Dear Dr. Snyder:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Polar Crane Auxiliary Hoist Inspection and Refurbishment Plan

Attached for your review and approval is the plan for inspection and refurbishment of the Polar Crane Auxiliary Hoist. It is GPU Nuclear's intention to use this plan to guide the refurbishment and qualification of the Auxiliary Hoist to its original rated capacity of twenty-five (25) tons. This plan is intended only as a guide for inspection and refurbishment activities and is subject to change based on actual conditions found during the inspection activities described herein. GPU Nuclear will advise the NRC staff of any significant deviations from the plan if such deviations are determined to be necessary.

GPU Nuclear will submit, at a future date, a safety evaluation for the actual requalification and load testing of the Polar Crane Auxiliary Hoist.

Per the requirements of 10 CFR 170, enclosed is a check in the amount of $150.00 for the application fee required for review of this submittal.
If you have any questions concerning this information, please call Mr. J. J. Byrne of my staff.

Sincerely,

[Signature]

F. R. Standerfer
Vice President/Director, TMI-2

FRS/RBS/jep
Attachment

cc: Acting Deputy Program Director - TMI Program Office, Dr. W. D. Travers
### POLAR CRANE AUXILIARY HOIST
### REFURBISHMENT PLAN

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Revision</th>
<th>By</th>
<th>Recovery Operations</th>
<th>Site Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11/2/84</td>
<td>Comments Incorporated</td>
<td>LH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature: [Signature]
1.0 PURPOSE

1.1 The purpose of the refurbishment plan is intended to provide a comprehensive and logistical outline to renovate and restore the auxiliary hoist feature of the TMI-2 refurbished polar crane to its original rated capacity of 25 tons.

1.2 This plan is only intended for use as a guide and is subject to change based on actual events.

2.0 APPLICABILITY/SCOPE

2.1 This plan is applicable to Site Engineering and Recovery Operations to assist in achieving refurbishment of the auxiliary hoist feature of the TMI-2 polar crane.

2.2 Safety classification is NIT3. See Section 4.7 for explanation and QC scope.

3.0 DEFINITIONS

3.1 Crane Maintenance - Any work required by means of rework or repair.

3.1.1 Rework - Any work required to maintain conformance to specified manufacturer's requirements. Rework includes replacement with like kind. Any rework required will be reviewed and approved by Site Engineering.

3.1.2 Repair - Site Engineering shall evaluate and approve any repair work, prepare any required ECA's and specify applicable QA/QC requirements.

3.2 Crane Modifications - Crane modifications are defined as replacement with unlike kind or any engineering changes to the crane components or functions. The authorizing document will be prepared by Site Engineering and will be reviewed and approved in accordance with Procedure 4000-ADM-7350.03. Appropriate QA/QC requirements will be specified.

4.0 PLAN

4.1 General

All major components of the auxiliary hoist are required to function properly for the auxiliary hoist to be operational except for the load sensing related components.
Each component shall be inspected for signs of wear and deterioration. Individual parts may be replaced and/or cleaned and lubricated based upon the initial inspection results. After performing the required maintenance, each component shall be checked or inspected as necessary to assure proper function. Following a successful checkout of all required components, a no load operational test and a rated load test shall be performed. Prior to and immediately following the load tests, the wire rope and the crane hook shall be inspected per the applicable sections of ANSI B30.2-1976 and ANSI B30.10-1982 for wear, deterioration, cracking, and deformation and shall be replaced if necessary. Prior to and immediately following the load test, the crane hook shall also be non-destructively examined in accordance with Procedure 6110-QAP-7209.01. The refurbishment task shall also comply with procedure 4000-PLN-3891.01 as applicable. After review and approval of all test data and examination, Site Engineering shall approve use of the auxiliary hook for the determined rated capacity. The auxiliary hoist shall be turned over to Site Operations after approval for use.

4.2 Refurbishment

4.2.1 Electrical Power Supply

Prior to performing any functional check of the individual components. The installation of power supply to the hoist system should be verified and checked (See Attachment 1 for details).

