

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9607300160      DOC. DATE: 96/07/24      NOTARIZED: NO  
 FACIL: 50-269 Oconee Nuclear Station, Unit 1, Duke Power Co.  
 AUTH. NAME:      AUTHOR AFFILIATION:  
 HAMPTON, J.W.      Duke Power Co.  
 RECIP. NAME:      RECIPIENT AFFILIATION:

DOCKET #  
 05000269

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SUBJECT: Requests for Relief from ASME Section XI 1989 edition,  
 allowing util to use alternative tests & insps which provide  
 acceptable level of quality & safety in lieu of required  
 ASME Addenda not encl.

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**DUKE POWER**

July 24, 1996

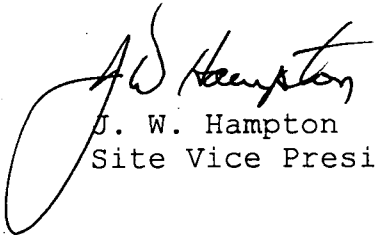
U.S. Nuclear Regulatory Commission  
Attention Document Control Desk  
Washington, DC 20555

Subject: Duke Power Company  
Oconee Nuclear Station, Unit 1  
Docket No. 50-269  
Third Ten Year Inservice Inspection Interval  
Request for Relief No. 96-03

Pursuant to 10 CFR 50.55a (a) (3) (i), attached is a Request for Relief from ASME Section XI, 1989 Edition, with no Addenda. This Request for Relief is to allow Duke Power to use alternative tests and inspections which provide an acceptable level of quality and safety in lieu of the required ASME Section XI tests and examinations for the Keowee Hydro Station Governor Oil System and Keowee Hydro Station Turbine Guide Bearing Oil System.

If there are any questions or further information is needed you may contact D. A. Nix at (864) 885-3634.

Very truly yours,

  
J. W. Hampton  
Site Vice President

Attachment

9607300160 960724  
PDR: ADOCK 05000269  
P PDR

A0471/

U. S. Nuclear Regulatory Commission  
July 24, 1996  
Page 2

xc (w/attch):        Mr. D. E. LaBarge  
                         Project Manager  
                         Office of Nuclear Reactor Regulation  
                         U. S. Nuclear Regulatory Commission  
                         Washington, DC 20555

                         Mr. S. D. Ebnetter  
                         Regional Administrator, Region II  
                         U. S. Nuclear Regulatory Commission

xc (w/o attch):       Mr. P. E. Harmon  
                         Senior NRC Resident Inspector  
                         Oconee Nuclear Station

                         Mr. Max Batavia  
                         Bureau of Radiological Health  
                         SC Dept. of Health & Environmental Control  
                         2600 Bull St.  
                         Columbia, SC 29201

Request # 96-03

(a) Name and Number: 1) Keowee Hydro Station Governor Oil System  
2) Keowee Hydro Station Turbine Guide Bearing Oil System

(b) Function: 1) Provides the inventory and motive force for operating the wicket gates, controlling turbine speed, and controlling generator load.  
2) Provides the inventory and distribution of bearing lubrication oil for the turbine.

(c) ISI Class/Duke Class: ISI Class 3 / Duke Class C

(d) Construction Code and Class: USAS B31.1.0 7/67 edition

(e) Reference documents (drawings, manuals, etc.)

Flow diagram	KFD-105A-1.1
(see attachment 1)	KFD-105A-2.1
	KFD-101A-1.1
	KFD-101A-2.1

ASME Boiler and Pressure Vessel Code Section XI, 1989 Edition; with no addenda Table IWD-2500-1, Examination Category D-B, requires pressure retaining components be visually examined, VT-2, during a system pressure test once each inspection period and during the hydrostatic test once each inspection interval.

As permitted by 10 CFR 50.55a(a)(3)(i), Duke Power proposes to use alternative tests which provide an acceptable level of quality and safety in lieu of the required ASME Section XI tests and examinations.

4. Alternate Examination:

Each month the Keowee Hydro Station units are started up and operated several times for post maintenance testing and for generation to the system grid. Over the past 3 years, the Keowee Hydro units have been operated on average, once every 1.2 days. Each time the Keowee Hydro units are run or when any evolution is performed that could change the governor oil or turbine guide bearing inventory, Operations personnel verify the oil inventory. Each shift, Operations personnel perform rounds according to OP/0/A/2000/043, in the Keowee Hydro Station. The information from the procedure is provided in Attachment 2, Enclosure 5.3, paragraph 4 on page 1 of 12, pages 5, 6, 7, and 8 of 12. Looking for indication of oil leaks is a part of these rounds. Proper operation of the systems is verified whenever the unit operates.

Duke Power proposes to use the above operation and processes in lieu of the ASME required tests and examinations.

5. Acceptability of proposed alternate testing with respect to the level of quality and safety as well as public health and safety:

As shown in part in Attachment 1, page 2 of 2, the Keowee Hydro Station Governor Oil System is comprised of one atmospheric storage tank, two pressurized tanks (350 psig), and the governor actuator cabinet which has typical hydraulic components such as pilot valves, centering pistons, and servomotors. The Governor Oil System is credited for accident mitigation and is accordingly designated ISI Class 3. ASME Section XI specifies that the tanks on this system be visually examined during the hydrostatic test. The normal operating system pressure would be used as the hydrostatic test pressure. The entire system, except for the atmospheric reservoir and associated piping, is at operating pressure during normal unit operation. The hydrostatic test, with the associated visual examination, is required to be performed once during each 10 Year Inspection Interval.

As shown in part in Attachment 1, page 1 of 2, the Keowee Hydro Station Turbine Guide Bearing Oil System is comprised of two oil reservoirs, and associated equipment for circulating the oil. The pressure ranges from atmospheric to 95 psig maximum. According to ASME Section XI, the system must be visually examined during the hydrostatic test. The pressure developed in the system during normal operation would be used as the test pressure. The hydrostatic test, with the associated visual examination, is required to be performed during each 10 Year Inspection Interval.

Once during each inspection period (approximately 3 years), the system is required to be visually examined for leakage during a system pressure test.

The Governor Oil System and the Turbine Guide Bearing Oil System are constantly under pressure from the normal operation of the systems. The Oconee Technical Specifications require that Keowee Hydro Station be capable of providing emergency power to Oconee Nuclear Station in 23 seconds. These two oil systems are required to operate the units, and thus are in their pressurized state constantly. The hydrostatic pressure applied in IWD-5000 would be 1.1 times the nominal operating pressure. This pressure is only 35 psig above normal operating pressure for the Governor Oil System and only 9.5 psig above normal operating pressure for the Turbine Guide Bearing Oil System.

