

M3807
1

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

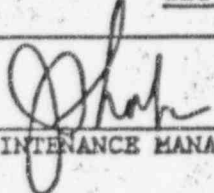
DEPARTMENT PROCEDURE

SAFETY-RELATED (Q)

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 1 of 23

APPROVED:


MAINTENANCE MANAGER

8/17/92
DATE APPROVED

8/24/92
DATE EFFECTIVE

1.0 Purpose and Scope

- 1.1 This procedure describes requirements to be observed in the inspection of top running overhead, and gantry cranes, semi gantry, cantilever gantry, wall cranes and others having the same fundamental characteristics. (Refer to Addendum 1 for Types of Cranes).
- 1.2 This procedure provides instructions for the inspection and storage of rigging and lifting devices.
 - 1.2.1 All Non permanent plant hoists and lifting devices issued through the maintenance toolrooms will be inspected and documented in accordance with the Tool and Measuring & Test Equipment Control procedure (OPGP03-ZM-0007) to the criteria stated herein.
- 1.3 This procedure is not applicable to fork lift trucks, hydraulic trucks, bucket trucks, man lifts, locomotive and truck cranes, derricks, jacks, or operation of any equipment except for maintenance.
- 1.4 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.

2.0 Responsibilities

- 2.1 Operator or person performing inspection shall contact the System Engineer or Designee for (Cranes and Hoists) for evaluation of any deficiencies found.

30pp

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 2 of 23

- 2.2 A Service Request (SR) shall be initiated to correct deficiencies identified during inspection.
- 2.3 All deficiencies found shall be carefully examined by the System Engineer or Designee and determination made as to the safe operation of the crane.
- 2.4 Operator or person performing ECW Gantry Crane inspections or maintenance shall ensure that tie-down mechanisms are utilized in accordance with OPMP04-EW-0005, (ECW Overhead Crane Tie-Down Removal and Installation).
- 2.5 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.
- 2.5 Maintenance shall keep preventive maintenance inspection data sheets indicating conditions of wire ropes associated with the specific crane/hoist applications.
- 3.0 Definitions
- 3.1 None
- 4.0 Prerequisites
- 4.1 None
- 5.0 Precautions
- 5.1 Personnel shall follow radiological precautions outlined on RWP, when working in Radiologically Restricted Area (RRA).
- 6.0 Procedure
- 6.1 Inspections - Cranes/Hoists/and Monorail Systems

NOTE (1)

Any deficiencies found shall be carefully examined by the System Engineer or Designee for Cranes and Hoists and determination made as to the safe operation of the crane.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 3 of 23

NOTE (2)

The responsible Supervisor shall file the completed Form (-1) in the appropriate Form (-1) file for the crane, hoist or lifting device inspected. These files are located in the Mechanical Maintenance Supervisor office area.

- 6.1.1 Enter Tag/TPNS number.
 - 6.1.1.1 Enter SR/PM number or N/A.
 - 6.1.1.2 Enter location.
 - 6.1.1.3 Enter date of inspection.
 - 6.1.1.4 Enter frequency of inspection.

Record

- 6.1.2 Daily inspection
 - 6.1.2.1 Daily inspection is required prior to crane use only if the requirements have not been met within the previous 24 hour period.
 - 6.1.2.2 Daily inspection shall be performed using the Crane/Hoist/Monorail Inspection Checklist Data Sheet Form (-1).

Record

- 6.1.3 Monthly inspection
 - 6.1.3.1 The monthly inspection requirements identified in this procedure shall be performed prior to crane operation only if the requirements have not been met within the previous four week period.
 - 6.1.3.2 Monthly inspection, shall be performed using the Crane/Hoist/Monorail Inspection Checklist Data Sheet Form (-1) in conjunction with the requirements identified below.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 4 of 23

6.1.3.3 As applicable, the following shall be inspected for unsatisfactory conditions and damage, with inspection results recorded in the "Comments" section of Form (-1).

- a) Hoist chains, if applicable, including end connections, for wear, twist, distorted links interfering with proper function, or stretch beyond acceptance criteria as specified in Subsection 6.5.
- b) Lubrication levels
- c) Rope reeving for noncompliance with crane manufacturer's recommendations.

Record

6.1.4 Yearly or outage frequency inspection

6.1.4.1 RCB located standby cranes preventive maintenance shall be performed prior to entering MODE 4 (plant heat up) at the completion of outage.

6.1.4.2 Yearly inspections or outage frequency inspections shall be performed in accordance with this procedure and the preventive maintenance program as deemed necessary by the designated inspector.

6.1.4.3 As applicable, the following shall be inspected for unsatisfactory conditions and damage, with inspection results recorded in the "Comments" section of Form (-1).

- a) All functional operating mechanisms for misadjustment interfering with proper operation.
- b) All limit switches. Each motion shall be inched into it's limit switch, or run in at slow speeds. (Polar crane hook lower limit switches need not be checked)
- c) Leakage in lines, tanks, valves, pumps and other parts of air, oil or hydraulic systems.

NOTE

Hooks with cracks or having more than 15% in excess of normal throat opening or more than 10 degrees twist from the plane of the unbent hook shall be removed from service.