4.2.2 Component Walkdown and Refurbishment

See Table 1 and Attachment 2 for a list of the major auxiliary hoist components and the required walkdown task.

4.3 Operational Test

An operational test for the auxiliary hoist feature will be performed in accordance with ANSI B30.2.1976, Paragraph 2-2.2.1.1 and 4. The bridge and trolley features were tested with the main hoist operational test and has met all of the criteria in the referenced paragraph. Testing methods shall be conducted and documented in accordance with Procedure 4000-ADM-3055.01, TMI-2 Start-up and Test Program.

4.4 Rated Load Test

A rated load test using the auxiliary hoist shall be performed in accordance with ANSI B30.2-1976, Paragraph 2-2.2.2b, 1 and 4. Similar to the Operational Test, the trolley and bridge features were tested with a greater load during the main hoist load test than is required by the auxiliary hoist load test and has therefore surpassed the requirements of the referenced paragraph as applicable to the auxiliary hoist.
The original 25 ton rating of the auxiliary hoist will be re-established by load testing. See Attachment 3 for the proposed method for achieving a 25 ton rated load test. Testing methods shall be conducted and documented in accordance with procedure 4000-ADM-3055.01 "TMI-2 Start-Up and Test Program."

4.5 Post-Load Test Inspection

The auxiliary hoist wire rope and crane hook will be inspected by a person qualified for the inspection prior to and immediately following the associated operational and rated load tests. ANSI B30.2-1976, Paragraphs 2-2.4.1 and 2-2.4.2 will be used for guidance in inspecting the wire rope. ANSI B30.2-1976, Paragraphs 2-2.1.2a.4 and 2-2.3.3c.1 shall be used for guidance in inspecting the crane hook. Nondestructive testing of the crane hook shall be performed in accordance with Procedure 6110-QAP-7209.01.

4.5.1 Rated Load Marking

The present load capacity signs attached to the crane shall illustrate the auxiliary hoist rated capacity based on a successfully executed load test. The rated load signs shall be installed in accordance with ANSI B30.2-1976, Paragraph 2-1.1.1.

4.6 Division of Responsibility

All walkdowns, refurbishment tasks, preoperational test, operational test, and load test shall be prepared by Recovery Operations per Procedure 4000-ADM-3000.01, "TMI-2 Unit Work Instruction".

Site Engineering shall be responsible for review of all walkdowns, refurbishment tasks, preoperational test, operational test, and load test per Procedure 4000-ADM-3000.01, "TMI-2 Unit Work Instruction". Site Engineering's review will be to insure fulfillment of functional and licensing requirements and provide any suggestions/recommendations.

Suggestions to repair/replace major components or make modifications may be identified by Recovery Operations. Site Engineering shall authorize any modifications (Reference 3.2) and shall concur on decisions to repair or replace major components.

Load test methods, rigs, and/or rigging components to be used shall be mutually agreed by Site Engineering and Recovery Operations. Any rig design needed for load test shall be performed by Site Engineering. Recovery Operations shall review all rig designs prior to being issued for construction for constructability and function.
Recovery Operations shall be responsible for planning and scheduling. Recovery Operations shall also be responsible for preparing all material requisitions for refurbishment materials including any replacement components.

Site Engineering shall perform any load drop analysis required to satisfy any licensing concerns.

4.7 QA/QC Requirements

The TMI-2 Recovery Quality Classification list contained in Procedure 4000-ENG-7313.01 identifies the polar crane's structure as an important to safety item. None of the auxiliary hoist's major components required for refurbishment (see Attachment 2, Table 1) affect the polar crane's structural integrity and shall be considered not important to safety. However, Quality Control (QC) shall be requested by Site Engineering to witness several of the refurbishment activities which may be identified as critical towards the safe operation of the auxiliary hoist. Upon completing the inspection and refurbishment of the identified components, the operational and rated load test shall be performed to verify the crane's structural ability to handle its load.