IWA-2300 describes qualifications for nondestructive examination personnel. The requirements are that personnel be qualified every three years, have Snellen fraction visual acuity of at least 20/30 in one eye, be qualified to conduct tests, and be capable of using test equipment. The Operations personnel at Keowee Hydro Station are required to complete training and qualification on specific tasks. These tasks provide the operator with knowledge of the normal conditions of the station. One of the tasks that operators are required to qualify for is crane operation. This qualification requires annual vision and color blindness tests. There is no test equipment associated with leak inspections for the subject Keowee oil systems.

Through shiftly Keowee Operator rounds and system monitoring, leakage that would prevent the Keowee Hydro units from performing their intended function would be identified and corrected. Alarms and gauges are available to Keowee operators for oil pressure indication in the Governor Oil System and for oil level in the Turbine Guide Bearing Oil System. Alarms are also available to the Oconee Control Room operators for these systems. Some leakage is expected from these systems as designed. This is acceptable as long as collection systems are operative per ASME Section XI IWA-5243. Excessive leakage is unacceptable as a part of the normal operation of Keowee Hydro Station due to the fire hazard and environmental impact that the leakage could cause.

As a part of normal operation of the Keowee Hydro units for maintenance, testing, and generation, the entire Governor Oil System and the Turbine Guide Bearing Oil System are verified as capable of meeting their required safety function. This verification is performed at more frequent intervals than the intervals required by ASME Section XI.

Therefore, the proposed alternative testing and monitoring specified above provides an acceptable level of quality and safety in lieu of the required ASME Section XI tests and visual examinations.

6. Implementation Schedule:

The alternative tests and monitoring of the Keowee Hydro Station Governor Oil and Turbine Guide Bearing Oil Systems are in place and being performed.