- d) Deformed or cracked hooks. (Q.C. shall perform NDT examination of each hook).
- e) Hook latches, for damage or malfunctioning.
- f) Hoist ropes, including tightness of end clamps and rope clips, refer to subsection 6.2.
- g) Hoist chains, including end connections, for wear, twist, distorted links interfering with proper functions or stretch beyond acceptance criteria, as specified in Subsection 6.5.
- h) Rope reeving for noncompliance with crane manufacturer's recommendations.
- i) Deformed, cracked or corroded members.
- j) Loose bolts or rivets.
- k) Cracked or worn sheaves and drums.
- l) Worn, cracked or distorted parts, such as pins, bearings, shafts, gears, wheels, rollers, locking, clamping devices, bumpers, switch baffles, interlock bolts and stops, as applicable.
- m) Brake system parts, linings, pawls and ratchets for wear.
- n) Drive sprockets for wear and stretch of chain.
- o) Electrical apparatus such as controllers, master switches, contacts, limit switches and pushbutton stations, for signs of any deterioration.

- p) Wire rope (refer to subsection 6.2).
- q) Wear of drive tires, for monorails and underhung cranes.
- r) Wear or deformation of lower load carrying flange of all track sections in the system, both straight and curved, for monorail and underhung cranes.

6.1.5 Cranes not in regular use

6.1.5.1 Preventive maintenance requirements shall be determined by the designated inspector.

6.1.5.2 Standby cranes shall be inspected, prior to being placed into service, in accordance with this procedure.

6.1.5.3 RCB located standby cranes preventive maintenance shall be performed prior to entering MODE 4 (plant heat up) at the completion of outage.

6.2 Wire Rope (other than slings) inspection and replacement

6.2.1 Inspection

NOTE

Sections of rope which are normally not visible i.e., sections that pass over sheaves should be examined carefully.

6.2.1.1 All wire rope which has been idle for a month or more due to shutdown or storage of a crane on which it is installed, shall be inspected for proper lubrication and deterioration by a qualified inspector, prior to crane being placed into service. This inspection shall be performed on all of the wire rope that is visible and accessible to the inspector.

6.2.1.2 The qualified inspector for wire rope inaccessible for lubrication or inspection, shall determine, based on factors such as expected wire rope life on similar installations; severity of environment; percentage of capacity lifts; frequency rates of operation and previous maintenance inspection reports, determine whether further use of wire rope would constitute a hazard or require wire rope to be replaced.

6.2.1.3 Any deterioration resulting in appreciable loss of original strength, such as described below, shall be noted and determination made as to whether further use of the rope would constitute a hazard.

- a) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion or wear of outside wires.
- b) Individual wires broken, twelve random in one rope lay or four broken in one strand in one rope lay.
- c) Worn outside wires.
- d) Corroded or broken wires at end connections.
- e) Corroded, cracked, bent, worn or improperly applied end connections.
- f) Kinking, crushing, cutting or unstranding.

6.2.1.4 Rope should be maintained in a well-lubricated condition. Approved lubricant applied as part of a maintenance program shall be compatible with the original lubricant and the rope manufacturer should be consulted. Approved lubricant applied shall be of the type which does not hinder visual inspection. Those sections of rope which are located over sheaves or otherwise hidden during inspection and maintenance procedures require special attention when lubricating rope. The object of rope lubrication is to reduce internal friction and to prevent corrosion.

6.2.2 Wire Rope replacement guidelines

6.2.2.1 No precise rules can be given for determination of the exact time for replacement of rope since many variable factors are involved. Continued use depends largely upon the use of good judgment in evaluating remaining strength in a used rope after allowance for deterioration disclosed by inspection. Continued operation depends upon this remaining strength.

6.2.2.2 Conditions such as the following should be sufficient reason for questioning continued use of the rope or increasing the frequency of inspection.

- a) In running ropes, twelve randomly distributed broken wires in one strand in one rope lay or four broken wires in one strand of one rope lay.
- b) Wear of one-third the original diameter of outside individual wires.
- c) Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.
- d) Evidence of heat damage.
- e) Reductions from nominal diameter of more than:
 - o 1/64 inch for diameters to and including 5/16 inch.
 - o 1/32 inch for diameters 3/8 inch to and including 1/2 inch.
 - o 3/64 inch for diameters 9/16 inch to and including 3/4 inch.
 - o 1/16 inch for diameters 7/8 inch to and including 1 1/8 inch.
 - o 3/32 inch for diameters 1 1/4 inch to and including 1 1/2 inch.

6.3 Storage of rigging

6.3.1 Slings of all grades and type should be stored in an area where they will not be damaged by:

6.3.1.1 Moisture

6.3.1.2 Extreme heat

6.3.1.3 Corrosion

6.3.1.4 Being run over

6.3.1.5 Being kinked

6.4 Inspection of rigging

6.4.1 All new rigging shall be inspected prior to initial use.

6.4.2 All rigging shall be visually inspected each day they are being used by the individual responsible for performing the rigging.

6.4.3 Slings which do not have toolroom code numbers shall not be used, and will be turned into the toolroom for evaluation.

6.4.4 A periodic safety inspection (Performed through the Tool Control Program) shall be done by a designated person on all slings stored in the toolrooms.

6.4.4.1 Slings and hoists which are removed from service and put into storage will not need a periodic inspection. They will need an inspection prior to being placed into service again.

6.4.5 Conditions such as the following should be sufficient reason for questioning continued use of the sling. Any sling found in a questionable condition shall be turned into the toolroom attendant. Toolroom attendant only, shall dispose of defective rigging.

6.4.5.1 Wire Rope slings

a) Wear or scraping of one-third the original diameter of outside individual wires.

b) Kinking, crushing, birdcaging or any other damage resulting in distortion of the rope structure.

c) Evidence of heat damage.

- d) End attachments that are cracked, deformed, or worn.
- e) Hooks that have been opened more than 15% of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- f) Corrosion of the rope or end attachments.
- g) Six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay.

