

M3994  
2

HOUSTON LIGHTING AND POWER COMPANY  
SOUTH TEXAS PROJECT  
ELECTRIC GENERATING STATION  
PLANT PROCEDURES MANUAL

DEPARTMENT PROCEDURE

SAFETY-RELATED (Q)

Polar Crane Inspection

OPMP04-JC-0002

Rev. 5

Page 1 of 22

APPROVED

*[Signature]*  
MAINTENANCE MANAGER

9/18/92  
DATE APPROVED

9/21/92  
DATE EFFECTIVE

PROCEDURE USE CONTROL: IN HAND

1.0 Purpose and Scope

- 1.1 This procedure provides instructions for lubrication and inspection of the Polar Crane(s).
- 1.2 This procedure need not be performed sequentially.
  - 1.2.1 This procedure may be used for troubleshooting and maintenance activities if specific instructions identifying the steps to be performed are controlled by a service request in accordance with OPGP03-ZA-0090, (Work Process Program).
  - 1.2.2 Steps of this procedure may be performed concurrently at the discretion of the Work Supervisor.
- 1.3 This procedure satisfies Significant Event Report (SER) 85-002 Commitment regarding warm up time prior to use and preservice checks saved on anticipated operating modes.
- 1.4 This procedure satisfies Significant Event Report (SER) 81-45 Commitment regarding locking devices on safety related equipment.
- 1.5 This procedure satisfies in part the commitment made in the response to NRC Generic Letter 81-07.

2.0 Definitions

- 2.1 None

37pp.

3.0 Prerequisites

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NOTE

The word (Record) indicates a data entry on Form (-1) of this procedure.

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- Record 3.1 Work Supervisor shall mark sections to be performed on enter N/A on Form (-1).
- Record 3.2 Record M&TE data on Form (-1) at time of initial use.
- 3.3 Verify availability of the following and obtain as needed:
- 3.3.1 Acetone
  - 3.3.2 Wipes
  - 3.3.3 Assorted hand tools and small hammer
  - 3.3.4 Flashlight
  - 3.3.5 Safety belts
  - 3.3.6 Containers for fluids
  - 3.3.7 Funnel
  - 3.3.8 Inspection mirror
  - 3.3.9 Combination square (protractor head)
  - 3.3.10 Containers for parts and fasteners
  - 3.3.11 Obtain the following lubricants:
    - 3.3.11.1 Chevron Industrial R&O 115
    - 3.3.11.2 Chevron Premium Lubecote EP #2, or equivalent
    - 3.3.11.3 Chevron Polyurea EP-2
    - 3.3.11.4 Chevron AW Hydraulic Oil 68
  - 3.3.12 Rulers, 6 in. and 24 in.

- 3.3.13 0-1 in. micrometer  $\pm$  .001 in. accuracy
- 3.3.14 1-2 in. micrometer  $\pm$  .001 in. accuracy
- 3.3.15 6 in. dial caliper
- 3.3.16 Assorted pressure grease fittings
- 3.3.17 Lanyards, for tying off tools and parts
- 3.4 Obtain a Radiation Work Permit (RWP).
- 3.5 Notify QC that Polar Crane inspection is being performed and a NDE needs to be performed on main and auxiliary hooks.
- 3.6 Notify Electricians for assistance in performing subsections 5.7 and 5.8 of this procedure.
- 3.7 To ensure accountability and traceability of parts during maintenance, parts should be placed in labeled or marked containers at time of disassembly. If no containers are available or parts are too large for containers, parts MUST be labeled or tagged.
- 3.8 Verify and sign onto equipment clearance order and obtain work start approval.

4.0 Precautions

- 4.1 Use of ordinary combustibles shall be in accordance with OPGP03-ZF-0004, (Control of Transient Fire Loads).
- 4.2 Use of flammable liquids and gases shall be in accordance with OPGP03-ZF-0005, (Use of Flammable Liquids and Gases).
- 4.3 Use and disposal of expendable materials, such as chemical and hazardous materials, shall be in accordance with STPEGS Expendable Materials Manual.
- 4.4 For disposal of those items not covered by the STPEGS Expendable Materials manual, refer to OPGP03-ZH-0003, (Packaging of Hazardous/Nonhazardous Waste Materials for Disposal).
- 4.5 Personnel shall follow radiological precautions outlined on RWP.
- 4.6 Place all controllers in "OFF" position.
- 4.7 After inspection, adjustments and or repairs have been made, crane shall not be placed in service until all guards have been installed, safety devices reactivated, and maintenance equipment removed.

- 4.8 If necessary to move or operate crane during inspection, operator shall make all persons involved aware.
- 4.9 Ensure locking devices, where provided, are properly secured during reassembly. (SER 81-45)
- 4.10 Crane should be located in a position where the least amount of traffic is expected.
- 4.11 All tools and loose parts should be secured with lanyards.
- 4.12 Periodic inspections shall be performed by a designated person. The individual outer wires in the strands of wire rope that are visible and accessible, shall be inspected. Any deterioration resulting in appreciable loss of original strength, such as described in this procedure, shall be noted and determination shall be made as to whether further use of the wire rope would constitute a hazard.
- 4.13 In order to establish data such as a basis of judging the proper time for replacement, a continuing inspection record shall be maintained. This record shall cover points of deterioration listed.
- 4.14 Maintenance shall keep preventive maintenance inspection data sheets indicating conditions of wire ropes associated with the specific crane/hoist applications.

5.0 Procedure

Record 5.1 Record SR/PM number.