Requested By: Nathan Reed Lawrence Date: 6-7-96

Reviewed By: Basil W. Cargill Date: 6/12/96

QA Reviewed: James M. Baughman Date: 6/24/96

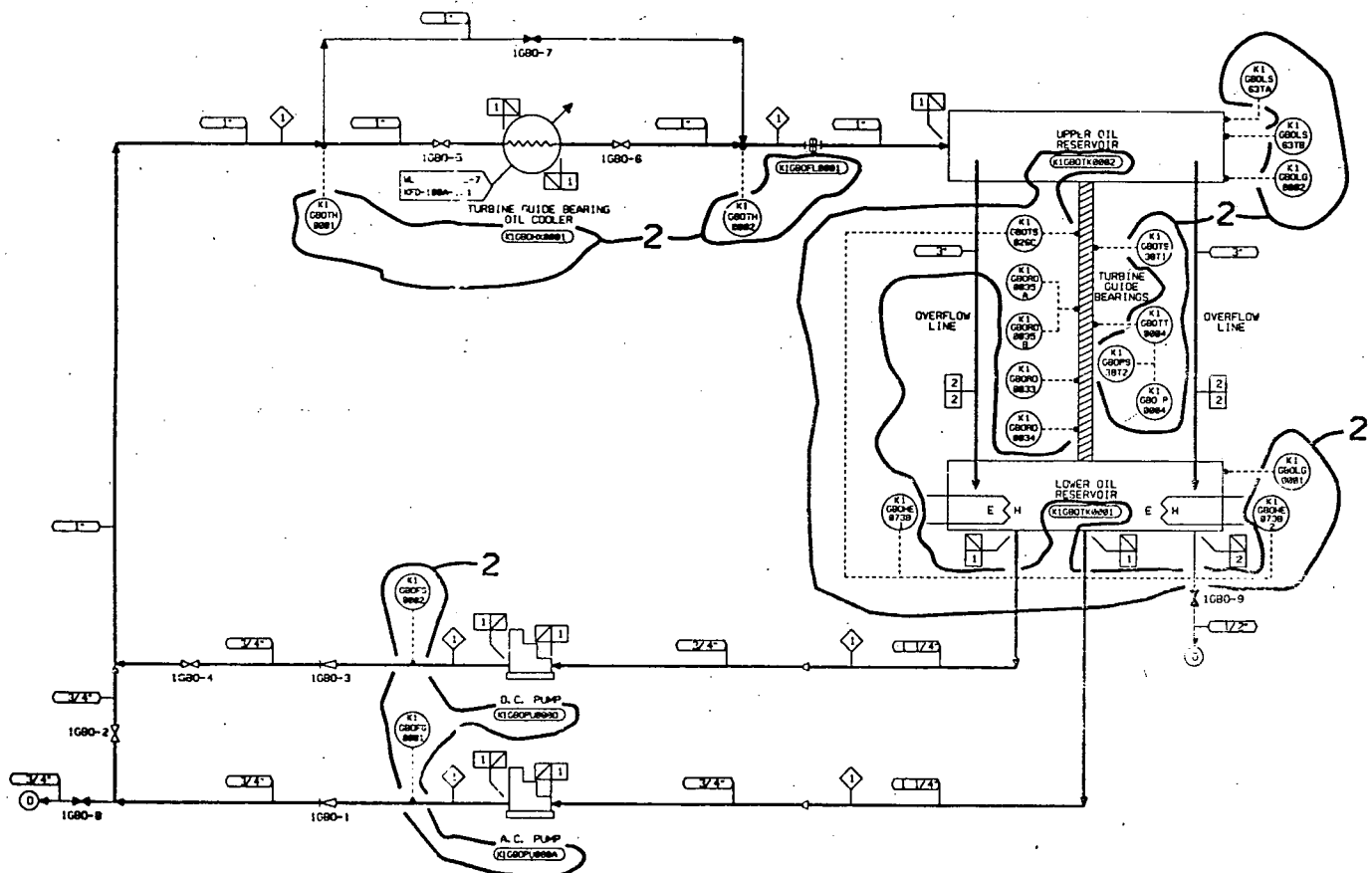
Approved By: B. Mulligan Date: 7/10/96

ATTACHMENT 1  
PAGE 1 OF 2

KFD-101A-1.1

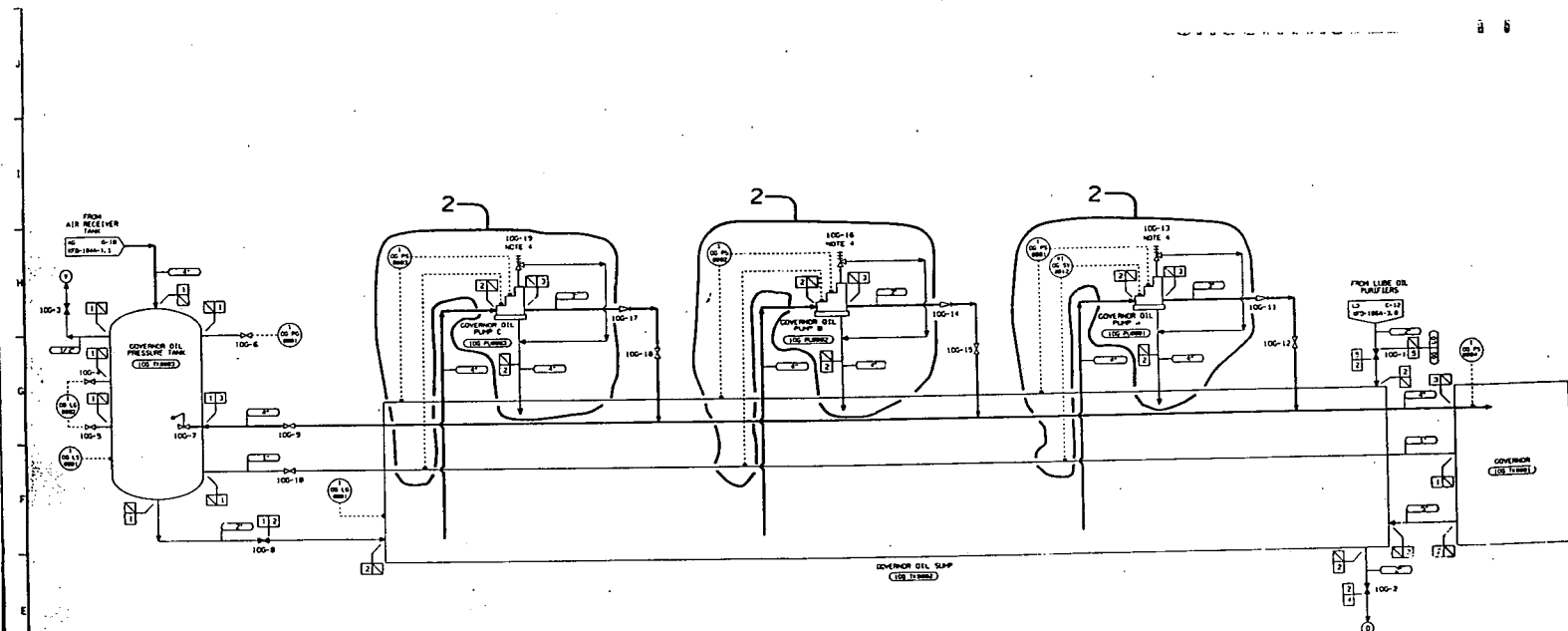
## TURBINE GUIDE BEARING OIL SYSTEM

FOR INFORMATION ONLY





KFD-105A-1.1  
GOVERNOR OIL SYSTEM  
FOR INFORMATION ONLY



INFORMATION ONLY

ATTACHMENT 2  
RELIEF REQUEST 96-04 198  
03

Duke Power Company

(1) ID No. OP/O/A/2000/043

## MASTER FILE

## PROCEDURE PROCESS RECORD

Change(s) 11 to  
11 incorporated

## PREPARATION

(2) Station: KEOWEE HYDRO STATION

(3) Procedure Title: KEOWEE SHIFT TURNOVER AND ROUNDS

(4) Prepared By J. B. Smith Date 09-26-95

(5) Requires 10CFR50.59 evaluation?

[ ] Yes (New procedure or reissue with major changes)

[X] No (Reissue with minor changes OR to incorporate previously approved changes)

(6) Reviewed By M. W. Abene Date 9-27-95Cross-Disciplinary Review By NR Mum Date 9-27-95

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (SRO) Date \_\_\_\_\_

By \_\_\_\_\_ Date \_\_\_\_\_

(9) Approved By George A. Ridgeway Date 10-3-95

## PERFORMANCE (compare with control copy every 14 calendar days)

(10) Compared with Control Copy N/A, See Enclosures Date N/ACompared with Control Copy N/A, See Enclosures Date N/ACompared with Control Copy N/A, See Enclosures Date N/A

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) N/A

## COMPLETION

(12) Procedure Completion Verification

[ ] Yes [ ] NA Check lists and/or blanks properly initialed, signed, dated, or filled in NA or NR, as appropriate?

[ ] Yes [ ] NA Listed enclosures attached?

[ ] Yes [ ] NA Data sheets attached, completed, dated, and signed?

[ ] Yes [ ] NA Charts, graphs, etc. attached and properly dated, identified, and marked?

[ ] Yes [ ] NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (attach additional pages, if necessary)

INFORMATION ONLY

DATE: \_\_\_\_\_

## DUKE POWER COMPANY

## KEOWEE HYDRO STATION

## KEOWEE SHIFT TURNOVER AND ROUNDS

1.0 PURPOSE

To provide a means of monitoring plant status and allow for a smooth, consistent transition between shifts. This procedure establishes a good, solid foundation for a proficient documentation of station inspection and communication of station status to on-coming operating personnel. However, it does not encompass all parameters, machinery, and activities of which individuals should be aware. Good inspection techniques and good observation habits are considered to be part of an individual's qualifications and are deemed necessary to fulfill the purpose of this procedure.

2.0 LIMITS AND PRECAUTIONS

- 2.1 While conducting normal rounds, operators should primarily observe status of equipment. Should any equipment be found in other than normal condition, extreme care should be utilized NOT to unduly change the operational status of that equipment until an evaluation can be made as to the equipment's relation to the Safety Related functions of the Keowee Hydro Station.
- 2.2 Should equipment be identified that requires attention which includes removal from service, a pre-written pre-approved procedure for the equipment or procedure OP/O/A/2000/039 (Removal and Restoration of Keowee Station Equipment) shall be performed.
- 2.3 While observing indicating lights, should one of the following conditions be found, first replace bulb. If replacement does not remedy the situation, contact Keowee Technician "On Call."
  - Light out
  - Light dim
  - Both lights lit, dim or bright.
- 2.4 If any ambient temperature is found to be at or above the maximum desirable temperature, contact the Keowee Station Supervisor or designee, record in Keowee Station Log Book, and, if possible, take actions to reduce the temperature back to normal levels. (See KC-2017)

INFORMATION ONLY

2.5 Should security concerns arise, contact Keowee Security on duty in Keowee lobby.

2.6 If the forebay indication appears to be incorrect or is determined to be inoperable or out of service, perform following for personnel listed (See PIP O-095-1076, CA #1):

- ONS Unit 2 control room personnel;
  - inform and request that this notification be logged,
  - request that an NLO be dispatched to take a manual absolute lake level measurement at frequency desired by ONS,
  - request that absolute forebay measurements be communicated to Keowee personnel,
- Keowee personnel;
  - initiate a R005 screen, in WMS, and record "WR NEW" number,
  - begin manual absolute measurements at shift change,
  - record actions taken in Keowee Station Log Book including absolute forebay indication.