6.4.5.2 Synthetic webbing slings

- a) Acid or caustic burns.
- b) Melting or charring of any part of the surface.
- c) Snags, punctures, tears, or cuts.
- d) Broken or worn stitching.
- e) Wear or elongation exceeding the amount recommended by manufacturer.

NOTE

Some slings contain a colored yarn cord to identify when the sling has been weakened by cutting or abrasion. If colored yarn appears, sling integrity should be questioned.

- f) Discoloration of fittings.
- g) Other apparent defects which cause doubt as to the strength of the sling should be referred to the manufacturer for determination.

6.4.5.3 Polyester round slings

- a) Acid or Caustic Burns
- b) Melting or charring of any part of the sling
- c) Snag, cuts or tears that are through both canvas covers and expose the polyester core.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 11 of 23

6.5 Chain Link Stretch Criteria

6.5.1 Chain link stretch shall not exceed the maximum allowable limits identified below:

<u>CHAIN SIZE INCHES</u>	<u>MAXIMUM STRETCH ALLOWED</u>
1/4".....	3/64"
3/8".....	5/64"
1/2".....	7/64"
5/8".....	9/64"
3/4".....	5/32"
7/8".....	11/64"
1".....	3/16"
1-1/8".....	7/32"
1-1/4".....	1/4"
1-3/8".....	9/32"
1-1/2".....	5/16"
1-3/4".....	11/32"

6.6 Manual Lever Operated Hoists (come-alongs)

6.6.1 All new Lever Operated Hoists SHALL be visually inspected prior to initial use by the Tool Technicians.

6.6.2 All the Lever Operated Hoists SHALL be visually inspected periodically. The frequency of inspections will be as follows:

6.6.2.1 Frequent inspections will be performed by the operator/user of the device. Records of the inspection(s) are not required to be maintained.

6.6.2.2 Periodic inspections will be performed by the Maintenance Tool Technicians on an annual basis. The annual inspections will be documented and records maintained.

6.6.3 Frequent Inspections should be conducted during regular service for any damage or evidence of malfunction that appears between regular inspections. Any deficiencies such as listed below shall be carefully examined and determination made as to whether they constitute a hazard. Inspection(s) include checking:

6.6.3.1 All function operating mechanisms for maladjustment interfering with proper operation;

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 12 of 23

- 6.6.3.2 Hooks and latches for deformation, chemical damage, cracks, and wear;
- 6.6.3.3 Hook latches for proper attachment and operation, if used;
- 6.6.3.4 Hoist load chain for deficiencies as follows;
- a. Test the hoist under load in lifting and lowering directions and observe the operation of the chain and sprockets. The chain should feed smoothly into and away from the sprockets.
 - b. If the chain binds, jumps, or is noisy, first see that it is clean and properly lubricated. If the trouble persists, inspect the chain and mating parts for wear, distortion or other damage.
 - c. Examine visually for gouges, nicks, weld splatter, corrosion and distorted links. Slacken the chain and move the adjacent links to one side to inspect for wear at the contact points. If wear is observed or if stretching is suspected, the chain should be measured according to the hoist manufacturer's instructions.
 - d. If manufacturer's instructions are not available, refer to ANSI B30.21 - 1989 21-1.5.1c for alternate instructions.
- 6.6.3.5 Wire Rope for deficiencies as follows:
- a. Distortion of the rope such as kinking, crushing, unstranding, main strand displacement, birdcaging, or core protrusion
 - b. General corrosion
 - c. Broken or cut strands
 - d. Visible broken wire such as 12 randomly distributed broken wires in one strand in 1 lay or 1 outer wire broken at the contact point with the core of the rope which has worked its way out of the rope structure and protrudes or loops out from the rope structure.

6.6.3.6 Web strap for deficiencies as follows:

- a. Melting or charring
- b. Acid or caustic burns
- c. Weld spatter
- d. Broken stitching
- e. Cuts or tears
- f. Damaged eyes or fittings
- g. Abrasive wear
- h. Knots

6.6.3.7 Load chain/wire rope/web strap reeving for compliance with hoist manufacturer's recommendations;

6.6.3.8 Hoist lever for bends, cracks, or other damage;

6.6.3.9 Damage to the support for the hoist.

6.6.4 Periodic Inspections are complete inspections of the hoist that are performed annually, as deemed necessary by designated inspector. Covers and other items normally supplied to allow inspection of the components should be opened or removed for these inspections. Any deficiencies, such as those listed below, shall be examined and determination made as to whether they constitute a hazard. These inspections shall include the requirements of para. 6.6.3 and, in addition, items such as evidenced by the following:

6.6.4.1 Loose bolts, nuts or rivets

6.6.4.2 Worn, corroded, cracked, or distorted parts such as load blocks, suspension housing, levers, chain attachments, devices, yokes, suspension bolts, shafts, gears, bearings, pins rollers, and locking and clamping devices;