Record 5.2 Record Unit number.

```
*****  
*                                     *  
*           CAUTION                 *  
*                                     *  
*   Ensure function and cleanliness of *  
*   foot-walks, ladders and handrails  *  
*   prior to starting inspection.      *  
*                                     *  
*****
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5.3 Clean and repair footwalks, ladders, and handrails.

5.4 Bridge lubrication and inspection:

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NOTE (1)

Allow proper warmup period of electrical components prior to operation. (SER 85-002)

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NOTE (2)

Pending oil samples, vendor recommends that oil in gearcases be changed every four years.

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NOTE (3)

If any abnormal conditions are found initiate a SR for repairs.

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NOTE (4)

Ensure locking devices, where provided, are properly secured during reassembly. (SER 81-45)

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- 5.4.1 Remove inspection cover from bridge drive unit gearcase. (Refer to Figure 1)

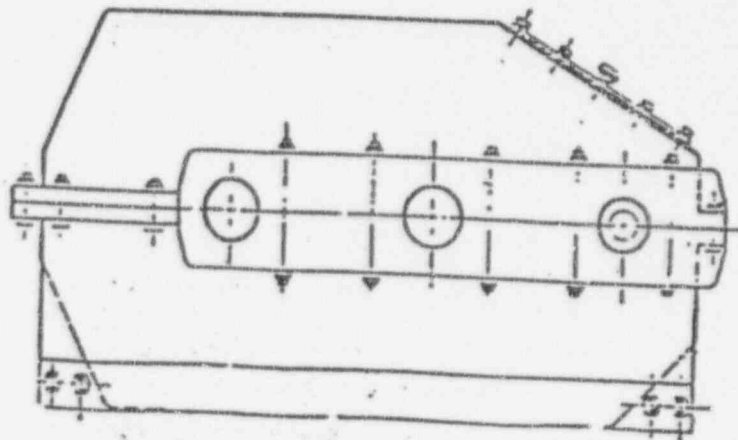


Figure 1

5.4.2 Place parts and fasteners in labeled or marked containers.

5.4.3 Check inside of gearcase for the following:

5.4.3.1 Burrs on gears

5.4.3.2 Chipped teeth

5.4.3.3 Unusual wear

5.4.3.4 Cleanliness

5.4.3.5 Cracks

Record 5.4.4 Check oil in gearcase for the following and record results:

5.4.4.1 Foreign material

5.4.4.2 Cleanliness

5.4.4.3 Metal slivers

5.4.4.4 Proper level (add Chevron Industrial R&O 115 oil, if necessary)

Record 5.4.5 Perform the following if sample indicates oil needs changing or oil requires four year changing:

5.4.5.1 Drain oil.

5.4.5.2 Flush reservoir with cleaning fluid.

\*\*\*\*\*  
\*  
\* CAUTION \*  
\* Do not overfill gearcase. \*  
\*  
\*\*\*\*\*

5.4.5.3 Add Chevron Industrial R&O 115 oil until proper level is observed.

5.4.6 Check condition of gearcase inspection cover gasket and replace, if necessary.

5.4.7 Install gearcase inspection cover with gasket, and tighten fasteners.

5.4.8 Check gearcase for signs of leakage.

5.4.9 Remove gearcase breather and clean.

5.4.10 Install gearcase breather.

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NOTE

Coupling guards may have to be removed for accessibility.

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5.4.11 Check coupling fasteners for tightness.

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NOTE

Brake covers may have to be removed for accessibility.

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5.4.12 Apply a few drops of Chevron Industrial R&O 115 to motor brake linkage pivot points. (Refer to Figure 2)

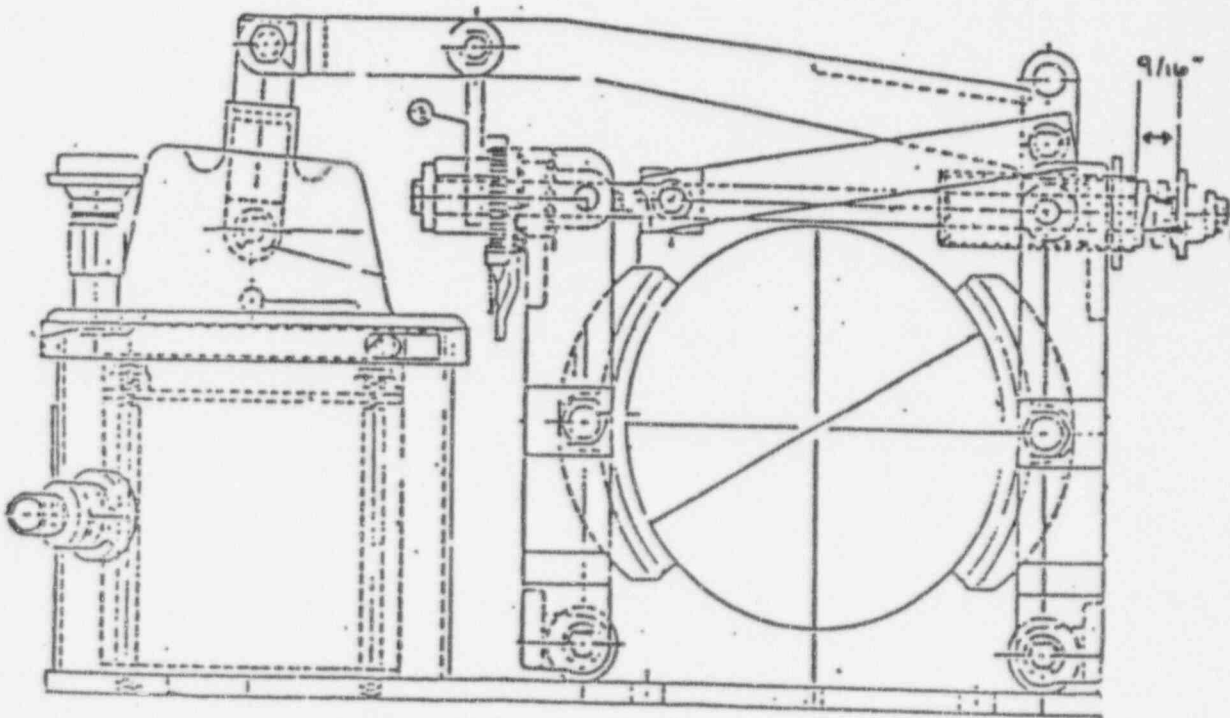


Figure 2

- 5.4.13 Check condition of brake pawl and ratchet wheel for the following:
- 5.4.13.1 Cracks
  - 5.4.13.2 Battered or broken pawls on ratchet teeth
  - 5.4.13.3 Inoperative pawl shifter
  - 5.4.13.4 Broken or worn springs

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NOTE

Brake shoes should be replaced when worn to 1/16 in. thickness at center of shoe. Riveted brake linings should be replaced before wearing down to rivet heads.

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- 5.4.14 Check condition of brake shoes.
- 5.4.15 Ensure 1/32 in. to 1/16 in. clearance between brake shoes and drum.
- 5.4.16 Adjust brake, if necessary. (Refer to Figure 2)
  - 5.4.16.1 Remove adjusting lever.
  - 5.4.16.2 Turn adjusting nut until desired clearance is obtained.
  - 5.4.16.3 Install adjusting lever.
- 5.4.17 Perform substeps 5.4.1 through 5.4.16 on each bridge drive unit (four).

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NOTE

If pressure grease fittings are not already installed on each bridge wheel bearing, (inside and outside) then remove existing pipe plugs and install appropriate pressure grease fitting. Fittings may be left installed.

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\*\*\*\*\*  
\*  
\* CAUTION \*  
\*  
\* Do not over lubricate bearings, as \*  
\* this may cause excessive heating and \*  
\* wear. \*  
\*  
\*\*\*\*\*

5.4.18 Using Chevron Polyurea EP-2 grease, lubricate each bridge wheel inside and outside bearings. (Refer to Figure 3 for grease fitting location).

5.4.19 Check bridge truck wheels for the following:

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NOTE (1)

Bridge drive wheels (4) with straight treads should be checked to ensure they are of the same diameter. If not, crane will run out of square and cause flanging. If this condition exists, wheels should be machined to equal diameter.

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NOTE (2)

Should wheel(s) need replacing, never change only one, change in pairs.

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5.4.19.1 Diameter (pairs of wheels should be within 1/16 in. of each other).

5.4.19.2 Flange and tread wear (replace if flanges are visibly bent).

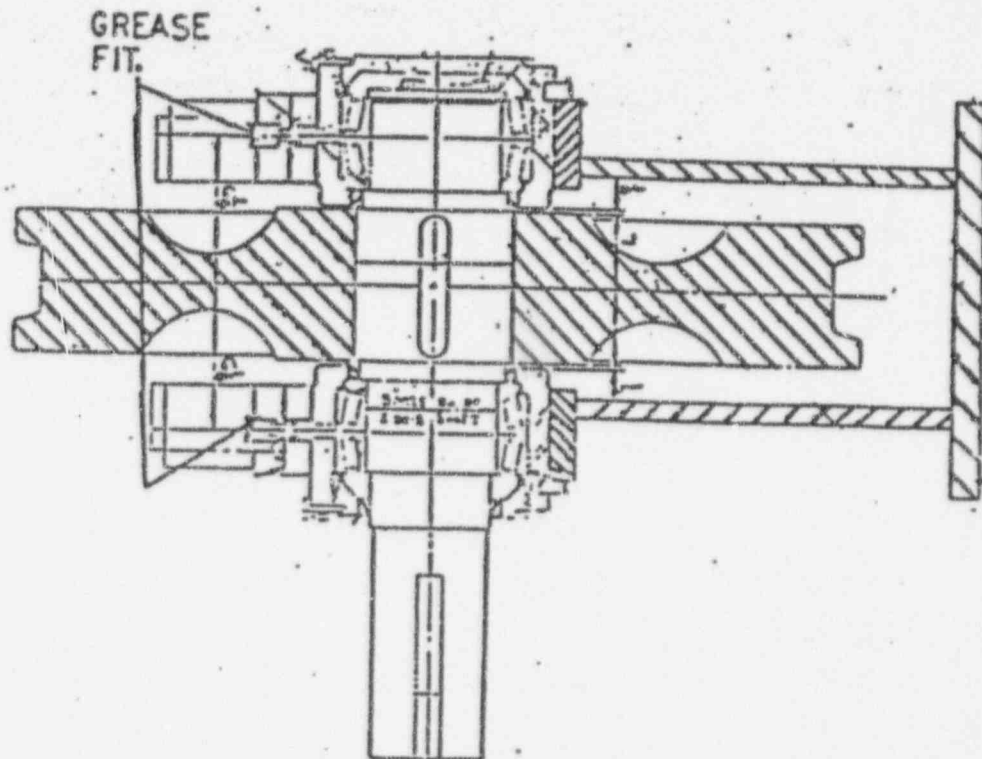


Figure 3

- 5.4.20 Apply Chevron Polyurea EP-2 greasse to each bridge truck pin to bridge.
- 5.4.21 Check fluid level of magnetic bridge brake solenoid, add Chevron AW hydraulic oil 68, if necessary.
- 5.4.22 Check for cracks, deformed or corroded members in web, truck flanges, and truck webs.
