Complete D.M.V.			

Summary by Craft/Resource Type

Craft/Resource Type	Total Hours	Craft/Resource Type	Total Hours

J-5		CRAFT/RESOURCE USAGE LOG AND MAINTENANCE RECORD	1. Document Number	
Date	Turnover, Problem Description, Action Taken	Name	Craft/Resource Type	Hours
10-10-94	(CONT) NEW VALVE TO BE BROUGHT IN TOMORROW BY VENDOR. 30A-250V FUSE BLEW ON ELECTRICAL GENERATOR EXCITER, NONE TO BE FOUND ON SITE. CAULKINS VENDOR WILL TRY TO SUPPLY, BUT I WILL ORDER AS A BACK-UP AND SEE WHAT ARRIVES FIRST. START OF ATP IS CONTINGENT ON THESE PARTS	TRJ		
10-11-94	VENDOR SUPPLIED NEW VALVE, MILLWRIGHT INSTALLED. HAD TROUBLE LOCATING COPPER FUSE, WHEN LOCATED, INSTALLED & TESTED. GENERATOR FOUND TO STILL BE INADEQUATE. 1530 HRS. NEW GENERATOR BROUGHT TO SITE. ENGINEERS & ELECTRICIANS TO DETERMINE CONFIGURATION NEEDS. /10-13-94 - SUSPEND PKG, PER J-8	TRJ		
11-28-94	RESTART ATP, CHECKED APPARATUS CONFIG. OF HYD. PUMP @ VENDOR ARRANGING HYD. SANDWICH VALVE, ELECTRICIANS WIRED CABLE FROM POWER SUPPLY IN SY FARM SCA TO CAULKINS HYD. PUMP. ALL EQUIPMENT IN LINE FOR OPERATION EXCEPT VENDOR SUPPLIED SANDWICH/PRV ASSEMBLY, WHICH HAS PROVEN TO BE WRONG EQUIPMENT, VENDOR HAS ORDERED PART AND WILL ACCEPT AIR FREIGHT DELIVERY THIS P.M. VEHICLE MAINT. WAS CALLED TO REPLACE BATTERY IN ENERPAC HYD. PUMP. MILLWRIGHT MADE HOSE CONNECTIONS & BLED AIR FROM LINE TO 'NEW' SNUBBER. ATTEMPT TO RESTART ATP 11/29. MECK PUMP WILL NOT BE AVAIL. TO US THIS WEEK, WILL PROCEED @ EMPTY PORTION OF TEST.	TRJ		
	Craft/Resource Type	Total Hours	Craft/Resource Type	Total Hours

J-5	CRAFT/RESOURCE USAGE LOG AND MAINTENANCE RECORD	1. Document Number 22-94-116201			
Date	Turnover, Problem Description, Action Taken	Name	Craft/Resource Type	Hours	
10-6-94	Generator Wiring &	Hopfinger	22	8	
	① Drove Ground Rods				
	② Mounted Disconnect				
	③ Rewired 100A Breaker				
	④ Installed 3/4" LT Flex & fittings				
	⑤ Ground Generator FRAME				
	⑥				
	Work Left :				
	① Install 40A fuses				
	② Additional parts for job needed				
	① male Roe Plug				
	② Receptacle J BOX				
	These parts will be Friday afternoon				
	so need released. NO WASTE				
	<i>[Signature]</i>				
10-07-94	ELECTRICIANS FINISHED WIRING CONFIG ON				
	GENERATOR - WM-03 7.0-7.1. Hyd Fitting				
	ARRIVED 1500 HRS TODAY, WRONG FITTING,				
	VENDOR WILL SUPPLY APPROPRIATE FITTING				
	MONDAY.				
10-10-94	BEGIN ATP AT STEP 5.0, CRANE CREW SHUT				
	DOWN DUE TO EXCESSIVE WIND GUSTS UP TO				
	25 MPH. EXPERIENCING SOME HANG-UPS VENDOR				
	SUPPLIED SANDWICH HYD. VALVE IS THE WRONG UNIT,				
	(CONT.)				
Summary by Craft/Resource Type					
Craft/Resource Type	Total Hours	Craft/Resource Type	Total Hours		