6.6.4.3 Damage to hook retaining nuts or collars, and pins and welds or rivets used to secure the retaining devices;

6.6.4.4 Damage or excessive wear of load sprockets or idler sprockets;

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 14 of 23

- 6.6.4.5 Worn, glazed, or oil contaminated friction disks; worn pawls, cams, or ratchets; corroded, stretched, or broken pawls springs in the brake mechanism;
 - 6.6.4.6 Deterioration of warning label on the device;
 - 6.6.4.7 Deterioration of end connections of load chains wire ropes or web straps including overtravel restraints.
- 6.6.5 A hoist that has been idle for a period of one (1) month or more, but less than one (1) year, shall be given inspection conforming with the requirements of paragraph 6.6.3 before it is placed into service.
- 6.6.6 A hoist that has been idle for a period of one (1) year shall be given an inspection conforming with the requirements of paragraph 6.6.4 before it is placed in service.
- 6.6.7 The inspections referenced in 6.6.5 and 6.6.6 shall be performed by the Tool Room Technicians.
- 6.6.8 All altered or repaired hoist, or hoists that have not been used within the preceding twelve (12) months, shall be tested before being placed in service, or under the direction of, a designated person to ensure compliance with industry standards, including the following.
- 6.6.8.1 All functions of the hoist shall be checked with the hoist suspended in the unloaded state. (Some hoists may require a nominal load or pull on the load hook to test the lowering motion).
 - 6.6.8.2 After testing in the unload state, a load of at least 100 lb. times the number of load supporting parts of chain shall be applied to the hoist in order to check proper load control.
- 6.6.9 All hoists in which load sustaining parts have been altered, replaced, or repaired shall be tested statically or dynamically by, or under the direction of, an appointed person, and a record of the test should be made. The applied test load shall be at least equal to the rated load or greater, as approved by the manufacturer.

6.7 Hand Chain Operated Hoists (Chainfalls)

- 6.7.1 All new Chain Operated Hoists SHALL be visually inspected prior to initial use by the Tool Technicians.
- 6.7.2 All chain operated hoists SHALL be visually inspected periodically. The frequency of inspections will be as noted in paragraphs 6.6.2.1 and 6.6.2.2.
- 6.7.3 Frequent inspections shall be the same as for Lever Operated Hoists and in accordance with paragraph 6.6.3.
- 6.7.4 Periodic inspections shall be the same as for Lever Operated Hoists and in accordance with paragraph 6.6.4.
- 6.7.5 Chain operated hoists that have been idle for a given period will be inspected before being placed in service in accordance with paragraphs 6.6.5 thru 6.6.7.
- 6.7.6 All chain operated hoists that have been repaired, altered or idle for the proceeding twelve (12) months shall be tested in accordance with paragraph 6.6.8 with the exception that the test load will be 50 lbs. times the number of the load supporting parts of chain.
- 6.7.7 All chain operated hoists in which load sustaining parts have been altered, replaced or repaired shall be tested in accordance with paragraph 6.6.9

7.0 Acceptance Criteria

- 7.1 Functions and limit switches are within acceptable criteria, as specified within this procedure.
- 7.2 Deficiencies noted have been evaluated and dispositioned by the System Engineer or Designee.

8.0 References

- 8.1 ANSI B30.2.0, Overhead and Gantry Cranes
- 8.2 ANSI B30.9, Slings
- 8.3 ANSI B30.11, Monorail and Underhung Cranes
- 8.4 OSHA 2206, OSHA Safety and Health Standards (29CFR1910), General Industry, Revised, June, 1981
- 8.5 Significant Event Report, (SER) 85-002 (ST-HS-HS-3207)

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 16 of 23

- 8.6 ANSI B30.16 Overhead Hoists
- 8.7 ANSI B30.10 Hooks
- 8.8 ANSI B30.21 Manually Lever Operated Hoists.

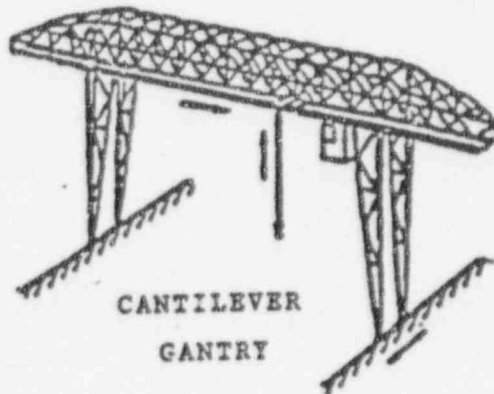
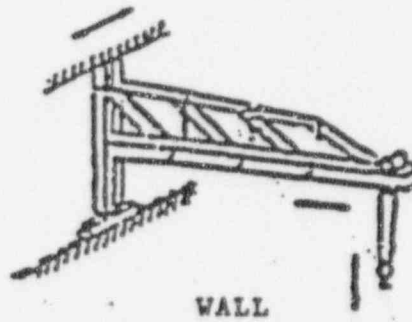
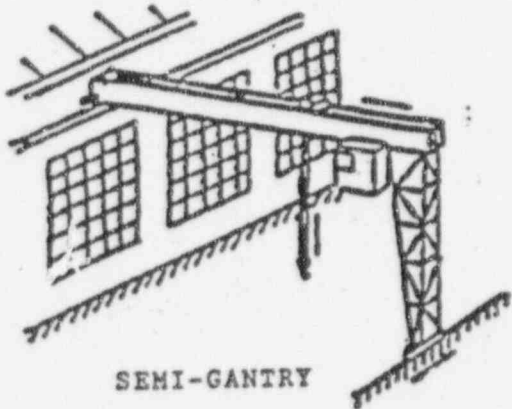
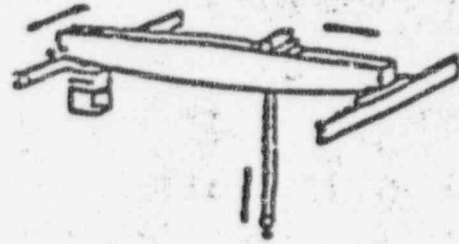
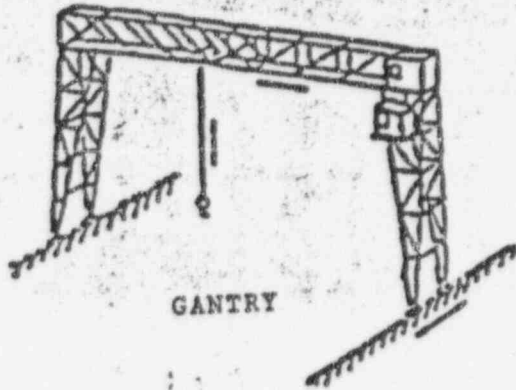
9.0 Support Documents