- 5.4.23 Ensure warning devices function properly, as intended.
- 5.4.24 Ensure proper warning signs are posted and clearly visible.
- 5.4.25 Using a small hammer, sound fasteners on crane runway rails for tightness.
- 5.4.26 Check runway rails for cleanliness.
- 5.4.27 Visually inspect all accessible welds for cracking.

Record 5.4.28 Check hoist drum groove wear using one of the following methods. (Refer to Figure 4) Record percentage of wear and method used.

5.4.28.1 Method 1

- a) Using a straight edge over unworn ropes near rope anchors, measure depth (A) of unworn groove.
- b) Measure depth (B) of any groove with maximum wear.
- c) When (B) exceeds (A) by more than 25% of rope diameter, replace drum.

5.4.28.2 Method 2

- a) Use large calipers to determine (C) and (D).
- b) When difference between (C) and (D) becomes more than 50% of rope diameter, replace drum.

5.4.29 Check hook block for worn or broken sheaves, or bent housing.

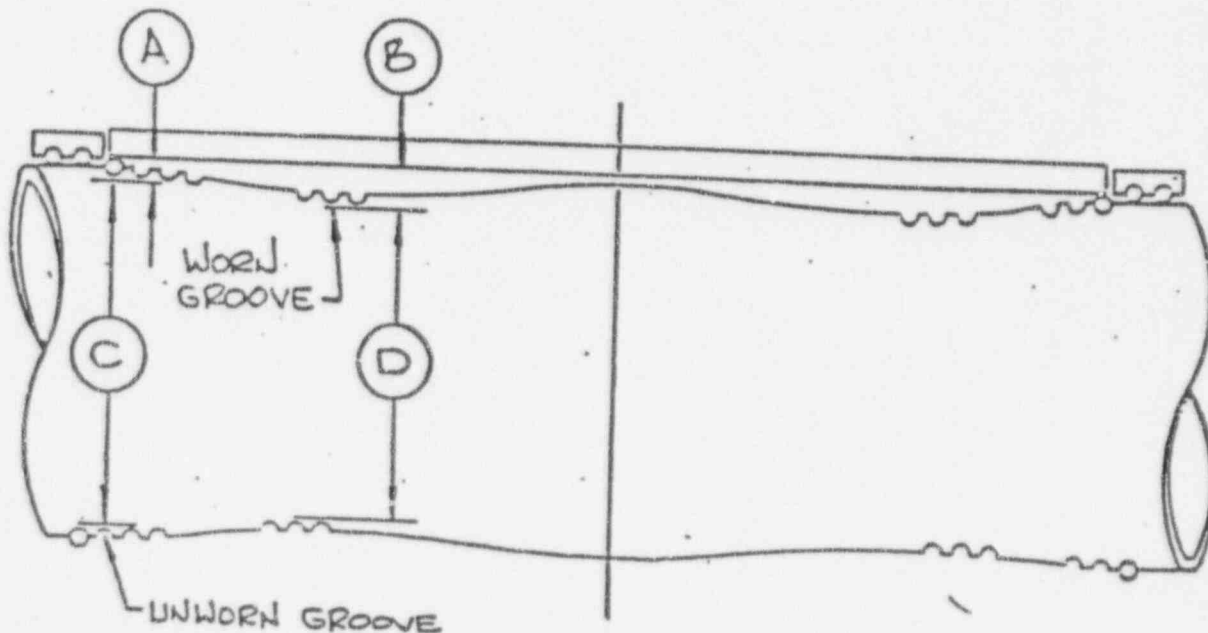


Figure 4

5.5 Trolley lubrication and inspection:

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NOTE

Trolley will have to be located on operators end of crane to perform the following substeps.

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- 5.5.1 Perform substeps 5.4.1 through 5.4.16 on trolley drive unit.
  - 5.5.2 Perform substeps 5.4.1 through 5.4.16 on main hoist unit.
  - 5.5.3 Perform substeps 5.4.1 through 5.4.16 on auxiliary hoist unit.
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NOTE

If pressure grease fittings are not already installed on trolley wheel bearings, then remove existing pipe plugs and install appropriate pressure grease fitting. Fittings may be left installed.

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\*\*\*\*\*  
\*  
\* CAUTION \*  
\*  
\* Do not over lubricate bearings, as \*  
\* this may cause excessive heating and \*  
\* wear. \*  
\*  
\*\*\*\*\*

- 5.5.4 Apply Chevron Polyurea EP-2 grease to inside and outside bearings of each trolley wheel, (8 wheels).
- 5.5.5 Check trolley wheels for wear on flanges and treads.
- 5.5.6 Apply Chevron Polyurea EP-2 grease to each main hoist drum shaft bearing, (4 bearings).
- 5.5.7 Apply Chevron Polyurea EP-2 grease to auxiliary hoist drum shaft bearings (2 bearings).

- 5.5.8 Apply Chevron Polyurea EP-2 grease to flanged bearing supports on trolley. (Refer to Addendum 1 for locations)
- 5.5.9 Apply Chevron Polyurea EP-2 grease to equalizer sheave assembly. (Refer to Addendum 1 for locations)
- 5.5.10 Apply Chevron Polyurea EP-2 grease to trolley drive unit flanged bearings. (Refer to Addendum 1 for location)
- 5.5.11 Check trolley rails and rail clips for cleanliness, tightness, excessive wear and alignment.
- 5.5.12 Check trolley stops and bumpers for abnormal conditions and alignment.
- 5.6 Hoists lubrication and inspection:
  - Record 5.6.1 Notify cranes and hoists system engineer or designee that inspection is to be performed.
  - Record 5.6.2 Measure O.D. of main hoist wire rope in three places, approximately three feet apart, and record measurements taken.
  - Record 5.6.3 Measure O.D. of auxiliary hoist wire rope in three places, approximately three feet apart, and record measurements taken.
  - 5.6.4 Replace wire rope if diameter is reduced more than:
    - 5.6.4.1 1/64 inch for rope diameters through 5/16 inch
    - 5.6.4.2 1/32 inch for rope diameters from 3/8 inch through 1/2 inch
    - 5.6.4.3 3/64 inch for rope diameters from 9/16 inch through 3/4 inch
    - 5.6.4.4 1/16 inch for rope diameters from 7/8 inch through 1 1/8 inch
    - 5.6.4.5 3/32 inch for rope diameters from 1 1/4 inch through 1 1/2 inch
  - 5.6.5 Check for twelve randomly distributed broken wires in one rope lay, or four broken wires in one strand in one rope lay.
  - 5.6.6 Check in several places for outside wires worn 1/3 of their original diameter.

- 5.6.7 Check for corroded or broken wires at end connections.
- 5.6.8 Check for corroded, cracked, bent, worn or improperly applied end connections.
- 5.6.9 Check for kinking, crushing, cutting or unstranding.
- 5.6.10 Check in general places for internal wear caused by grit penetrating between strands and wires.
- Record ENP 5.6.11 Check for evidence of improper lubrication. (SPR-920177)
- Record ENP 5.6.12 Cranes and hoists system engineer or designee shall determine if wire ropes are to be replaced. (SPR-920177)
- Record 5.6.13 Measure between prick punch marks on auxiliary hook, and record throat gage measurement taken. (Refer to Figure 5)
- Record 5.6.14 Measure between prick punch marks on main hook, and record throat gage measurement taken. (Refer to Figure 5)

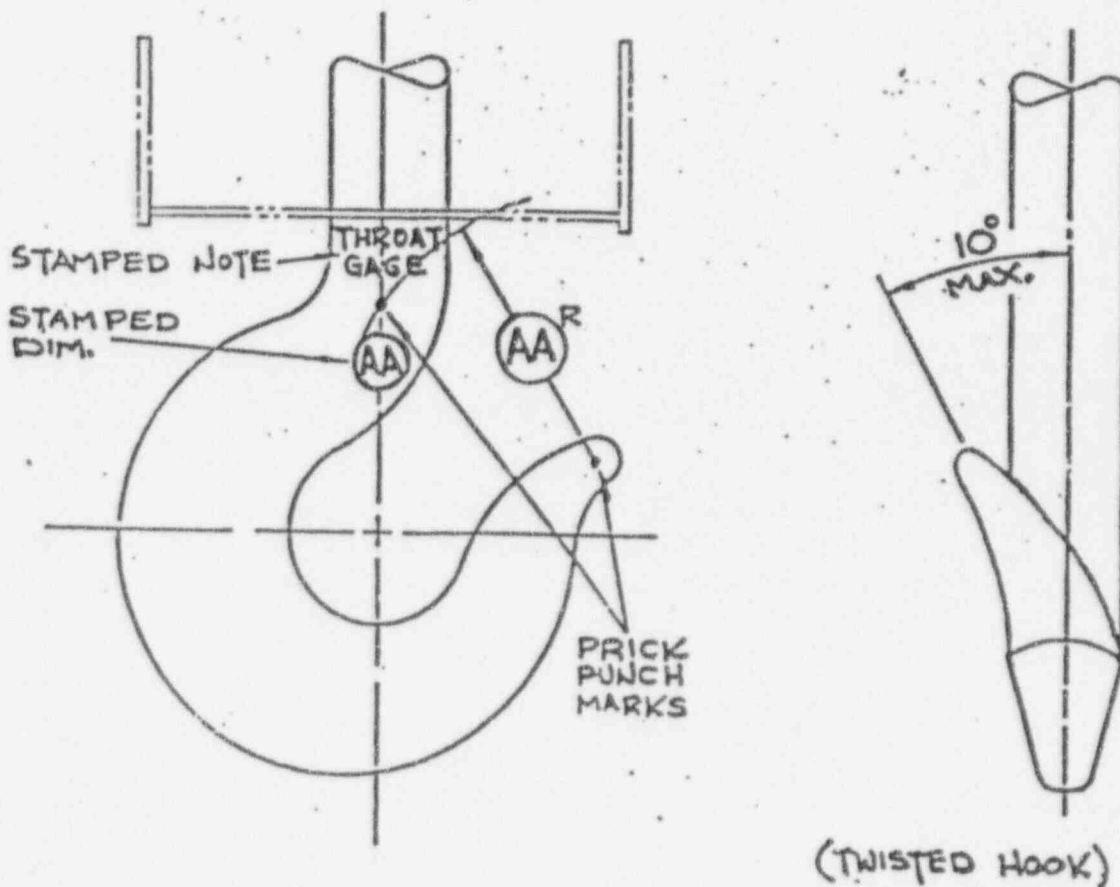


Figure 5

- 5.6.15 Replace hooks if measurements are 1.15 times original throat gage stamped on hooks.
- Record 5.6.16 Measure twist of auxiliary hook, using protractor, and record measurement taken. (Refer to Figure 5)
- Record 5.6.17 Measure twist of main hook, using protractor, and record measurement taken. (Refer to Figure 5)
- 5.6.18 Replace hook if twisted more than 10 degrees.
- 5.6.19 Notify QC to perform a NDE inspection on auxiliary hook.
- 5.6.20 Notify QC to perform a NDE inspection on main hook.
- 5.6.21 Replace hooks, if defective.
- 5.6.22 Apply Chevron Polyurea EP-2 grease to auxiliary and main hook sheaves.
- 5.6.23 Check lower sheaves on auxiliary and main hook for wear and breakage.