J-5	CRAFT/RESOURCE USAGE LOG AND MAINTENANCE RECORD	1. Document Number 21W-914-10067710		
Date	Turnover, Problem Description, Action Taken	Name	Craft/Resource Type	Hours
9-14-94	J-7 RELEASED PKG. ICE J-7 WORK ON MUCK PUMP. IRONWORKERS TO DRILL FOR CRADLE PIN PER ECN 1614108	T. Lane		
9-20-94	PACKAGE RETURNED FROM I.W. -			
10-03-94	WORKING ECN'S FOR ELECTRICAL + NEW SNUBBER - SEVERAL UNRESOLVED QUESTIONS AS TO MATERIAL + WIRING CONFIG. ATP SCHEDULED TO WORK 10-04 + 10-05 WILL NOT HAPPEN AND WOULD LIKE TO PUSH FOR NEXT WEEK TO START ATP. WEAH ORDERING NECESSARY ELECTRICAL SUPPLIES	TRZ		
10-04-94	DETERMINED SNUBBER SUPPORT NEEDS TO BE RELOCATED TO ALLOW FOR PROPER ANGLE R. THORNE INCORPORATING WELD PROCEDURE + J-7 TO PACKAGE. MATERIAL FOR ELECTRICAL CONFIG. HAS NOT YET ARRIVED, EXPECT DELIVERY TOMORROW AFTER NOON.	TRZ		
10-05-94	RE-LOCATED SNUBBER SUPPORT TO PROPER LOCATION, INSTALLED SNUBBER, QUIK-DISCONNECTS TO HOSE + SNUBBER, NEED DIRECTION IN PKG. FOR INSTALLATION OF NEW METERING/RELIEF VALVE FOR NEW SNUBBER, R. THORNE CONSULTING WITH VENDOR FOR DIAGRAMS FOR INSTALLATION.	TRZ		
Summary by Craft/Resource Type				
Craft/Resource Type	Total Hours	Craft/Resource Type	Total Hours	

2W-94-006771G

J-5

CRAFT/RESOURCE USAGE LOG AND MAINTENANCE RECORD

Date	Turnover, Problem Description, Action Taken	Name	Craft/Resource Type	Hours
8-29-94	PRE-Job HELD AT 272-WA RT 8:00 AM All CRAFT INVOLVED IN ATTENDANCE OF PRE-Job, ELECTRICIAN + ENGINEER RESOLVING WIRING PROBLEM ON GENERATOR. DETERMINED PARTS WERE NECESSARY FOR LOAD AMPERAGE UPGRADE ON GENERATOR. EXPECT PARTS TO ARRIVE TOMORROW, OR WILL USE ALTERNATE GEN.	YR Jan		
8-30-94	TIED INTO ALTERNATE GEN. MOVED AHEAD WITH ATP TO COMPLETION OF STEP 6.2.4.3. WILL PICK UP ATP AT STEP 6.3, "UNLOADED LIFT TEST" TOMORROW. VENDOR ORDERED NEW BLEED VALVE	YR Jan		
8-31-94	INSTALLED NEW/CORRECT BLEEDER VALVE CENTERED WITH ATP THRU STEP 6.3.6.2. RAISED CRADLE TO 70° INDICATOR, HIGH PRESSURE SIDE OF HYDRAULICS NOT ACTIVATING, VENDOR DISCOVERED A PLUGGED PORT IN MANIFOLD, POSSIBLY A PIECE OF METAL LEFT WHEN MANUFACTURED, SUCH AS A BURR FROM TAPPING THREADS. PROBLEM APPEARS TO HAVE BEEN CORRECTED, TO LATE IN DAY TO MAKE ANOTHER PICK.	YR Jan		
9-1-94	RAISED CRADLE TO 90° LOST Hyd. SNUBBER SEAL. COG ORDERING NEW SNUBBER OF GREATER CAPACITY, SHOULD ARRIVE BY NEXT HOURS. 9-8-94	YR Jan		
9-2-94	PK9 NOT WORKED WALK-DOWN @ APPOINTED ENGINEERS' TO FILL B. KOONS POSITION WHILE ON VACATION, C. SHAW + R. SCHWEHR	YR Jan		

Summary by Craft/Resource Type

Craft/Resource Type	Total Hours	Craft/Resource Type	Total Hours



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APPENDIX C

Operator List

Author: Brian M Koons at ~WHC61
Date: 1/24/95 7:45 AM
Priority: Normal
TO: Keith M Best at ~WHC88
TO: Craig E Brewer at ~WHC277
BCC: Brian M Koons
Subject: CRADLE TEST ATTENDEES

----- Message Contents -----

Kieth/Craig,

The following is a list of riggers/operators who were at the cradle hydraulic test. Can you tell me if this list is complete and correct. The test was also considered a training excersize so all those present have been trained.

Thanks, Brian

Riggers: Kieth Best
Kevin Keller
Dan Golden
Bill Dyes
Dale Tucker

Crane Ops: Ken Flowers
Kieth Lanouette

Hvy Driver: Max Aguillar