- 9.1 Addendum 1, Types of Cranes
- 9.2 Crane/Hoist/Monorail Inspection Checklist (-1)

10.0 Documentation

- 10.1 The following documentation is required to be retained in the appropriate crane, hoist or lifting device Form (-1) file:
 - 10.1.1 Data Sheet, OPMP02-ZG-0003-1

ADDENDUM 1
TYPES OF CRANES
(Page 1 of 1)



Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices
CRANE/HOIST/MONORAIL INSPECTION CHECKLIST
DATA SHEET
OPMP02-ZG-0003-1
(Page 1 of 6)

OPMP02-ZG-0003
Rev. 8
Page 18 of 23

- 6.1.1 Tag/TPNS Number: _____
- 6.1.1.1 SR/PM Number: _____
- 6.1.1.2 Location: _____ 6.1.1.3 Date: _____
- 6.1.1.4 Frequency of Inspection: Daily _____ Monthly _____ Yearly _____

If inspection is to be performed on the ECW Gantry Crane, ensure that tie-down mechanisms have been removed and installed in accordance with OPMP04-EW-0005 (ECW Overhead Crane Tie-Down Removal and Installation).

Tie-Down mechanisms removed in accordance with OPMP04-EW-0005.

Signature Date

Tie-Down mechanisms installed in accordance with OPMP04-EW-0005.

Signature Date

The following shall be inspected for defects and damage, including observations during operation, which might appear between periodic inspections. A Service Request (SR) shall be initiated to correct any deficiencies identified during inspection. Any deficiencies found shall be carefully examined by the System Engineer or Designee for (Cranes and Hoists) and determination made as to the safe operation of the crane.

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
1. All directional operations	Operate correctly			1.
2. All speed controls	Function properly			2.
3. Hook drift (both directions)	No drift			3.

This FORM, when completed, shall be retained for one year.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 19 of 23

CRANE/HOIST/MONORAIL INSPECTION CHECKLIST
DATA SHEET
OPMP02-ZG-0003-1
(Page 2 of 6)

NOTE (1)

Polar crane hook lower limit switches need not be checked.

NOTE (2)

Hook lower limit switch operation need only be checked if hook is being lowered toward it's lower limit for lifting purposes.

4. All limit switches should be checked, with no load on hook. Each motion shall be inched into it's limit switch, or run in at slow speeds.

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. All limit switches	Function properly			A.
B. Each motion	Inched into it's limit switch correctly			B.

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. Hook lower limit switch	Functions properly			A.

5. Check control operating details of:

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. Master switches functions	Function properly			A.
B. Push button pendants and stations operability	Operate properly			B.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003

Rev. 8

Page 20 of 23

CRANE/HOIST/MONORAIL INSPECTION CHECKLIST

DATA SHEET

OPMP02-ZG-0003-1

(Page 3 of 6)

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
C. Return springs functions	Function properly			C.
D. Functional name plates or control stations visibility	Clearly visible			D.

6. Check hoisting cable for:

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. Kinks, broken strands or evidence of having been crushed	Absence of kinks, broken strands or evidence of having been crushed			A.
B. Following drum grooves	Follows drums grooves correctly			B.
C. End clamps and rope clips	Tight			C.

7. Check load blocks and hooks for:

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. Load block and sheaves	General condition acceptable			A.
B. Hook for deformation or cracks	No deformation or cracks			B.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 21 of 23

CRANE/HOIST/MONORAIL INSPECTION CHECKLIST

DATA SHEET
OPMP02-ZG-0003-1
(Page 4 of 6)

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
C. Hook latches for damage or malfunctions	No damage or malfunctions			C.

B. Check for oil, air or hydraulic leakage:

<u>Inspection</u>	<u>Criteria</u>	<u>Yes</u>	<u>No</u>	<u>Deficiencies</u>
A. Lines	No leaks			A.
B. Tanks	No leaks			B.
C. Valves	No leaks			C.
D. Pumps	No leaks			D.
E. Other parts of oil, air or hydraulic systems	No leaks			E.

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 23 of 23

CRANE/HOIST/MONORAIL INSPECTION CHECKLIST
DATA SHEET
OPMP02-ZG-0003-1
(Page 6 of 6)

NOTE

Deficiencies previously addressed as
satisfactory do not require re-evaluation.

DEFICIENCIES EVALUATED:

1. _____

RESULTS OF EVALUATION:

DEFICIENCIES EVALUATED:

2. _____

RESULTS OF EVALUATION:

SR NUMBER: _____

SR NUMBER: _____

EVALUATION PERFORMED BY: _____

System Engineer/Designer

DATE _____

904 102
1

RECEIVED

OCT 5 1992

RMS/PROCEDURE CONTROL

Plant Procedures

FIELD CHANGE FORM

OPGP03-ZA-0002-4

(Page 1 of 1)

OPGP03-ZA-0002

Rev. 22

Page 59 of 65

N/A ANY FIELDS NOT NEEDED

FC NO. 92-0566

NO YES One-Time-Only FC?
 NO YES Typed prior to the Section B approval?