- 5.6.24 Check upper sheaves for wear and breakage.
- 5.6.25 Apply Chevron Premium Lubecote EP #2, or equivalent, to open drum gears, if necessary.
- Record 5.6.26 Cranes and hoists system engineer or designee shall ENP determine if auxiliary and main hoist wire rope requires lubrication in substep 5.6.27. (SPR-920177)
- 5.6.27 Apply Chevron Premium Lubecote EP #2, or equivalent, to auxiliary and main hoist wire rope, if necessary.
- 5.6.28 Check upper limit switch function on each block.
- 5.6.29 Check for reverse reeving by hoist rotation to lever direction.

5.7 Operational inspection:

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NOTE

After mechanical and electric.l inspections are complete and it has been determined that crane is in good operating condition, an operational test can be made. It is suggested that mechanic work in conjunction with electrician for this operational check.

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- 5.7.1 Release clearance on power supply.
- 5.7.2 Ensure everyone is in clear before switches are thrown.
- 5.7.3 Ensure all controllers are in a neutral position.
- 5.7.4 Notify everyone concerned that crane is to be put back into operation.

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NOTE

Polar crane hook lower limit switches need not be checked.

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- 5.7.5 Ensure all limit switches are functioning.
- 5.7.6 Run trolley approximate length of bridge to ensure all speeds are functioning.
  - 5.7.6.1 Electrician can observe operation of components in panel and mechanic can watch operation of trolley.
  - 5.7.6.2 Pay particular attention to watch for vibration and excessive backlash in gears, and listen for noises that might be out of the ordinary.
- 5.7.7 Watch operation of trolley collectors.
  - 5.7.7.1 Pay particular attention to arcing, clearance and complete contact of collector shoes with conductors for the complete length of travel.



- 5.7.8 Ensure trolley brake, when provided, is functioning and when controller is returned to neutral, that trolley decelerates gradually and comes to a smooth stop.
- 5.7.9 Ensure trolley is tracking properly and wheels are not flanging.
- 5.7.10 Whenever possible, trolley should be moved to end stops to ensure stops or bumpers are functioning properly and trolley approaches end stops squarely.

\*\*\*\*\*  
\*  
\* CAUTION \*  
\* \*  
\* An insulating mat should be used for \*  
\* protection of electrician during this \*  
\* inspection. \*  
\* \*  
\*\*\*\*\*

- 5.7.11 Operate hoists, both auxiliary and main, one at a time.
  - 5.7.11.1 Electrician is to watch to see that all timers and contactors are functioning properly.
- 5.7.12 Check to see that brakes are functioning.
- 5.7.13 Ensure all sheaves in upper sheave nest and block are turning. (All sheaves should rotate with exception of equalizer.) Equalizer may rotate a part of a turn to equalize load and level block.
- 5.7.14 Check to see that cables are not rubbing on trolley framework or on block housing.
- 5.7.15 Whenever possible, block should be raised and trolley placed at end stops to ensure hook clearance is maintained from collectors at runway conductor end.
- 5.7.16 Check to see that hoisting cables are going into grooves on drum properly and when in full raised position, cable should remain in grooves. If cable is too long it will run out of grooves or overlap.
- 5.7.17 When hoist is lowered to it's maximum lower position there should be two wraps of cable at anchors unless hoist is equipped with a lower limit switch.

5.8 Operation of bridge:

- 5.8.1 Ensure adequate clearance is maintained between bridge and any obstruction at each end of bridge.
- 5.8.2 Check cab for proper clearance along with trolley clearance overhead and at ends.
- 5.8.3 Check by driving and coasting up and down runway to see that crane is not binding or that wheels are not tilting on any portion of runway rails.
- 5.8.4 Whenever possible, operate bridge the full length of runway.

\*\*\*\*\*  
\*  
\* CAUTION \*  
\* \*  
\* While panel doors are opened during this \*  
\* inspection, the electrician should have \*  
\* on hand and stand on an insulating mat. \*  
\* \*  
\*\*\*\*\*

- 5.8.4.1 Check to see that all speeds are operating and that all contactors and timers are functioning.
- 5.8.5 Watch operation of runway collector for entire length of runway.
  - 5.8.5.1 Pay particular attention to arcing, loss of contact and clearance with brackets and insulators.

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NOTE

Crane should cross joints in rails with minimum of bumping or vibration.

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- 5.8.6 While bridge is traveling, squaring shaft, couplings, and gearcases and entire drive train should be observed for vibration or looseness of any fasteners or equipment.
- 5.8.7 Ensure brakes are functioning properly and crane can be brought to a smooth safe stop.

5.8.8 Check to see that electrical panels and resistors are anchored and braced properly, especially against vibration and freedom of movement in direction of bridge travel.

Record

5.9 Record results of operational test. If unsatisfactory, note corrective action to be taken in comment section with SR/EM number included.

5.10 Return documentation to Work Supervisor for disposition.

6.0 Acceptance Criteria