2.7 During inspections of wheelpit areas, should accumulations of oil and/or grease be found on surface of equipment or in sump area, the wheelpit should be cleaned. This cleaning should be performed as-soon-as-possible to prevent the oil and grease from being pumped to the tailrace by the turbine sump pumps. (See PIP O-095-1032, CA #5)

2.8 If air is added to the governor oil pressure tank of either unit, the Operator shall remain with the process until complete. At NO time shall valves be aligned to admit air to a unit's governor system without an Operator in attendance.

### 3.0 INITIAL CONDITIONS

None

### 4.0 PROCEDURE

- \_\_\_\_ 4.1 Perform Enclosure 5.3 (Keowee Shift Rounds Sheet) for day shift AND record any remarks on Enclosure 5.1 (Day Shift Turnover Sheet).
- \_\_\_\_ 4.2 Perform Enclosure 5.3 (Keowee Shift Rounds Sheet) for night shift AND record any remarks on Enclosure 5.2 (Night Shift Turnover Sheet).
- \_\_\_\_ 4.3 Perform Enclosure 5.4 (Keowee Weekly Rounds Sheet) for day shift on Tuesday of each week AND record any remarks on Enclosure 5.1 (Day Shift Turnover Sheet).

INFORMATION ONLY

- \_\_\_\_\_ 4.4 Perform Enclosure 5.4 (Keowee Weekly Rounds Sheet) for night shift on Tuesday of each week AND record any remarks on Enclosure 5.2 (Night Shift Turnover Sheet).
- \_\_\_\_\_ 4.5 Perform Enclosure 5.5 (Keowee Monthly Rounds Sheet) for day shift on first Tuesday of each month AND record any remarks on Enclosure 5.1 (Day Shift Turnover Sheet).
- \_\_\_\_\_ 4.6 Perform Enclosure 5.5 (Keowee Monthly Rounds Sheet) for night shift on first Tuesday of each month AND record any remarks on Enclosure 5.2 (Night Shift Turnover Sheet).

#### 5.0 ENCLOSURES

- 5.1 Day Shift Turnover Sheet
- 5.2 Night Shift Turnover Sheet
- 5.3 Keowee Shift Rounds Sheet
- 5.4 Keowee Weekly Rounds Sheet
- 5.5 Keowee Monthly Rounds Sheet
- 5.6 Breaker Status Checklist
- 5.7 Keowee Supervisor Notification
- 5.8 Ocone Unit 2/Control Room Supervisor Notification
- 5.9 Keowee Security Notification
- 5.10 Safety Eye Wash Check

of \_\_\_\_\_

ENCLOSURE 5.1

INFORMATION ONLY  
PIP, etc., previously

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

1000

of

ENCLOSURE 5.2

INFORMATION ONLY

[illegible]

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

DATE: \_\_\_\_\_

OP/O/A/2000/043

1 of 12

COMPARED CONTROL COPY:

ENCLOSURE 5.3

INFORMATION ONLY

KEOWEE SHIFT ROUNDS SHEET

INFORMATION SHOULD BE RECORDED DURING THE SHIFT INDICATED

All blanks, except those in the remarks column shall be filled in with a check (✓) or initials of individual performing round. If status is other than normal, enter (SR) in the REMARK column.

A check (✓) after the equipment description in the appropriate shift column indicates all associated parameters have been monitored and are normal except for those noted by a See Remark (SR) in the REMARK column and recorded on Enclosure 5.1 (Day Shift Turnover Sheet) or Enclosure 5.2 (Night Shift Turnover Sheet).

If equipment is found not normal, then it shall be reported to the Keowee Supervisor or designee using Enclosure 5.7 (Keowee Supervisor Notification), recorded as See Remark (SR) in the REMARK column, and recorded on Enclosure 5.1 or Enclosure 5.2.

If it is necessary to add oil to equipment during the shift, then note this as See Remark (SR) in the REMARK column and record it on Enclosure 5.1 or Enclosure 5.2.

OIL  
ADDITION  
DOCUMENTATION

While checking the ACB air system (breakers and compressors), record pressure indications in blanks provided. At ACB compressors, observe position of "protection" valve. For correct operation, the valve handle should be down with the valve stem up. If the protection valve has tripped, the valve handle will be up and the valve stem down. Should the valve be found tripped, reset one time. If valve resets, record action on Enclosure 5.1 or Enclosure 5.2 as required. If valve will not reset or air leakage (any amount) is observed, immediately contact technical support person "on call" for assessment. If ACB air system pressure indications are below required listed pressure, immediately contact technical support person "on call" for assessment. List any action taken on appropriate enclosure(s).

While checking for sufficient lighting in an area, if a light is not lit, then check light switch and power supply. Change bulbs in areas to extent necessary to maintain area lighting at a safe level. Routine change-out of bad bulbs and ballasts are performed by vendors.

When checking for clutter, obstructed walkways or areas and unsafe conditions for personnel shall be the over-riding concern. Unsafe conditions shall be attended to immediately.

When checking Motor Control Centers (MCC) for tag(s), verify tag(s) (red and white safety tags or blue notice tags) are properly attached and breaker position corresponds to position indicated on tag(s).

If equipment status indicate possible problems, refer to prior week procedures to determine trends and enter conclusion on Enclosure 5.7 and, if required, inform Oconee Unit 2 Supervisor per Enclosure 5.8 (Oconee Unit 2 Supervisor Notification).



If a security issue item is identified during rounds, notify Keowee Security per Enclosure 5.9 (Keowee Security Notification).

ACRONYMS:

- (SR) - See Remarks  
(✓) - All Equipment Parameters Monitored

1.0 INITIAL CONDITIONS

Review Section 2.0 (Limits and Precautions).