SECTION A - DESCRIPTION

Procedure No. OPMP02-ZG-0003 Rev No. 8
Procedure Title Inspection and Maintenance For Cams, Hoists, Monorail Systems and Lifting Devices

QUALITY CLASSIFICATION: QUALITY-RELATED NON QUALITY-RELATED
APPROVAL CLASSIFICATION: STATION DEPARTMENT

Description of Change(s): Added step 5.2 to precautions. Added step 6.1.2.3 to daily inspection. Added step 6.1.3.1 to monthly inspection. Added step 6.1.4.3 to yearly inspection section
Reason for Change(s): Per Plant Managers request, to prevent future ECR crane cable breakage

This is the 1st FC against this current revision, other than one-time-only.

AFFECTED/ADDITIONAL PAGES 2, 3 and 4

Prepared by (Signature) See Griffin Date 10/02/92
Prepared by (Print) Lee Griffin

SECTION B - APPROVAL

Recommend [Signature] Date 10/2/92
Approval [Signature] Technical Reviewer
Recommend [Signature] Date 10/2/92
Approval [Signature] Authorized Individual (See Addendum 3)
Approved [Signature] Date 10/2/92
On Duty Shift Supervisor

NO YES Is this FC a minor change to correct an obvious typographical, editorial or drafting error? If YES, provide explanation/justification in the "Reason for Change" above and the LCR Form and Technical and Surveillance Procedure Review Checklists are not required.

SECTION C - FINAL REVIEW AND APPROVAL OF TYPED COPY

NOTE: Cognizant DM Review SHALL be completed within 21 calendar days of effective date.

Satisfactory NO YES Station Problem Report No. N/A

Revision Required NO YES MATS ITEM NO: N/A

Is a change required to the other unit's and/or trains' procedures? NO YES N/A Tracking No.(s) N/A

Training required NO YES

**Reviewed by [Signature] Date N/A

Approved by [Signature] Cognizant DM Date 10/2/92
Plant Manager or Cog DM

DB
10/5/92

- ** This signature not required for Department Procedures.
- # Plant Manager signature required for Station Procedures, Cognizant DM signature required for Department Procedures.

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

TECHNICAL REVIEW CHECKLIST

OPGPO3-ZA-0002-5

(Page 1 of 1)

Document Number OPMPO2-ZG-0003 Rev. 8 FC 92-0566Document Title Inspection and Maintenance for Cables, Hoists, Monorail Systems and Lifting Devices

INITIAL (OR PUT "N/A" IF NOT APPLICABLE) * NOT APPLICABLE FOR PROCEDURE DELETIONS

- POD 1. The intent of this procedure is clear to the expected users.
- POD 2. This procedure, revision, or change is technically and administratively correct.
- POD 3. This procedure, revision, or change is capable of being performed in the order specified.
- POD 4. This procedure, revision, change or deletion is compatible with other plant procedures.
- N/A 5. This procedure, revision, or change references and adequately implements (or in the case of a deletion, adequately compensates for) commitments made in the UFEAR, SER, and other licensing documents.
- POD 6. This procedure, revision, or change is correctly numbered, formatted and prepared in accordance with approved procedures.
- N/A 7. This procedure, revision, change or deletion adequately addresses and/or references Technical Specifications and other matters that may affect nuclear safety.
- POD 8. The questions on the License Compliance Review Form are properly answered.
- * N/A 9. This procedure, revision or change adequately addresses configuration control requirements as described in OPGPO3-ZM-0021, Control of Configuration During Maintenance, including independent verification. (SPR 900317)
- * N/A 10. Temporary modifications required by this procedure are documented and controlled in accordance with OPGPO3-ZA-0039, Addendum 17.
- * N/A 11. This procedure, revision, or change specifies the correct plant modes and/or plant conditions required for procedure performance. (SER 91-011)
- N/A 12. If this procedure is used to satisfy Technical Specification Surveillance requirements, then the Surveillance Procedure Review Checklist (-7) has been completed (not required for superseded procedures).

Reviewed by

[Signature]Date 10/2/92

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

License Compliance Review Form

OPGP03-ZA-0003-1

(Page 1 of 2)