6.1 Manufacturer's requirements have been met upon satisfactory completion of this procedure.

7.0 References

7.1 Manufacturer Technical Manual (4013-01001-WG)

7.2 Response to SER 85-002 (ST-HS-HS-3207)

7.3 Response to SER 81-45 (ST-HS-HS-3860)

7.4 ANSI B30.2.0 - 1976 (Overhead and Gantry Cranes)

7.5 ANSI N45.2.2 - 1972 (Packaging, Shipping, Receiving, Storage and Handling of items for Nuclear Power Plants)

7.6 Response to NRC Generic Letter 81-07

7.7 Response to SPR-920177

8.0 Support Documents

8.1 Addendum 1 - Lubrication Points

8.2 Data Sheet (-1)

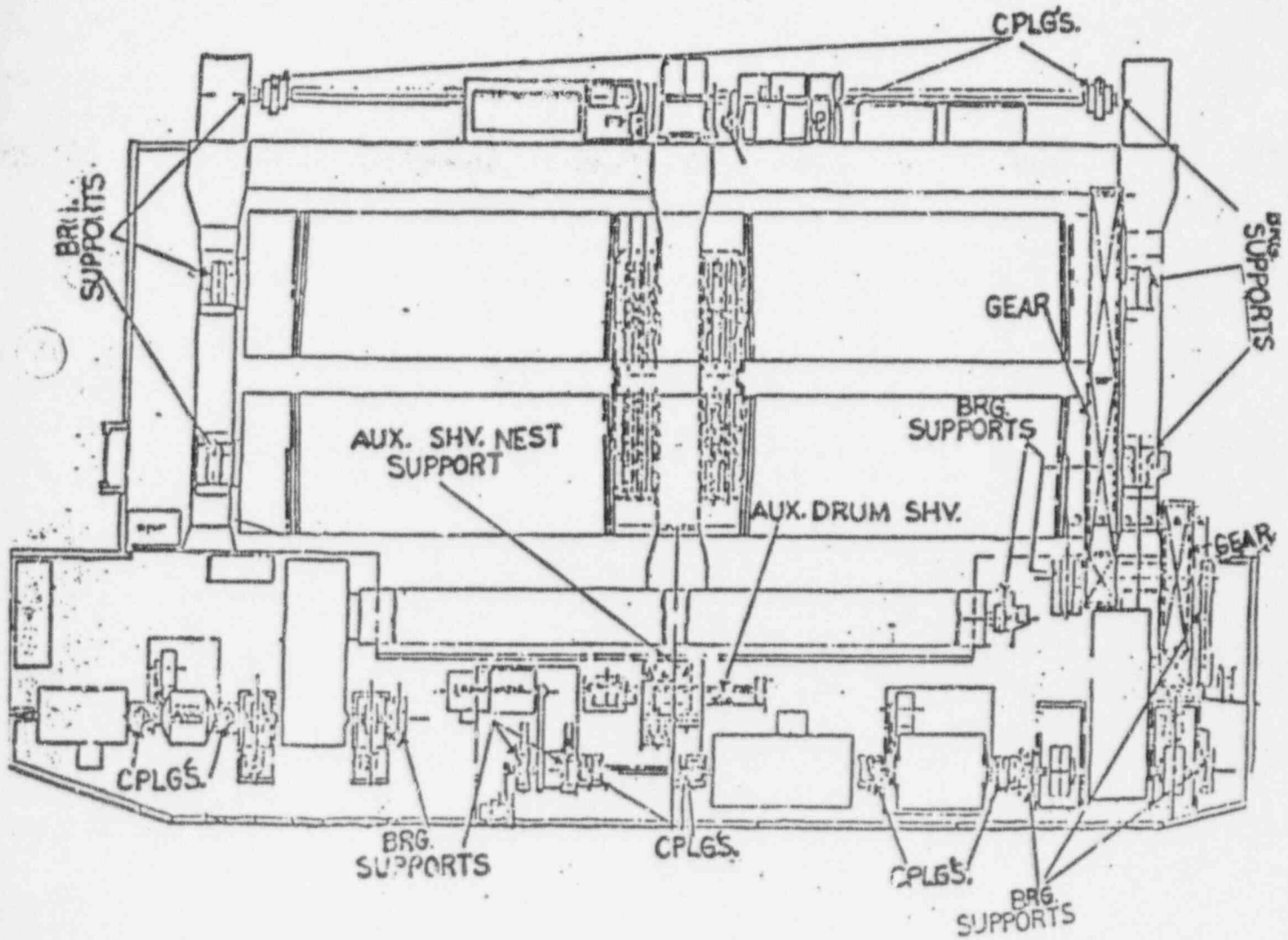
9.0 Documentation

9.1 The following documentation is required to be retained with work package:

9.1.1 OPMP04-JC-0002-1

9.1.2 NDE inspection reports on auxiliary and main hooks

ADDENDUM 1  
LUBRICATION POINTS  
(Page 1 of 1)



Polar Crane Inspection

OPMP04-JC-0002  
Rev. 5  
Page 21 of 22

DATA SHEET  
OPMP04-JC-0002-1  
(Page 1 of 2)

5.1 SK/PM No. \_\_\_\_\_

5.2 Unit No. \_\_\_\_\_

3.1

WORK SUPERVISOR SHALL MARK SECTIONS TO BE PERFORMED OR ENTER N/A			
5.4	Bridge Lubrication and Inspection	5.7	Operational Inspection
5.5	Trolley Lubrication and Inspection	5.3	Operation of Bridge
5.6	Hoist Lubrication and Inspection		

3.2

MEASURING AND TEST EQUIPMENT		
DESCRIPTION	STPEGS I.D. NUMBER	CALIBRATION DUE DATE

5.4.4 Checked oil in gearcase: \_\_\_\_\_ SAT. \_\_\_\_\_ UNSAT.

5.4.5 Changed oil in gearcase: \_\_\_\_\_ 4 yr. changeout \_\_\_\_\_ Oil was UNSAT \_\_\_\_\_ N/A

5.4.28 Hoist drum groove wear percentage - \_\_\_\_\_ Method: \_\_\_\_\_

5.6.1 Notified cranes and hoists system engineer or designee. \_\_\_\_\_ / \_\_\_\_\_  
Mech. Sign Date

5.6.2 Measurements of main hoist wire rope O.D.  
\_\_\_\_\_ in. \_\_\_\_\_ in. \_\_\_\_\_ in.

5.6.3 Measurements of auxiliary hoist wire rope O.D.  
\_\_\_\_\_ in. \_\_\_\_\_ in. \_\_\_\_\_ in.

ENP 5.6.11 Lubrication inspection of wire ropes:  SAT  UNSAT

\_\_\_\_\_  
System Engineer or Designee Sign

\_\_\_\_\_  
Date

ENP 5.6.12 Cranes and hoists system engineer or designee determined wire ropes are to be replaced.  YES  NO

\_\_\_\_\_  
System Engineer or Designee Sign

\_\_\_\_\_  
Date

This FORM, when completed, shall be retained for the life of the plant.

DATA SHEET  
OPMP04-JC-0002-1  
(Page 2 of 2)

5.1 SR/PM No. \_\_\_\_\_

5.2 Unit No. \_\_\_\_\_

5.6.13 Throat gage measurement on auxiliary hook. \_\_\_\_\_ in.

5.6.14 Throat gage measurement on main hook. \_\_\_\_\_ in. \_\_\_\_\_ in.

5.6.16 Measured twist of auxiliary hook. \_\_\_\_\_ deg.

5.6.17 Measured twist of main hook. \_\_\_\_\_ deg. \_\_\_\_\_ deg.

ENP

5.6.26 Cranes and hoists system engineer or designee determined auxiliary and main hoist requires lubrication.

YES  NO

\_\_\_\_\_  
System Engineer or Designee Sign

\_\_\_\_\_  
DATE

5.9 Crane operates satisfactory: \_\_\_\_\_ Yes \_\_\_\_\_ No

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PERFORMED BY: \_\_\_\_\_  
MECHANIC DATE

REVIEWED BY: \_\_\_\_\_  
WORK SUPERVISOR DATE

909.11

ORIGINAL

STP 3259A (06/93)  
REV 3

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION  
PLANT CHANGE FORM

1 Con 4/1/99  
315406-A  
PCF NUMBER

JC-315406  
WORK DOC. NO

(Page 1 of 12)

1. Problem/Condition: FOUND THE FOLLOWING ON THE ORBITAL BRIDGE BETWEEN 170° TO 270° (See Note) AND @ 129° (1.) FOUND THE ORBITAL WHEELS ARE NOT RUNNING OFF THE RAIL. THE ONLY THING KEEPING IT ON TRACK ARE THE SAFETY STOPS. 2.) FOUND THE CANTILEVER TUBE STEEL SUPPORT FOR THE COLLECTOR ARM MISSING THE END OF THE FLAT BAR SUPPORT, RUBBER INSULATORS AND JUMPER CABLES

2. TAG/TPNS: 7C102NCP201A System: JC Unit: ONE Priority: 2

Component/Part Description:

3. Recommended Action: REQUEST DED ENG. LOOK INTO PROBLEM/CONDITION.

Est. Instal. Date

Initiated by: HAROLD W. GIBSON Harold Gibson Date: 2/5/99 Phone: 6029  
PWA Sign

PCF Accepted by TSE Engineer (Name): R. W. Rimm

4. Disposition/Description of Change

See page 2 of this PCF. Sum 5/13/99

STI-94-006134-N 15

1 NO IMPACT ON SD. 59 EVALUATION Con 4/1/99

SE-51 EVAL REQUIRED? YES  NO  DISPOSITION: INTERIM\*  FINAL  Q-RELATED: YES  NO   
(\*FOR INTERIM, ATTACH PCF-INTERIM 50.59 EVALUATION FORM.)

50.59 EVAL REQUIRED? YES  NO  (If no, identify the reasons) NO. OF AMENDMENTS 1

- A. NON CONFORMANCE
- B. PAPER CHANGE
- C. REPLACE EQUIVALENT
- D. BENEFICIAL CHANGE
- E. REEVALUATE
- USE-AS-IS
- REPAIR
- REWORK

RWA S.E.D. 2/1/99 4/1/99  
Rd Egan Con 4/1/99  
 ENGINEER 4/1/99 3/20/99  
Earle Spawne 3/1/99 3/31/99  
 REVIEWER 4/1/99 3/31/99  
R M Attan 4/1/99 3/31/99  
 ENGINEER SUPV. DATE

**PLANT CHANGE FORM**

(CONTINUATION)

(Page 2 of 2)

315406-A  
PCF NUMBER4. Disposition/Description of Change (continued): **USE-AS-IS**

Rob Engen of DED and Ray Asbury of SED observed the orbital bridge tracking/interferences on 3/21/94 after the following inspections and adjustments were performed on the orbital bridge and polar crane:

- 1) Inspection of the orbital bridge wheel bearings per SR # 208942,
- 2) Diagnostic evaluation on the operation of the orbital bridge brakes per SR # 208942, and
- 3) Adjustment of the polar crane brakes per SR # 208943.

Completion of the above actions indicate:

- the orbital bridge wheel bearings are acceptable,
- the orbital bridge brakes are operating appropriately, and
- the polar crane brakes are now operating properly since being adjusted.

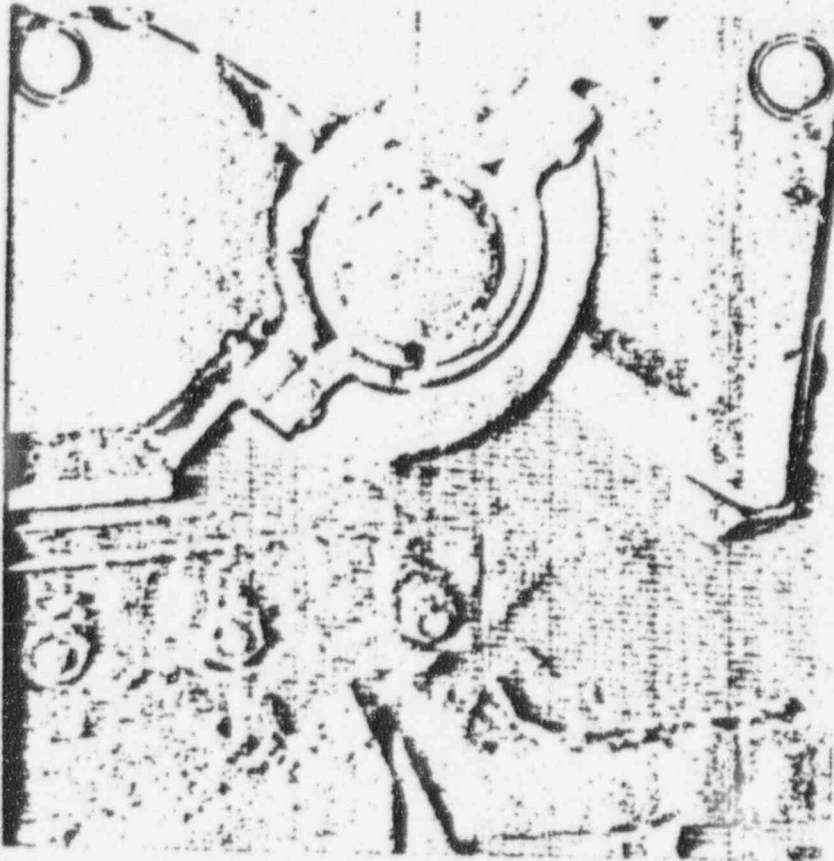