- \_\_\_\_ • Day Shift  
\_\_\_\_ • Night Shift

2.0 PROCEDURE

Description of Equipment

Day Night Remark

Control Room

Day Night

Review Keowee Operators Log \_\_\_\_\_

Check station computer for alarms and alarm summary \_\_\_\_\_

Check station events recorder for alarms and alarm summary \_\_\_\_\_

Check and, if required, set station events recorder date and time \_\_\_\_\_

Review Keowee OPS GUIDES Log Book \_\_\_\_\_

Record Keowee lake elevation on "Daily Lake Level" form (day shift only) \_\_\_\_\_

Check Keowee Statalarm Panels for alarms and perform light test \_\_\_\_\_

- Keowee Statalarm Panel SA1 \_\_\_\_\_
- Keowee Statalarm Panel 1SA1 \_\_\_\_\_
- Keowee Statalarm Panel 1SA2 \_\_\_\_\_
- Keowee Statalarm Panel 2SA1 \_\_\_\_\_
- Keowee Statalarm Panel 2SA2 \_\_\_\_\_

Check Control Board for proper indicator lights and status \_\_\_\_\_

INFORMATION ONLYTest Emergency Start Initiated-Unit 1 light on CB3Test Emergency Start Initiated-Unit 2 light on CB8Check Control Board and Electrical Board for any  
abnormal conditions

Any other Control Room abnormal condition

Verify Auxiliaries Auto/Manual Transfer Switches  
are in AUTOVerify ambient temperature is below 95°F and record  
temperatureDayNight

- Control Room Temperature -                             °F                             °F
- Minimum/Maximum Temperature (°F) -                             /                                    /

Check L&N recorders for proper operation and time  
and, if required, set time

Review Keowee R&amp;R Log

Review Keowee TSM Log

Check Fire Indicating Unit for proper lights

Perform Enclosure 5.6 (Breaker Status Checklist)

Perform radio check to ONS Unit 2 Control Room

Perform telephone check of ARD (Auto-Ringdown) phone,  
to ONS Unit 2 control room (day shift only)

Test Battery Bank 1 &amp; 2 Battery Ground Test

Verify sufficient lighting in Control Room

Check for clutter in Control Room

Record rainfall on "Monthly Rainfall" form (night  
shift only)Battery RoomDay      NightPerform Daily Battery Surveillance  
(IP/1-2/A/0400/013, day shift only, NOT  
required on weekends or holidays)

INFORMATION ONLY

Verify Battery Charger No. 1 is operating properly  
and ALARM switch is in ENABLE position

Verify Stand-by Battery Charger is in required status  
and ALARM switch is in proper position (ENABLE -  
if operating, DEFEAT - if shutdown)

Verify Battery Charger No. 2 is operating properly  
and ALARM switch is in ENABLE position

Check eye wash station for proper condition

Verify static inverter is operating properly

Verify Battery Bank No. 1 room temperature is  
between 70° and 80°F, record current  
temperature, minimum and maximum  
temperature, and reset thermometer

DayNight

- Battery Bank No. 1 Temperature -            °F            °F
- Minimum/Maximum Temperature (°F) -       /             /

Check DC 1DA for abnormal breaker position(s)  
and placement of tag(s)

Check DC 2DA for abnormal breaker position(s)  
and placement of tag(s)

Verify Battery Bank No. 2 room temperature is  
between 70° and 80°F, record current  
temperature, minimum and maximum  
temperature, and reset thermometer

DayNight

- Battery Bank No. 2 Temperature -            °F            °F
- Minimum/Maximum Temperature (°F) -       /             /

Verify sufficient lighting in Battery Room

Check for clutter in Battery Room

Check drains for obstructions

#### West End - Mechanical Equipment Gallery

Day Night

Verify sufficient grease in grease pump

Check Fire Protection Pump for water leakage

INFORMATION ONLY

Check turbine gauge panel for indications and lights

Verify indicator lights and switches are normal  
for Fire Protection Pump

Check main step-up transformer multisifre for water  
leakage

Verify main step-up transformer multisifre water  
pressure is greater than 35 psi

Check ACB-1 Air Compressor for abnormal conditions  
(i.e., air or oil leaks), drain condensate,  
and record pressure indications  
(in psi)

Day

Night

• Storage Pressure ( $\geq 260$  psi)

• Discharge Pressure ( $\geq 150$  psi)

Verify ACB-1 Air Compressor protection valve  
in reset position (handle down - stem up)

Verify packing box water pressure is  $\geq 20$  psi (at TGP)

Verify sufficient lighting in area

Verify walkways are unobstructed

Check drains for obstructions

KHU-1 (Wheelpit)

Day

Night

Check for grease line breakage or excessive  
accumulation

Check for oil leakage from governor servo-motors

Check for other than normal water leakage in  
wheelpit area

Check for air leakage in wheelpit area

Check for oil leakage from turbine bearing oil  
reservoir

Verify a turbine bearing oil pump is operating

Verify turbine bearing flow meter indicates flow

Verify thrust bearing oil level is within  
marks at sight glass

OIL  
LEAKAGE

OIL  
LEAKAGE

PROPER  
SYSTEM  
OPERATION

Check for oil leakage from thrust bearing oil reservoir

INFORMATION ONLY

Verify ambient temperature is below 95°F and record temperature

Day

Night

- KHU-1 Wheelpit Temperature - °F
- Minimum/Maximum Temperature (°F) - /

Verify sufficient lighting in wheelpit

Verify walkways are unobstructed

Check drains for obstructions

#### KHU-1 (Mechanical Equipment Gallery)

Day

Night

Verify governor oil pressure is between 318-350 psi

Check governor indicator lights

Verify Governor BRAKE VALVE control switch is in "AUTO." position on GAC1

Verify NO abnormal or excessive oil or air leakage from governor

Verify OR adjust governor oil level in pressure tank between high and low marks @ 350 psi

Check MCC 1XA for abnormal breaker position(s) and placement of tag(s)

Check MCC 1XS for abnormal breaker position(s) and placement of tag(s)

Verify sufficient lighting in area

Check for clutter in area

Check drains for obstructions

OIL  
PRESSURE  
CHECK

OIL  
LEAKAGE

#### Mechanical Equipment Gallery

Day

Night

Verify Governor Air Storage tank pressure is ~350 psi

INFORMATION ONLY

Check governor air compressors for abnormal conditions and drain condensate

Verify KHU-1 wheelpit ventilating fan is operating

Verify air handling unit is operating

Check, and if required, add oil to depressing air compressors valve oilers

Verify depressing air compressors crankcase oil level is showing at least 1/2 of sight glass when operating

Check depressing air compressors for abnormal condition

Check for other than normal water leakage

Check for other than normal air leakage

Verify ambient temperature is below 95°F and record temperature

Day

Night

- Mechanical Equipment Gallery Temperature -        °F        °F
- Minimum/Maximum Temperature (°F) -        /               /

Verify packing box water pressure is  $\geq$  20 psi (at TGP)