STP 717A (04/90)	SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
LICENSE COMPLIANCE REVIEW	
LICENSE COMPLIANCE REVIEW FORM	
PAGE <u>1</u> OF <u>2</u>	
UNIT: <input type="radio"/> 1, <input type="radio"/> 2 QUALITY RELATED: <input checked="" type="radio"/> Y, <input type="radio"/> N	ORIGINATING DOCUMENT NO. <u>FC-92-0566</u> REV. <u>N/A</u> ASSOCIATED PROCEDURE NO. <u>OPMPO2-ZG-0003</u> REV. <u>8</u>
PROCEDURE TITLE <u>Inspection and Maintenance for Cranes, Hoists, Monorail Systems and Lifting Devices</u>	
THIS FORM MAY BE USED ONLY FOR SCREENING PERMANENT, TEMPORARY, AND EMERGENCY CHANGES TO PROCEDURES. THIS FORM IS NOT TO BE USED FOR SCREENING MODIFICATIONS (i.e. DESIGN CHANGES AND TEMPORARY MODIFICATIONS). GUIDANCE ON ANSWERING QUESTIONS 1 THROUGH 5 MAY BE FOUND IN ATTACHMENT 4 TO IP-3.200 AND ADDENDUM 1 TO OPGP03-ZA-0003.	
1. DOES THE SUBJECT OF THIS REVIEW INVOLVE A CHANGE TO THE FACILITY AS DESCRIBED IN THE SAR?	YES ___ NO <input checked="" type="checkbox"/>
2. DOES THE SUBJECT OF THIS REVIEW INVOLVE A CHANGE TO THE PROCEDURES AS DESCRIBED IN THE SAR?	YES ___ NO <input checked="" type="checkbox"/>
3. DOES THE SUBJECT OF THIS REVIEW CONDUCT TESTS AND/OR EXPERIMENTS NOT DESCRIBED IN THE SAR?	YES ___ NO <input checked="" type="checkbox"/>
4. DOES THE PROPOSED CHANGE AFFECT CONDITIONS OR BASES ASSUMED IN THE SAR OF SAFETY-RELATED FUNCTIONS OF EQUIPMENT/SYSTEM, EVEN THOUGH THE PROPOSED CHANGE DOES NOT ENTAIL ANY PHYSICAL CHANGE IN EXISTING STRUCTURES, SYSTEMS, OR PROCEDURES AS DESCRIBED IN THE SAR?	YES ___ NO <input checked="" type="checkbox"/>
IF ANY ANSWERS TO QUESTIONS 1 THROUGH 4 ARE "YES", COMPLETE THIS FORM AND PREPARE AN UNREVIEWED SAFETY QUESTION EVALUATION PER IP-3.200 (SEE ATTACHMENT IP-3.200-3).	
IF ALL OF THE QUESTIONS ARE ANSWERED "NO", INDICATE BELOW THE TECHNICAL JUSTIFICATION FOR BASES OF ANSWERS.	
BASES FOR RESPONSES TO QUESTIONS 1 THROUGH 4 - CHECK ONE AND ONLY ONE.	
<input type="checkbox"/> BASIS 1. THIS CHANGE CONSISTS ONLY OF FORMAT MODIFICATION(S) AND/OR REWORDING FOR CLARIFICATION AND/OR EDITORIAL CORRECTION. THE INTENT OF THE PROCEDURE IS NOT AFFECTED. THIS CHANGE DOES NOT INVOLVE AN UNREVIEWED SAFETY QUESTION.	
<input checked="" type="checkbox"/> BASIS 2. THIS CHANGE IS ASSOCIATED WITH A PROCEDURE WHICH IS NOT CONTAINED OR DESCRIBED IN THE SAR.	
<input type="checkbox"/> BASIS 3. THIS CHANGE IS ASSOCIATED WITH A PROCEDURE WHICH IS LISTED IN THE SAR BUT NOT OUTLINED, SUMMARIZED OR COMPLETELY DESCRIBED.	
<input type="checkbox"/> BASIS 4. THIS CHANGE IS ASSOCIATED WITH A PROCEDURE WHICH IS LISTED AND/OR DESCRIBED IN THE SAR; HOWEVER, THIS CHANGE CONSISTS OF PROCEDURAL MODIFICATION(S) FOR WHICH THE SAR DOES NOT CONTAIN THE REQUISITE LEVEL OF DETAIL.	
<input type="checkbox"/> OTHER (SPECIFICALLY ADDRESS QUESTIONS 1 - 4 EACH) BASIS _____ _____ _____ _____ _____	
(ATTACH ADDITIONAL SHEETS, IF NECESSARY)	
IF ALL ANSWERS TO QUESTIONS 1 THROUGH 4 ARE NEGATIVE, THEN NO UNREVIEWED SAFETY QUESTION EVALUATION IS REQUIRED.	
THIS FORM WHEN COMPLETED SHALL BE RETAINED FOR THE LIFE OF THE PLANT	

License Compliance Review Form
DPGPO3-ZA-0003-1
(Page 2 of 2)

STF 7178 (04/90)	SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION
LICENSE COMPLIANCE REVIEW	
LICENSE COMPLIANCE REVIEW FORM	
	PAGE <u>2</u> OF <u>2</u>

ORIGINATING DOCUMENT NO. FC-92-0566 REV. N/A

5. DOES THE SUBJECT OF THIS REVIEW REQUIRE A CHANGE TO THE TECHNICAL SPECIFICATIONS? YES ___ NO
IF "YES" REFER TO RP-1.190. AN UNREVIEWED SAFETY QUESTION EVALUATION IS NOT REQUIRED.

DOCUMENTS REVIEWED

TECHNICAL SPECIFICATION SECTIONS REVIEWED: 6.5, 6.8

SAP SECTIONS REVIEWED: 13.5.1.2 13.5.1.3

OTHER DOCUMENTS REVIEWED (SEE DPGPO3-ZA-0003, ADDENDUM 9): See 6.5. 10/02/92
SPR 92-0611

- 6. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL FIRE HAZARD, AFFECT FIRE PROTECTION TRAINING OR ADMINISTRATION, EMERGENCY LIGHTING OR COMMUNICATIONS, OR PROTECTION OF THE METHODS FOR ACHIEVING AND MAINTAINING SAFE SHUTDOWN IN THE EVENT OF A FIRE?
 NO. () YES - ATTACH A FIRE HAZARDS EVALUATION
- 7. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL RADIOLOGICAL HAZARD TO THE ENVIRONMENT?
 NO. () YES - ATTACH A RADIOLOGICAL ENVIRONMENTAL EVALUATION
- 8. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL NON-RADIOLOGICAL HAZARD TO THE ENVIRONMENT?
 NO. () YES - ATTACH A NON-RADIOLOGICAL ENVIRONMENTAL EVALUATION
- 9. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL ALARA CONCERN?
 NO. () YES - ATTACH AN ALARA EVALUATION
- 10. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL INDUSTRIAL SAFETY HAZARD?
 NO. () YES - ATTACH AN INDUSTRIAL SAFETY EVALUATION
- 11. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL TO REDUCE THE COMMITMENTS OF THE NUCLEAR SECURITY PROGRAM?
 NO. () YES - ATTACH A NUCLEAR SECURITY EVALUATION
- 12. DOES THE SUBJECT OF THIS REVIEW REPRESENT OR CREATE A POTENTIAL TO REDUCE THE COMMITMENTS OR EFFECTIVENESS OF THE EMERGENCY PLAN OR EMERGENCY PREPAREDNESS PROGRAM?
 NO. () YES - ATTACH AN EMERGENCY PLAN/EMERGENCY PREPAREDNESS PROGRAM EVALUATION