QC shall witness the operational and load tests and crane hook examinations. The crane hook shall be examined in accordance with ANSI B30.10-1982 and Procedure 6110-QAP-7209.01, as applicable. QC receipt inspection is required for any replacement parts for the load bearing components of the auxiliary hoist.

4.8 Crane Turnover

The method for crane turnover of the auxiliary hoist maintenance responsibilities to Site Operations shall be per Procedure 4000-ADM-7350.04.

4.9 Safety Evaluation Report

A Safety Evaluation Report (SER) shall be prepared for load testing the auxiliary hoist as described in Attachment 3.

4.10 Spare Parts

Prior to turnover, a spare parts list for the auxiliary hoist shall be established with the recommended parts procured and available or requisitioned.

5.0 RESPONSIBILITIES

5.1 Responsibilities are as stated within Section 4.0 of this plan.
6.0 REFERENCES
6.1 Procedure 4000-ADM-3000.01, "TMI-2 Unit Work Instruction"
6.2 Procedure 4000-ADM-7350.03, "Engineering Change Authorizations"
6.3 Procedure 4000-ADM-7350.04, "TMI-2 Turnover Procedure"
6.4 Procedure 4000-ADM-3055.01, "TMI-2 Start-Up and Test Program"
6.5 Procedure 6110-QAP-7209.01, "Magnetic Particle Examination"
6.6 ANSI B30.2.0-1976, "Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)"
6.7 ANSI/ASME B30.10-1982, "Hooks"
6.8 2-M72-M402, Rev. 2, "Polar Crane Functional Description"
6.9 Procedure 4000-IMP-3891.01, "TMI-2 Recovery Operations Polar Crane Operation"
6.10 Procedure 4000-PLN-3891.01, "TMI-2 Lifting and Handling Program"

7.0 ATTACHMENTS AND TABLES
7.1 Attachment 1 - Electrical Power Supply Refurbishment Plan and Details
7.2 Attachment 2 - Auxiliary Hoist Major Components Refurbishment Plan and Details
   7.2.1 Table 1 - Required Auxiliary Hoist Components List
7.3 Attachment 3 - Auxiliary Hoist Load Test Method and Details
Electrical Power Supply Refurbishment Plan

AUXILIARY HOIST REFURBISHMENT

NOTE: The auxiliary hoist is completed for wiring--previous refurbishment included control (pendant) and power cables.

VISUAL WALKDOWN REQUIRED

Control Cabinet (on walkway)
Slow Speed Panel (on trolley)
Slow & Fast motors include wiring, brushes, etc.
Terminations for pendant and power
Brakes
Resistors

ELECTRICAL CHECKS/FUNCTIONAL TEST

Voltage/Current/Megger Readings:
All motors w/directions, brakes and resistors

NEW INSTALLATIONS

Relays/Contactors
Thermal Overloads
Resistors
AUXILIARY HOIST MAJOR COMPONENTS WALKDOWN

I. COMPONENT
Brake Wheels (Auxiliary Hoist)

II. TYPE OF WALKDOWN
Visual examination

III. SPECIFIC AREA OF CONCERN
Corrosion of brake wheel

IV. REFERENCE DRAWINGS
Whiting Drawing No. U-61901 General Arrangement for Trolley
Attached diagrams of Trolley Arrangement

V. DESCRIPTION OF WALKDOWN
1. Visually examine each brake wheel to determine the severity of corrosion.
2. Photograph each brake wheel to document condition.

VI. WALKDOWN RESULTS
1. Brake wheel corrosion is:

<table>
<thead>
<tr>
<th>Auxiliary Hoist #1</th>
<th>Slight</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake #2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional Comments: 

________________________________________
________________________________________
________________________________________
________________________________________
________________________________________
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________________________________________
________________________________________
________________________________________
## VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Use-As-Is</th>
<th>Repair</th>
<th>Replace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Hoist #1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake #2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe conditions requiring component repair or replacement:

- 
- 
- 
- 
- 

*Field Engineer's Signature* ______________________ *Date* __________
I. COMPONENT

Auxiliary Hoist Drive Flexible Couplings

II. TYPE OF WALKDOWN

Visual examination

III. SPECIFIC AREAS OF CONCERN

Corrosion of coupling internals. Deterioration of seals.