Verify sufficient lighting in area

Check for clutter in area

Check drains for obstructions

#### KHU-2 (Wheelpit)

Day

Night

Check for grease line breakage or excessive accumulation

Check for oil leakage from governor servo-motors

Check for other than normal water leakage in wheelpit area

Check for air leakage in wheelpit area

Check for oil leakage from turbine bearing oil reservoir

OIL  
LEAKAGEOIL  
LEAKAGE

PROPER  
OPERATION

Verify a turbine bearing oil pump is operating \_\_\_\_\_

Verify turbine bearing flow meter indicates "flow" \_\_\_\_\_

Verify thrust bearing oil level is within  
marks at sight glass \_\_\_\_\_

Check for oil leakage from thrust bearing oil  
reservoir \_\_\_\_\_

Verify ambient temperature is below 95°F and record  
temperature \_\_\_\_\_

Day

Night

• KHU-2 Wheelpit Temperature - \_\_\_\_\_ °F

• Minimum/Maximum Temperature (°F) - \_\_\_\_\_ / \_\_\_\_\_

Verify sufficient lighting in wheelpit \_\_\_\_\_

Verify walkways are unobstructed \_\_\_\_\_

Check drains for obstructions \_\_\_\_\_

KHU-2 (Mechanical Equipment Gallery)

Day

Night

Check turbine gauge panel for indications and lights \_\_\_\_\_

Verify sufficient grease in grease pump \_\_\_\_\_

Verify governor oil pressure is between 318-350 psi \_\_\_\_\_

Check governor indicator lights \_\_\_\_\_

Verify Governor BRAKE VALVE control switch is in  
"AUTO." position on GAC2 \_\_\_\_\_

Verify NO abnormal or excessive oil or air leakage  
from governor \_\_\_\_\_

Verify OR adjust governor oil level in pressure tank  
between high and low marks @ 350 psi \_\_\_\_\_

Check MCC 2XA for abnormal breaker position(s)  
and placement of tag(s) \_\_\_\_\_

Check MCC 2XS for abnormal breaker position(s)  
and placement of tag(s) \_\_\_\_\_

Check eye wash station for proper operation \_\_\_\_\_

Verify sufficient lighting in area \_\_\_\_\_

PRESSURE  
CHECK

OIL  
LEAKAGE

INFORMATION ONLY

Check for clutter in area

Check drains for obstructions

East End - Mechanical Equipment Gallery

	<u>Day</u>	<u>Night</u>
Check station air compressor for abnormal condition and drain condensate		_____
Check ACB-2 Air Compressor for abnormal conditions (i.e., air or oil leaks), drain condensate, and record pressure indications (in psi)	<u>Day</u>	<u>Night</u>
• Storage Pressure ( $\geq 260$ psi)	_____	_____
• Discharge Pressure ( $\geq 150$ psi)	_____	_____
Verify ACB-2 Air Compressor protection valve in reset position (handle down - stem up)		_____
Verify KHU-2 wheelpit ventilating fan is operating		_____
Verify instrument air dryer is operating		_____
Verify main lube oil room mulsifyre water pressure is $\geq 35$ psi		_____
Check main lube oil room mulsifyre for water leakage		_____
Verify sufficient lighting in area		_____
Check for clutter in area		_____
Check drains for obstructions		_____

Main Lube Oil Room

	<u>Day</u>	<u>Night</u>
Check for oil leaks in oil room		_____
Check main lube oil room for any abnormal condition or water leakage		_____
Verify proper condition of parts washer		_____
Verify sufficient lighting in area		_____
Check for clutter in area		_____
Check drains for obstructions		_____



INFORMATION ONLY

Spiral Case Gallery

Day Night

Verify gravity oil room mulsifyre water pressure  
is  $\geq$  35 psi \_\_\_\_\_

Check for excessive water leakage in area \_\_\_\_\_

Check for oil leaks in area \_\_\_\_\_

Verify sufficient lighting in area \_\_\_\_\_

Check for clutter in area \_\_\_\_\_

Check drains for obstructions \_\_\_\_\_

Draft Tube Gallery

Day Night

Check for excessive water leakage in area \_\_\_\_\_

Verify NO oil sheen in station sump \_\_\_\_\_

Check station sump pumps for water leakage \_\_\_\_\_

Check station unwatering pumps for water leakage \_\_\_\_\_

Check for oil leaks in area \_\_\_\_\_

Check for air leaks in area \_\_\_\_\_

Verify sufficient lighting in area \_\_\_\_\_

Check for clutter in area \_\_\_\_\_

Check drains for obstructions \_\_\_\_\_

Operating Floor

Day Night

Check CO2 system for leakage \_\_\_\_\_

Check for water leakage in KHU-2 area \_\_\_\_\_

Check ACB-2 for abnormal conditions (i.e., air  
leaks, loose connections, etc.) and  
record pressure indication (in psi) \_\_\_\_\_

Day

Night

- Air Pressure ( $\geq$  150 psi) \_\_\_\_\_

Verify sufficient lighting in KHU-2 area \_\_\_\_\_

INFORMATION ONLY

Verify ACB-3 Disconnects (89E-3) are closed

Verify ACB-4 Disconnects (89E-4) are closed

Check ACB-3 for abnormal conditions (i.e., air leaks, loose connections, etc.) and record pressure indication (in psi)

Day

Night

- Air Pressure ( $\geq 150$  psi)

Check ACB-4 for abnormal conditions (i.e., air leaks, loose connections, etc.) and record pressure indication (in psi)

Day

Night

- Air Pressure ( $\geq 150$  psi)

Verify ambient temperature is below 95°F and record temperature

Day

Night

- Main Operating Floor Temperature -
- Minimum/Maximum Temperature (°F) -
- Breaker Vault Temperature -
- Minimum/Maximum Temperature (°F) -

°F

°F

°F

°F

Verify ACB breaker vault is closed

Check ACB-1 for abnormal conditions (i.e., air leaks, loose connections, etc.) and record pressure indication (in psi)

Day

Night

- Air Pressure ( $\geq 150$  psi)

Verify sufficient lighting in KHU-1 area

Check for water leakage in KHU-1 area

Verify oil spill material is in proper area

Verify movable items are secured

Check for clutter on operating floor

Verify powerhouse crane is stored in proper position

Verify restrooms are in proper order

INFORMATION ONLY  
Day NightComputer Room

Verify station events recorder is operating properly \_\_\_\_\_

Verify station computer is operating properly \_\_\_\_\_

Verify diode cabinets are in proper order \_\_\_\_\_

Check for water leakage in area \_\_\_\_\_

Verify restroom is in proper order \_\_\_\_\_

Verify sufficient lighting in area \_\_\_\_\_

Check for clutter in area \_\_\_\_\_

Keowee Station Exterior

Day Night

Test Fisherman Warning Horn and Light \_\_\_\_\_

Check Main Step-up Transformer for leakage and  
cooling fans and pumps are operating \_\_\_\_\_