At the time the interference with the orbital bridge bus supports was identified, the polar crane brakes were not operating properly. The polar crane would have sudden stops tending to jar the polar cranes and orbital bridge. The previous inspection on the orbital bridge noted that when the polar crane pushes the orbital bridge and several stops and starts of the crane were performed the rubbing/interference of the supports tended to worsen. Based on discussions with Whiting (Joe Poradzisz), Joe felt these types of iterations (braking problems) could affect orbital bridge tracking. Now that the polar crane brakes provide smooth stopping, based on the observation of the orbital bridge on 3/21/94 there is not any rubbing of the supports in the areas of concern.

The clearance between the supports is still small and future perturbations with the brakes could cause support rubbing. Accordingly, DED recommends modification to the support be implemented in the future in order to provide more clearance between the bus support and the conductor support. Amendment #1 to this PCF allows an alternate detail of the conductor support.

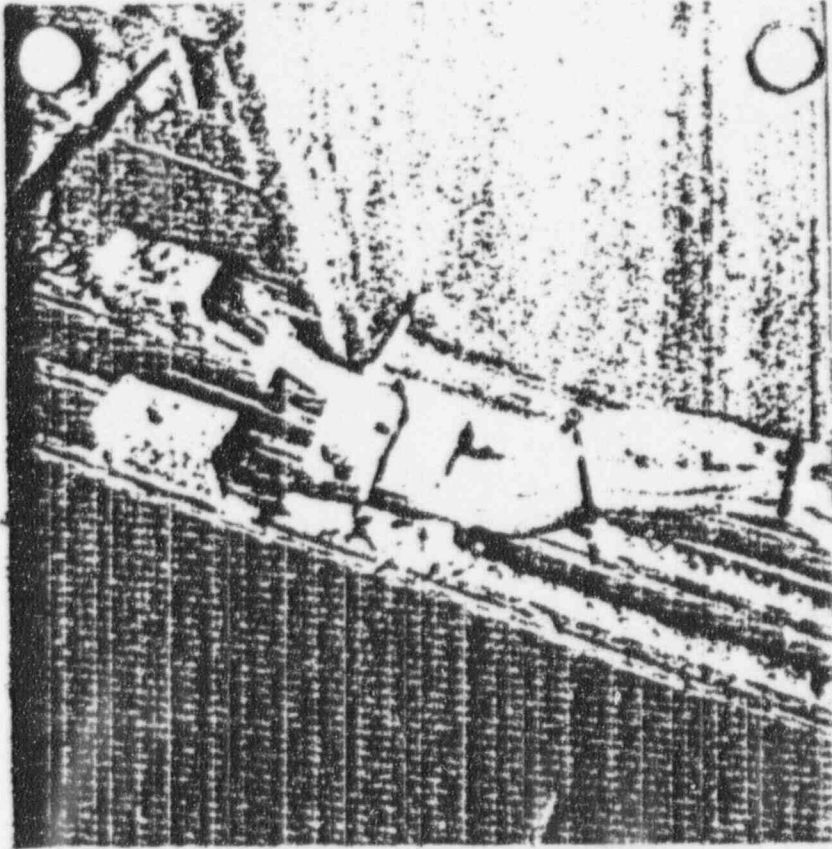
DED recommends the polar crane be released for normal rotation of the crane in both clockwise and counter clockwise direction. If the rubbing of the supports begins again, the polar crane operation should be restricted to the clockwise direction (looking down; i.e. direction of pulling orbital bridge), it is recommended the alternate support (per Amendment #1) be installed.

The amendment associated with this PCF is a paper change only amendment since it allows additional modification of the existing support and can be installed at any time.





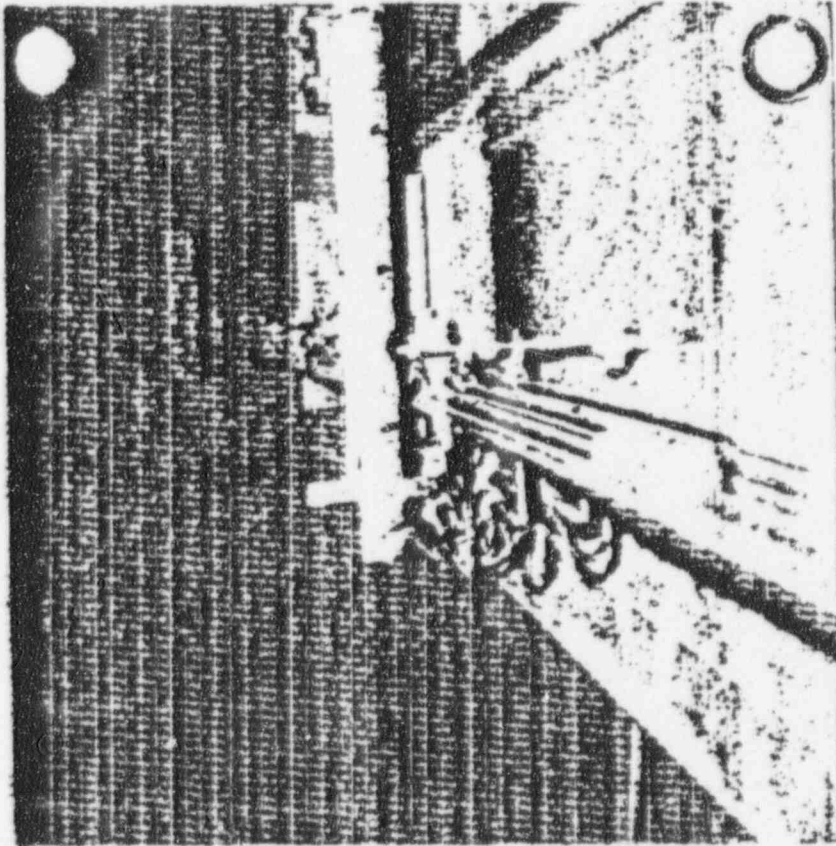
200°



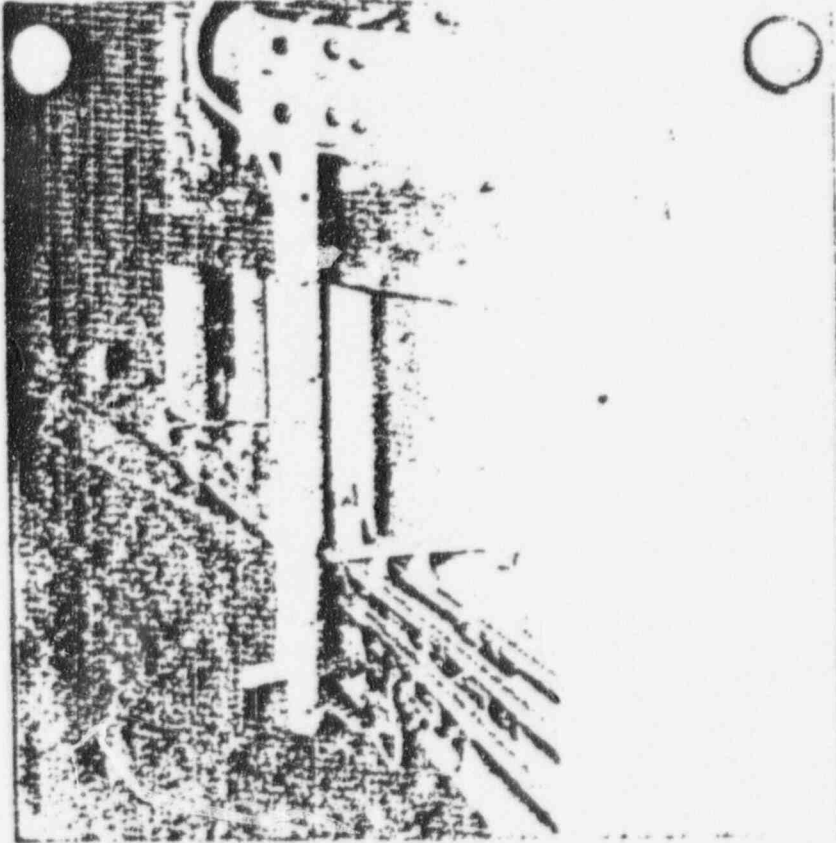
245°

PCF 315406A

page 5 of 12



275°



245°

# 10CFR50.59 SCREENING FORM

(TYPICAL)

UNIT #1        PROCEDURE       PLANT MODIFICATION       ECNP       DCN  
 UNIT #2   
 BOTH        UFSAR CN       OTHER Plant Change Form

ORIGINATING DOCUMENT NO.: 315406 A      REV. NO.: 0

DESCRIPTION OF CHANGE: See page 5

REASON FOR CHANGE: See page 5

## PRELIMINARY SCREENING

YES      NO

1. Does the proposed change represent a change to the Plant Technical Specifications?           

2. If an Unreviewed Safety Question is known to be associated with the subject change, then further screening is not required; refer to IP-1.190.

If "Yes" refer to IP-1.190. Further screening is not required.

Does the proposed change represent:      YES      NO

3. A change to correct a typographical, editorial or drafting error?           

4. A change which is identical to and addressed in its entirety by an existing approved 10CFR50.59 Screening/USQC?           

5. A procedure change in which the format or text changed without changing actions or intent?           

6. A spare or replacement part/component change with an equivalent part/component? (see Section 3.16 for a definition of equivalent)           

If all answers to the above questions are "No" perform the final screening and mark N/A in the approval blocks below.

If the answer to any question (3) through (6) is "Yes" a final screening is not necessary. Sign approval blocks below and discard pages 2 thru 4.

Provide an explanation/justification and references if any of items (3) through (6) are answered "Yes".

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Prepared by: N/A      Date: \_\_\_\_\_  
 Originator

Approved by: N/A      Date: \_\_\_\_\_  
 Section Supervisor

# 10CFR50.59 SCREENING FORM

(TYPICAL)

ORIGINATING DOCUMENT 315406A

## FINAL SCREENING

In response to the questions below, if the change involves something that is not described in the SAR and is not part of the licensing basis as shown by a review of NRC-published documents, then "No" is appropriate. However, this decision must be clearly documented with adequate technical justification.

The phrase "not part of licensing basis" implies that the subject matter was not used by NRC to issue or maintain the operating license or amendments; and is determined by examination of the Licensing Docket and the following (as applicable):

- |                                     |                                    |
|-------------------------------------|------------------------------------|
| Safety Analysis Report              | Training and Qualification Program |
| Environmental Report                | Final Environmental Statement      |
| Fire Hazards Analysis Report        | Safety Evaluation Report           |
| Physical Security Plan              | Standard Review Plan               |
| Safeguards Contingency Plan         | Correspondence                     |
| Operations Quality Assurance Plan   | Emergency Plan                     |
| Previously Approved USO Evaluations |                                    |

- |  | YES                      | NO                                  |
|--|--------------------------|-------------------------------------|