IV. REFERENCE DRAWING

Whiting Drawing No. U-61901 - General Arrangement of Trolley Amerigear Installation, Lubrication and Maintenance Instructions

V. DESCRIPTION OF WALKDOWN

1. Remove coupling guard covers from the auxiliary hoist drive train flexible coupling located between the auxiliary hoist 40 hp motor and the drive shaft support bearing.

2. Visually examine the couplings for deterioration of the coupling seals.

3. Uncouple the coupling and slide the coupling sleeves apart to examine the coupling internals.

   If the coupling is full of grease do not remove grease to further examine coupling.

4. Note the amount of grease in the coupling.

5. Photograph each coupling while separated.

6. Reassemble the coupling in accordance with the referenced Amerigear instructions.

VI. WALKDOWN RESULTS

1. Coupling seal condition is:

   Good          Poor

   Auxiliary hoist flexible couplings
2. Coupling cavity is generally full of grease:

Yes No

Auxiliary hoist flexible couplings

3. Coupling internal general condition is:

Good Poor

Auxiliary hoist flexible couplings

VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

Auxiliary Hoist Flexible coupling

Use-As-Is Repair Replace

Describe conditions requiring component repair or replacement:

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________

Field Engineer's Signature ___________________________ Date ___________________
I. COMPONENT
   Auxiliary Hoist Driveshaft Support Bearings

II. TYPE OF WALKDOWN
   Visual examination

III. SPECIFIC AREAS OF CONCERN
   Deterioration of bearing seals.

IV. REFERENCE DRAWING
   Whiting Drawing No. U-61901 - General Arrangement of Trolley

V. DESCRIPTION OF WALKDOWN
   For each of the two auxiliary hoist driveshaft support bearings:
   1. Visually examine the driveshaft seal penetration for deterioration or leaking lubricant.
   2. Photograph and driveshaft seal penetration.
   3. Visually examine bearing for general condition.

VI. WALKDOWN RESULTS
   1. Bearing seal condition is:
      
      | Good | Poor |
      |------|------|
      |      |      |
      | Auxiliary hoist drive shaft bearings |
      |      |      |

   2. Bearing general condition is:
      
      | Good | Poor |
      |------|------|
      |      |      |
      | Auxiliary hoist driveshaft bearings |
      |      |      |

   3. Additional comments: 
      _______________________________________________________
      _______________________________________________________
      _______________________________________________________
      _______________________________________________________
### VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Use-As-Is</th>
<th>Repair</th>
<th>Replace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary hoist driveshaft bearings</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe conditions requiring component repair or replacement:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________
________________________________________________________________________

Field Engineer's Signature ____________________ Date ____________
I. COMPONENT
Auxiliary Hoist Drum Support Bearing

II. TYPE OF WALKDOWN
Visual examination

III. SPECIFIC AREA OF CONCERN
Corrosion of bearing internals. Deterioration of bearing seals.

IV. REFERENCE DRAWINGS
Whiting Drawing No. U-61901 General Arrangement for Trolley
Attached diagrams of Trolley Arrangement

V. DESCRIPTION OF WALKDOWN
1. Remove the closed bearing cover (away from the drum) from the auxiliary hoist drum support bearing.
2. Inspect bearing for corrosion. If bearing cavity is full of grease and there is no visible corrosion, do not remove grease to further inspect bearing. Inspect bearing seal at the drum shaft penetration for deterioration of leaking lubricant.
3. Photograph bearing with cover removed.
4. Replace bearing cover.