Check for oil leakage \_\_\_\_\_

Verify disconnects are locked \_\_\_\_\_

Check tailrace for oil sheen \_\_\_\_\_

Verify draft tube hoist is properly secured \_\_\_\_\_

Check depressing air tanks for leakage and drain  
condensate \_\_\_\_\_

Check fire hydrants for water leakage \_\_\_\_\_

Verify powerhouse doors are secured \_\_\_\_\_

Check powerhouse structure for any abnormal  
conditions \_\_\_\_\_

Verify sufficient lighting in area (night shift only) \_\_\_\_\_

Check for clutter in area \_\_\_\_\_

Check drains for obstructions \_\_\_\_\_

DATE: \_\_\_\_\_

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COMPARED CONTROL COPY:

ENCLOSURE 5.4

KEOWEE WEEKLY ROUNDS SHEET

INFORMATION ONLY

INFORMATION SHOULD BE RECORDED DURING THE SHIFT INDICATED

All blanks, except those in the remarks column shall be filled in with a check (✓) or initials of individual performing round. If status is other than normal, enter (SR) in the REMARK column.

A check (✓) or initials after the equipment description in the appropriate shift column indicates all associated parameters have been monitored and are normal except for those noted by a See Remark (SR) in the REMARK column and recorded on Enclosure 5.1 (Day Shift Turnover Sheet) or Enclosure 5.2 (Night Shift Turnover Sheet).

If equipment is found not normal, then it shall be reported to the Keowee Supervisor or designee using Enclosure 5.7 (Keowee Supervisor Notification), recorded as See Remark (SR) in the REMARK column, and recorded on Enclosure 5.1 or Enclosure 5.2.

If it is necessary to add oil to equipment during the shift, then note this as See Remark (SR) in the REMARK column and record it on Enclosure 5.1 or Enclosure 5.2.

If equipment status indicate possible problems, refer to prior week procedures to determine trends and enter conclusion on Enclosure 5.7 and, if required, inform Oconee Unit 2/Control Room Supervisor per Enclosure 5.8 (Oconee Unit 2/Control Room Supervisor Notification).

If a security issue item is identified during rounds, notify Keowee Security per Enclosure 5.9 (Keowee Security Notification).

1.0 INITIAL CONDITIONS

Review Section 2.0 (Limits and Precautions).

- \_\_\_\_ • Day Shift
- \_\_\_\_ • Night Shift

2.0 PROCEDURE

Day Shift

Day

Remark

Keowee Station Equipment

Test Fire Protection Pump

Check and, if required, add oil to compressors

Swap instrument air dryer

INFORMATION ONLY

Perform Enclosure 5.10 (Safety Eye Wash Check)  
as required on enclosure

Night ShiftNight RemarkKeowee Station Equipment

Lubricate KHU-1 Governor

Lubricate KHU-2 Governor

Check Durant counters against watt-hour meters

Check outside lights for proper operation

DATE: \_\_\_\_\_

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1 of 2

COMPARED CONTROL COPY:

ENCLOSURE 5.5

INFORMATION ONLY

KEOWEE MONTHLY ROUNDS SHEET

INFORMATION SHOULD BE RECORDED DURING THE SHIFT INDICATED

All blanks, except those in the remarks column shall be filled in with a check (✓) or initials of individual performing round. If status is other than normal, enter (SR) in the REMARK column.

A check (✓) or initials after the equipment description in the appropriate shift column indicates all associated parameters have been monitored and are normal except for those noted by a See Remark (SR) in the REMARK column and recorded on Enclosure 5.1 (Day Shift Turnover Sheet) or Enclosure 5.2 (Night Shift Turnover Sheet).

If equipment is found not normal, then it shall be reported to the Keowee Supervisor or designee using Enclosure 5.7 (Keowee Supervisor Notification), recorded as See Remark (SR) in the REMARK column, and recorded on Enclosure 5.1 or Enclosure 5.2.

If equipment status indicate possible problems, refer to prior month procedures to determine trends and enter conclusion on Enclosure 5.7 and, if required, inform Oconee Unit 2/Control Room Supervisor per Enclosure 5.8 (Oconee Unit 2/Control Room Supervisor Notification).

If a security issue item is identified during rounds, notify Keowee Security per Enclosure 5.9 (Keowee Security Notification).

1.0 INITIAL CONDITIONS

Review Section 2.0 (Limits and Precautions).

- \_\_\_\_ • Day Shift
- \_\_\_\_ • Night Shift

2.0 PROCEDURE

Day Shift

Day

Remark

Keowee Station Equipment

Operate station air compressor (approx. 30 min.)

Place stand-by battery charger in service (approx. 24 hours, No. 1 - odd months, No. 2 - even months)

Swap and clean main service water strainer

Check and, if required, set outside lighting timers

INFORMATION ONLY

Record transformer "Hot Spot" reading in Keowee  
Station Log and reset gauges

Review Emergency Action Plan (each operator SHALL  
review plan at least once each six months)

Night ShiftNight RemarkKeowee Station Equipment

Check and, if required, add oil to KHU-1  
vacuum break valve

Check and, if required, add oil to KHU-2  
vacuum break valve

Wipe oil and dust from depressing air compressors

Wipe oil and dust from piping in depressing air  
gallery

Verify sufficient lighting at station (bad ballasts  
found)

DATE: \_\_\_\_\_

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COMPARED CONTROL COPY:

ENCLOSURE 5.6

**INFORMATION ONLY****BREAKER STATUS CHECKLIST**PERFORMED BY: \_\_\_\_\_  
Day Night

- NOTES:**
1. This checklist is to be performed during each shift every day. Check status for breakers listed, indicator lights status, and, if found in status other than normal, check "Other Than Normal" column, and record reason in comment section. Each breaker's indicator light status should be with only one light lit brightly. Should a light be out or dimly lit, first, check and/or replace bulb. If one light continues to be dim or both lights are lit, either bright or dim, contact technician "On call." In all cases, if necessary, contact technician "On Call." Enter any abnormal conditions on Enclosure 5.1 (Day Shift Turnover Sheet) or Enclosure 5.2 (Night Shift Turnover Sheet).
  2. ACBs 5, 6, 7, and 8 breaker position is dependent upon the alignment of the Keowee units. If KHU-1 is aligned to the overhead, then ACB-5 is closed and ACB-7 is open. If KHU-1 is aligned to the underground, then ACB-5 is open and ACB-7 is closed. If KHU-2 is aligned to the overhead, then ACB-6 is closed and ACB-8 is open. If KHU-2 is aligned to the underground, then ACB-6 is open and ACB-8 is closed. These are the normal positions of the breakers.
  3. Breakers 2A of 1X Switchgear and 2D of 2X Switchgear are in their "jacked out" position due to a breaker co-ordination concern discovered by ONS Engineering. NSM ON-52961 is to address this concern and has an implementation date of the end of 1996. Until this situation is resolved, the normal position of these breakers is to be opened and in the jacked out position. Unless either of these breakers are found in a different status, checking the status as "OPEN" will be sufficient for this checklist until the resolution is complete.