| 1. Does the subject of this review involve a change to the facility as described in the Safety Analysis Report?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Does the subject of this review involve a change to the procedures as described in the Safety Analysis Report?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Does the subject of this review propose the conduct of tests or experiments not described in the Safety Analysis Report?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. Does the proposed change affect conditions or bases assumed in the Safety Analysis Report or safety-related functions of equipment/systems, even though the proposed change does not entail any physical change in existing structures, systems, or procedures as described in the SAR? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If any answer is affirmative, complete the screening form and perform an Unreviewed Safety Question Evaluation.

If all answers are negative, no Unreviewed Safety Question Evaluation is required.

All questions require adequate technical justification.

# 10CFR50.59 SCREENING FORM

(TYPICAL)

PAGE 3 OF 4

ORIGINATING DOCUMENT 315406-A

TECHNICAL JUSTIFICATION SHOULD INCLUDE THE SAFETY IMPLICATIONS OF THE CHANGE, AND OTHER INFORMATION SUPPORTING ALL ANSWERS.

TECHNICAL JUSTIFICATION OF THE CHANGE: See page 5

(use additional pages as necessary)

- Interdiscipline Coordination Required?  Yes  No  
 If "yes", obtain appropriate concurrence.
- Risk and Reliability Analysis  Thermal Hydraulics  Reactor Engr.
- CMB  Mech  Elect  I&C  EQ  Other

Prepared by: R. L. Evers  
Originator

3/30/94  
Date

Approved by: R. M. Atter/For S. Thomas  
Department Manager

3/31/94  
Date

# 10CFR50.59 SCREENING FORM

(TYPICAL)

ORIGINATING DOCUMENT 315906A

The following documents/attributes have been reviewed as part of the 10CFR50.59 final screening process.

Documents

Sections Reviewed

- UFSAR
- Technical Specifications
- Safety Evaluation Report (SER)
- Fire Protection (FHAR)
- Environmental Report (ER)
- Security Plan
- Emergency Plan
- Offsite Dose Calculation Manual (ODCM)
- Final Environmental Statement
- Core Operating Limits Report (COLR)
- Operations Quality Assurance Plan
- Other \_\_\_\_\_

See page 6  
\_\_\_\_\_  
\_\_\_\_\_  
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Attributes

Check if Reviewed

- Environmental Qualification .....
- Seismic Design .....
- Personnel Radiation Protection .....
- Missile Protection .....
- Containment Integrity .....
- Single Failure Criteria .....
- Electrical Separation (RG 1.75) .....
- Heavy Loads .....
- HELBA .....
- Control Room Habitability .....
- Internal Flooding .....
- Plant Chemistry .....
- Human Factors .....
- Probabilistic Safety Assessment .....
- Other \_\_\_\_\_

NOTE: If Attributes are identified in the originating document this section need not be completed.



ORIGINATING DOCUMENT NO.: PCF 315406A

REV. 0

**DESCRIPTION OF CHANGE:** Use-as-is of the Orbital Bridge since the conductor support does not interfere with the bus support based on walkdown on 3/21/94. Also, the earthquake restraint does not rub on the rail. Nevertheless, a revision to the conductor support drawing allows for alternate location of the support if required.

**REASON FOR CHANGE:** The clearance between the supports is small and future perturbations with the brakes could cause support rubbing. Accordingly, Amendment #1 to the PCF allows further notching of the conductor support.

**TECHNICAL JUSTIFICATION OF THE CHANGE:** At the time the interference with the orbital bridge bus supports was identified, the polar crane brakes were not operating properly. The polar crane would have sudden stops tending to jar the polar crane and orbital bridge. The previous inspection on the orbital bridge noted that when the polar crane pushes the orbital bridge and several stops and starts of the crane were performed the rubbing/interference of the supports tended to worsen. Based on discussions with Whiting, these types of iterations (braking problems) could affect orbital bridge tracking. Now that the polar crane brakes have been adjusted (SR #208943) and provide smooth stopping, based on the observation of the orbital bridge on 2/21/94 there is no rubbing of the supports or earthquake restraints in the areas of concern. Therefore, the orbital bridge/polar crane is released for normal operation.

- Q1.** The subject of this review **does not** involve a change to the facility as described in the SAR, since this level of detail is not discussed or shown in the SAR. UFSAR Section 1.2 provides a general description of the plant and Figure 1.2-15 shows this general area.
- Q2.** The subject of this review **does not** involve a change to the procedures as described in the SAR, since no procedures are involved in the subject change.
- Q3.** The subject of this review **does not** propose the conduct of any tests or experiments not described in the SAR, since no tests are involved in the subject change.
- Q4.** The proposed change, **does not** affect conditions or bases assumed in the SAR or safety-related functions of equipment/systems, since the supports are not currently rubbing each other nor is the earthquake restraint rubbing the rail. Amendment #1 allows modification of the connector support. Structural integrity of the orbital bridge and associated supports is fully intact with the optional support location of the connector supports.

ORIGINATING DOCUMENT NO.: PCF 315406A

REV. 0

The following documents/attributes have been reviewed as part of the 10CFR50.59 final screening process.

Documents

UFSAR.....  
Technical Specifications.....  
Safety Evaluation Report (SER)....  
Fire Protection (FHAR).....  
Environmental Report (ER).....  