VI. WALKDOWN RESULTS
1. Bearing internals are corroded:
   - Yes ______ No ______
     Slight ______ Moderate ______ Severe ______
   If yes, corrosion is:
     ______ ______ ______
     ______ ______ ______

2. Bearing general condition is:
   - Good ______ Poor ______

3. Bearing cavity is generally full of grease:
   - Yes ______ No ______
4. Additional Comments: __________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Use-As-Is</th>
<th>Repair</th>
<th>Replace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary hoist drum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>support bearings</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Describe conditions requiring component repair or replacement:
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Field Engineer's Signature ___________________________ Date __________________
I. COMPONENT
Auxiliary Hoist Clutch

II. TYPE OF WALKDOWN/TESTING
Visual examination and manual rotation testing

III. SPECIFIC AREA OF CONCERN
Corrosion of clutch faces. Deterioration of power lead connections.

IV. REFERENCE DRAWINGS
Whiting Drawing No. U-61901 General Arrangement for Trolley
Cutler Hammer Clutch Instruction Sheet, Publ. No. 9231
(contained in Whiting Crane Instruction Manual)

V. DESCRIPTION OF WALKDOWN/TESTING
1. Remove canopy covering the clutch and eddy current brake.
2. Visually inspect the clutch for general condition. Examine clutch
   for corrosion of clutch faces (do not disassemble clutch). Inspect
   power lead connections for deterioration or corrosion.
3. Manually rotate the clutch half on the inching motor side to verify
   the clutch halves rotate independently of each other when the clutch
   is deenergized. Note any difficulties such as dragging or binding.
4. Photograph clutch to document the condition.
5. Replace canopy if eddy current brake inspection has been completed
   or will not be performed during this entry.

VI. WALKDOWN/TEST RESULTS
1. Clutch general condition: Good _____ Poor _____
2. Clutch faces are corroded: Yes _____ No _____
   If yes, corrosion is: Slight Moderate Severe ______ ______ ______
3. Clutch power leads condition: Good _____ Poor _____
4. Clutch halves rotated independently: Yes _____ No _____
5. Additional Comments: __________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

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______________________________________________________________________________

VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

Use-As-Is  Repair  Replace

Describe conditions requiring component repair or replacement:

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Field Engineer's Signature ___________________________ Date ________________________
I. COMPONENT

Auxiliary Hoist No. 25 Herringbone Gear Unit

II. TYPE OF WALKDOWN

Visual examination

III. SPECIFIC AREA OF CONCERN

Corrosion of gears or gear shafts. Deterioration of shaft bearing seals. Corrosion of gearshaft bearings.

IV. REFERENCE DRAWINGS

Whiting Drawing No. U-61901 General Arrangement for Trolley
Whiting Drawing No. T-18353 Assembly of No. 25 Gear Unit

V. DESCRIPTION OF WALKDOWN/TESTING

1. Remove gear unit cover.
2. Visually inspect gears, gear shafts and bearings for corrosion.
3. Photographs gears and bearing(s) as accessible.
4. Inspect the gearshaft bearing seals for deterioration of leaking oil.
5. Photographs the external gearshaft/bearing seal interfaces.
6. Replace gear unit cover.

VI. WALKDOWN RESULTS

1. Condition of gears: Good _______ Poor _______
2. Gears have corrosion: Yes _______ No _______
   If yes, corrosion is: Slight _______ Moderate _______ Severe _______
3. Bearing condition is: Good _______ Poor _______
4. Bearing seal condition is: Good _______ Poor _______
5. Additional Comments:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

VII. FIELD ENGINEERING COMPONENT CONDITION EVALUATION

<table>
<thead>
<tr>
<th>Use-As-Is</th>
<th>Repair</th>
<th>Replace</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Describe conditions requiring component repair or replacement:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Field Engineer's Signature ______________________ Date ______________
COMPONENT

Auxiliary Hoist DC Clutch
At Auxiliary Hoist Panel on Trolley UFT outgoing Wires 58 and 60 at terminal block and megger either of the disconnected wires and record.