BKR	LOCATION	INDICATOR LIGHT	NORMAL POS- TION	DAY SHIFT AS FOUND		NIGHT SHIFT AS FOUND		OTHER THAN NORMAL
				OPEN	CLOSED	OPEN	CLOSED	
1B	1X Switchgear - ACB-7	CB5 - ACB NO. 7 CONTROL	See Note "2"					
2A	1X Switchgear 600V. MCC 2XA	CB4 - 600 V SWGR 1X 2XA STAND-BY SUPPLY BREAKER 2A	See Note "3"					
2B	1X Switchgear 600V. MCC 2XS	CB4 - 600 V SWGR 1X 2XS STAND-BY SUPPLY BREAKER 2B	Open					



BKR	LOCATION	INDICATOR LIGHT	NORMAL POSI- TION	DAY SHIFT AS FOUND		NIGHT SHIFT AS FOUND		OTHER THAN NORMAL
				OPEN	CLOSED	OPEN	CLOSED	
2C	1X Switchgear	CB4 - 600V SWGR. 1X 1XA NORMAL SUPPLY BKR 2C	Closed					
2D	1X Switchgear	CB4 - 600 V SWGR 1X 1XS NORMAL SUPPLY BREAKER 2D	Closed					
3B	1X Switchgear	CB5 - ACB NO. 5 CONTROL	See Note "2"					
1B	2X Switchgear	CB5 - ACB NO. 8 CONTROL	See Note "2"					
2A	2X Switchgear	CB7 - 600 V SWGR 2X 2XS NORMAL SUPPLY BREAKER 2A	Closed					
2B	2X Switchgear 600V. MCC 2XA	CB7 - 600 V SWGR 2X 2XA NORMAL SUPPLY BREAKER 2B	Closed					
2C	2X Switchgear 600V. MCC 1XS	CB7 - 600V SWGR. 2X 1XS STANDBY SUPPLY BKR 2C	Open					
2D	2X Switchgear 600V. MCC 1XA	CB7 - 600 V SWGR 2X 1XA STAND-BY SUPPLY BREAKER 2D	See Note "3"					
3B	2X Switchgear - ACB-6	CB5 - ACB NO. 6 CONTROL	See Note "2"					
5A	MCC DC 1DA, TIE BREAKER No 1	(No indicator light)	Open					
1A	MCC DC 2DA, TIE BREAKER No 2	(No indicator light)	Open					

COMMENTS: \_\_\_\_\_

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DATE: \_\_\_\_\_

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\_\_\_\_\_ of \_\_\_\_\_

COMPARED CONTROL COPY:

ENCLOSURE 5.7

*NOTIFICATION ONLY*

KEOWEE SUPERVISOR NOTIFICATION

The discovery of any abnormal condition which requires the notification of the Keowee Supervisor or designee SHALL be documented on this enclosure. Include all pertinent information, date and time of notification, and instructions provided at that time. Any follow-up actions are to be entered as they are taken. Should more space be required, use duplicate copies of this page and number when complete.

Person making notification: \_\_\_\_\_

Equipment involved: \_\_\_\_\_  
\_\_\_\_\_

Condition: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Keowee Supervisor or designee: \_\_\_\_\_

Response: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional actions: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE: \_\_\_\_\_

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\_\_\_\_\_ of \_\_\_\_\_

COMPARED CONTROL COPY:

ENCLOSURE 5.8

*Information Only*

OCONEE UNIT 2/CONTROL ROOM SUPERVISOR NOTIFICATION

The discovery of any abnormal condition which requires the notification of the Oconee Unit 2/Control Room Supervisor or designee SHALL be documented on this enclosure. Include all pertinent information, date and time of notification, and instructions provided at that time. Any follow-up actions are to be entered as they are taken. Should more space be required, use duplicate copies of this page and number when complete.

Person making notification: \_\_\_\_\_

Equipment involved: \_\_\_\_\_

Condition: \_\_\_\_\_

Oconee Unit 2/Control Room Supervisor or designee: \_\_\_\_\_

Response: \_\_\_\_\_

Additional actions: \_\_\_\_\_

DATE: \_\_\_\_\_

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\_\_\_\_\_ of \_\_\_\_\_

COMPARED CONTROL COPY: \_\_\_\_\_

ENCLOSURE 5.

INFORMATION ONLY

KEOWEE SECURITY NOTIFICATION

The discovery of any security concern which requires the notification of the Keowee Security Officer SHALL be documented on this enclosure. Include all pertinent information, date and time of notification, and instructions provided at that time. Any follow-up actions are to be entered as they are taken. Should more space be required, use duplicate copies of this page and number when complete.

Person making notification: \_\_\_\_\_

Equipment involved: \_\_\_\_\_

Condition: \_\_\_\_\_

Keowee Security Officer: \_\_\_\_\_

Response: \_\_\_\_\_

Additional actions: \_\_\_\_\_

DATE: \_\_\_\_\_

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COMPARED CONTROL COPY:

ENCLOSURE 5.10

*Information Only*

SAFETY EYE WASH CHECK

- NOTES:
1. Portable eye wash units do NOT require a flow test but do require a fluid level check and an access clear check.
  2. If flow, level, access, or condition of eye wash stations is NOT acceptable for use and can NOT be corrected, record on Enclosure 5.1 or 5.2.
  3. The level of a portable eye wash station is with the tank full. Flow from a fixed sink type eye wash station is with sufficient quantity of water and pressure to thoroughly flush eyes when in use.

WEEKLY CHECK

EYE WASH LOCATION	TYPE	LEVEL/ FLOW	ACCESS CLEAR	DATE	INITIAL
Keowee Battery Room	Portable				
Keowee Mechanical Eq. Gallery - East End	Fixed Sink				

NOTE: Portable eye wash units are to be emptied, rinsed, and refilled with fresh water at 6 month intervals. This is to be performed during the first week of January and July.

SEMI-ANNUAL MAINTENANCE

EYE WASH LOCATION	TYPE	EMPTIED RINSED REFILLED	DATE	INITIAL
Keowee Battery Room	Portable			