PREPARED BY: See Griffin DATE 10/02/92

REVIEWED BY: [Signature] DATE 10/02/92

Inspection and Maintenance for Cranes,
Hoists, Monorail Systems
and Lifting Devices

OPMP02-ZG-0003
Rev. 8
Page 2 of 23

- 2.2 A Service Request (SR) shall be initiated to correct deficiencies identified during inspection.
 - 2.3 All deficiencies found shall be carefully examined by the System Engineer or Designee and determination made as to the safe operation of the crane.
 - 2.4 Operator or person performing ECW Gantry Crane inspections or maintenance shall ensure that tie-down mechanisms are utilized in accordance with OPMP04-EW-0005, (ECW Overhead Crane Tie-Down Removal and Installation).
 - 2.5 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.
 - 2.6 Maintenance shall keep preventive maintenance inspection data sheets indicating conditions of wire ropes associated with the specific crane/hoist applications.
- 3.0 Definitions
- 3.1 None
- 4.0 Prerequisites
- 4.1 None
- 5.0 Precautions
- 5.1 Personnel shall follow radiological precautions outlined on RWP, when working in Radiologically Restricted Area (RRA).
 - 5.2 Personnel utilizing the Essential Cooling Water (ECW) Gantry Crane shall ensure that a load cell or dynamometer is attached to the load hook prior to any lift. Load cell or dynamometer shall be attached to ensure that the cranes rated load capacity is not exceeded during lifting activities.
- 6.0 Procedure
- 6.1 Inspections - Cranes/Hoists/and Monorail Systems

NOTE (1)

Any deficiencies found shall be carefully examined by the System Engineer or Designee for Cranes and Hoists and determination made as to the safe operation of the crane.

FC 92-0565

NOTE (2)

The responsible Supervisor shall file the completed Form (-1) in the appropriate Form (-1) file for the crane, hoist or lifting device inspected. These files are located in the Mechanical Maintenance Supervisor office area.

6.1.1 Enter Tag/TPNS number.

6.1.1.1 Enter SR/PM number or N/A.

6.1.1.2 Enter location.

6.1.1.3 Enter date of inspection.

6.1.1.4 Enter frequency of inspection.

Record

6.1.2 Daily inspection

6.1.2.1 Daily inspection is required prior to crane use only if the requirements have not been met within the previous 24 hour period.

6.1.2.2 Daily inspection shall be performed using the Crane/Hoist/Monorail Inspection Checklist Data Sheet Form (-1).

6.1.2.3 Personnel utilizing the Essential Cooling Water (ECW) Gantry Crane shall ensure that a load cell or dynamometer is attached to the load hook prior to any lift. Load cell or dynamometer shall be attached to ensure that the cranes rated load capacity is not exceeded during lifting activities.

FC 92-0566

Record

6.1.3 Monthly inspection

6.1.3.1 Personnel utilizing the Essential Cooling Water (ECW) Gantry Crane shall ensure that a load cell or dynamometer is attached to the load hook prior to any lift. Load cell or dynamometer shall be attached to ensure that the cranes rated load capacity is not exceeded during lifting activities.

FC 92-0566

6.1.3.2 The monthly inspection requirements identified in this procedure shall be performed prior to crane operation only if the requirements have not been met within the previous four week period.

6.1.3.3 Monthly inspection, shall be performed using the Crane/Hoist/Monorail Inspection Checklist Data Sheet Form (-1) in conjunction with the requirements identified below.

6

6.1.3.4 As applicable, the following shall be inspected for unsatisfactory conditions and damage, with inspection results recorded in the "Comments" section of Form (-1).

- a) Hoist chains, if applicable, including end connections, for wear, twist, distorted links interfering with proper function, or stretch beyond acceptance criteria as specified in Subsection 6.5.
- b) Lubrication levels
- c) Rope reeving for noncompliance with crane manufacturer's recommendations.

Record

6.1.4 Yearly or outage frequency inspection

6.1.4.1 RCB located standby cranes preventive maintenance shall be performed prior to entering MODE 4 (plant heat up) at the completion of outage.

6.1.4.2 Yearly inspections or outage frequency inspections shall be performed in accordance with this procedure and the preventive maintenance program as deemed necessary by the designated inspector.

6.1.4.3 Personnel utilizing the Essential Cooling Water (ECW) Gantry Crane shall ensure that a load cell or dynamometer is attached to the load hook prior to any lift. Load cell or dynamometer shall be attached to ensure that the cranes rated load capacity is not exceeded during lifting activities.

6.1.4.4 As applicable, the following shall be inspected for unsatisfactory conditions and damage, with inspection results recorded in the "Comments" section of Form (-1).

- a) All functional operating mechanisms for misadjustment interfering with proper operation.
- b) All limit switches. Each motion shall be inched into it's limit switch, or run in at slow speeds. (Polar crane hook lower limit switches need not be checked)
- c) Leakage in lines, tanks, valves, pumps and other parts of air, oil or hydraulic systems.

FC-12-056C

7