PROCEDURE

_________________________________________ Megohms

Reconnect Wires 58 and 60 _______ Signature ____________________________

Field Engineer's Signature ___________________________ Date ____________
COMPONENT

Auxiliary Hoist Eddy Current Brake
(Auxiliary Hoist Control Panel)

PROCEDURE (insulation test)

1. At Auxiliary Hoist Control Panel, lift leads 43, Z-X1, AB and A-B2 from rectifiers (assure rectifiers are not subject to megger the potential) megger secondary of transformer (X1) and megger A-B1 and record both readings.

<table>
<thead>
<tr>
<th>Wire</th>
<th>Megohms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire X</td>
<td></td>
</tr>
<tr>
<td>Wire A-B2</td>
<td></td>
</tr>
</tbody>
</table>

Verify lifted leads replaced

Field Engineer's Signature ___________________________ Date ___________________________
### Auxiliary Hoist Refurbishment Plan

#### Table 1. Required Auxiliary Hoist Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Required</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auxiliary Hoist Main Drive Train</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoist Motor</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Drive Motor Resistors</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Motor Zero Speed Switch</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Coupling, Hoist Motor to Zero Speed Switch</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Flexible Couplings - Amerigear F-102</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drive Gear Unit</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Driveshaft Support Bearings (2)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>All control components such as breakers, starters, switches &amp; relays in</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Hoist Control Panel &amp; Auxiliary Hoist Slow Speed Control Panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All contractors (1A-4A), overload devices &amp; fuses related to</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Hoist System</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auxiliary Hoisting Unit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoist Solenoid Brakes (2)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Solenoid Brakes Rectifiers &amp; Transformers</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drum Support Bearing</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Wire Rope</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Weight Type Limit Switch</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Screw Type Limit Switch</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Load Sensing Device on Trolley</td>
<td>No</td>
<td>Load indication will be provided at load</td>
</tr>
<tr>
<td>Adjustable Dial for Hoist Load Sensing Device</td>
<td>No</td>
<td>Since load sensing device on crane is not required</td>
</tr>
<tr>
<td>Hoist Upper Sheave Nest</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hoist Bottom Block Assembly</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hook</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

Sheet 1 of 2
### POLAR CRANE AUXILIARY HOIST REFURBISHMENT PLAN

#### TABLE 2. REQUIRED AUXILIARY HOIST COMPONENTS (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Required</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Hoist Inching Drive Train</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Gear Motor</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drive Magnetic Clutch</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drive Magnetic Clutch Rectifier &amp; Transformer</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drive Eddy Current Brake</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Drive Eddy Current Brake Rectifier, Resistors &amp; Transformers</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Flexible Coupling - Americor F-102</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
AUXILIARY HOIST LOAD TEST METHOD AND DETAILS

Upon completion of all auxiliary hoist refurbishment efforts and a successful operational test, a rated load test shall be performed to certify the hoist's capability for lifting loads up to but not exceeding 25 tons. The test will generally meet the requirement of ANSI B30.2-1976, Paragraph 2-2.2.2. An exception to be noted is that no movement of the bridge and trolley features under load (auxiliary hoist) shall be conducted. These features were tested during the main hoist load test with a much greater load than required by the auxiliary hoist, and has therefore surpassed the functioning capabilities needed for the auxiliary hoist.

The test load will consist of the lift rigging a load indicating device, and the pressurizer missile shield. Because the pressurize missile shield exceeds the maximum 31.25 tons required for performing a load test at the recommended 125 percent of the 25 ton rated load, it shall be necessary to obtain approval from the crane manufacturer for the excessive load as permitted by ANSI B30.2-1976, Paragraph 2-2.2.2.

The test load will be lifted so it is supported by the crane and held by the hoist brakes.

The test load will be lowered, stopped and held by the hoist brakes and finally lowered to the floor.

The pressurizer missile shield shall be lifted and relocated with the main hoist along the load path as shown on the attached sketch.

Operation of the polar crane for movement of the test load shall be in accordance with procedure 4000-1MP-3891.01.