Security Plan.....  
Emergency Plan.....  
Offsite Dose Calculation Manual (ODCM).  
Final Environmental Statement.....  
Core Operating Limit Report (COLR)  
Other.....

Sections Reviewed

Section 1.2, fig. 1.2-15, Sections 3.8.3 & 9.1.4;  
Structural Audit ST-HL-AE-1250

Sections 3.8

General Structural Design Criteria 5A360SQ1001  
Specification for Polar Crane 7C109NS0052  
SPR 940252 (Reference Only)  
System Description of Cranes 7A019MD0108  
STRUCTURAL DRAWINGS: 2-S-31024/1-S-31023  
VENDOR DOCUMENTS: 8013-01067-GWG Polar  
Crane Manual  
8013-01018-BWG  
8013-01028-AWG  
8013-01027-AWG  
8013-01026-BWG  
8013-00009-AWG

STP 662A (11/93)  
OEP-2020

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION  
**DESIGN VERIFICATION CHECKLIST**

DOCUMENT NUMBER PCF 315406 A REV. 0

NOTE: THIS CHECKLIST SHOULD BE COMPLETED FOR MODIFICATION DESIGN PACKAGES, ENGINEERING CHANGE NOTICE PACKAGES, SPECIFICATIONS, ETC PER OEP-2020.

	YES	NO	N/A
1 HAS THE POTENTIAL FOR LICENSING IMPACT BEEN CONSIDERED?			
UFSAR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
TECHNICAL SPECIFICATIONS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FIRE HAZARD ANALYSIS REPORT (FHAR)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
HEAVY LOADS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ENVIRONMENTAL REPORT (ER)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
EMERGENCY RESPONSE DATA SYSTEM (ERDS)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
OTHER COMMITMENTS (CRDR REPORTS, IRCs, AUDITS, ETC)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 HAS THE IMPACT ON THE FOLLOWING BEEN CONSIDERED?			
PLANT SAFETY	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PLANT OPERABILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ACCESSIBILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
MAINTAINABILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TEST PROC./RESULTS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 HAS IN INTERDISCIPLINARY REVIEW ADEQUATELY CONSIDERED?			
MECHANICAL/NUCLEAR	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CODES AND STANDARDS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ELECTRICAL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
EQUIPMENT QUALIFICATION	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SEISMIC QUALIFICATION	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PIPING	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CIVIL/STRUCTURAL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PS/ISI	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
INSTRUMENTATION & CONTROL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 HAVE ALL OF THE AFFECTED DESIGN DOCUMENTS BEEN IDENTIFIED?			
DESIGN CRITERIA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DESIGN BASES DOCUMENT	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SYSTEM DESCRIPTIONS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CALCULATIONS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SPECIFICATIONS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P&IDs	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SAFETY SYSTEM FUNCTIONAL DIAGRAMS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LOGICS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ONE-LINE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
O LIST	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SPECIAL EQUIPMENT QUALIFICATION MAINTENANCE BOOK	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ELEMENTARIES	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
EQUIPMENT INDEX (MED)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
INSTRUMENT INDEX (MED)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
INSTRUMENT SETPOINT LIST	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ELECTRICAL SETPOINT LIST	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
EOP SETPOINT LIST	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VALVE LIST (MED)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VENDOR DRAWINGS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VENDOR MANUALS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
RESTRICTED COMPONENT LIST	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
OTHERS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

PA (3/31/94)

STP 48288 (11/93)  
DCP-2090

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION  
DESIGN VERIFICATION CHECKLIST

5. HAVE ALL OF THE AFFECTED DESIGN DOCUMENTS BEEN IDENTIFIED INCLUDING IMPACT ON ENGINEERING WALKDOWN AS APPLICABLE?

	YES	NO	N/A
ALARA	---	---	---
SPARE PARTS	---	---	---
MAINTENANCE REQUIREMENTS	---	---	---
CONTROL ROOM DESIGN REVIEW (CRDR)	---	---	---
CUMULATIVE LOAD VERIFICATION	---	---	---
ODPS/ERFDADS	---	---	---
CABLE TRAY LOAD VERIFICATION	---	---	---
SYSTEM INTERACTION	---	---	---
SINGLE FAILURE	---	---	---
ELECTRICAL SEPARATION	---	---	---
SEISMIC R/A	---	---	---
PIPE RUPTURE PROTECTION (HELBA)	---	---	---
INTERNAL PLANT FLOODING (MELBA)	---	---	---
INTERNALLY GENERATED MISSILES	---	---	---
TORNADO AND WIND	---	---	---
APPENDIX R (INCLUDING OVERHEAD FP SPRINKLER SPRAY PATTERNS)	---	---	---
ENVIRONMENTAL QUALIFICATION	---	---	---
SEISMIC QUALIFICATION	---	---	---
EES60	---	---	---
EROSION/CORROSION PROGRAM	---	---	---
SECTION XI ISI PROGRAM	---	---	---

6. ADDITIONAL COMMENTS (IF ANY).

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DESIGN VERIFIER: *E. Skinner* / 3-31-94  
SIGNATURE/DATE