

17031

RELATED CORRESPONDENCE

DOCKETED
USNRC

AUGUST 18, 1995

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

'95 AUG 23 P3:06

Before the Atomic Safety and Licensing Board OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)	Docket Nos. 50-424-OLA-3
)	50-425-OLA-3
GEORGIA POWER COMPANY, <u>et al.</u>)	
)	Re: License Amendment
(Vogtle Electric Generating Plant,)	(Transfer to Southern
Units 1 and 2))	Nuclear)
)	
)	ASLBP No. 93-671-01-OLA-3

REBUTTAL TESTIMONY

OF

MARK BRINEY

ON

DIESEL GENERATOR REPORTING STATEMENTS

DS03

REBUTTAL TESTIMONY OF MARK BRINEY

1 Q: WHAT IS YOUR NAME AND PLACE OF EMPLOYMENT?

2 A: My name is Mark Briney. I am currently employed by the
3 Indiana Michigan Power Company at the D. C. Cook Nuclear Power
4 Plant. A summary of my professional qualifications is attached
5 hereto as Exhibit A.

6 Q: WHERE WERE YOU EMPLOYED DURING FEBRUARY THROUGH DECEMBER 1990?

7 A: I was employed by the Georgia Power Company at the Vogtle
8 Electric Generating Plant.

9 Q: WHAT WAS YOUR POSITION DURING THAT TIME PERIOD?

10 A: I was the acting Instrumentation & Controls ("I&C") department
11 superintendent. Mr. Mike Hobbs, the actual I&C superintendent, was
12 assigned to a special project related to reducing the backlog
13 associated with the Vogtle Preventative Maintenance Program.

14 Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

15 A: My testimony addresses allegations by Mr. Mosbaugh that (1)
16 maintenance personnel wanted to keep quiet their opinions of the
17 Calcon sensors (Mosbaugh Revised Prefiled Testimony at 14-15), (2)
18 Georgia Power did not honestly believe or did not reasonably
19 conclude that high dew point measurements on March 29, 1990 were
20 due to a faulty dew point measuring instrument (Mosbaugh Revised
21 Prefiled Testimony at p. 71-79), and (3) that the out of
22 specification readings obtained by an EG&G instrument (VP-1114) on

1 April 6 and 7 were valid high dew point measurements (Mosbaugh
2 Revised Prefiled Testimony at p. 79-80).

3 Q: DO YOU RECALL WORKING DIRECTLY WITH THE VOGTLE GENERAL
4 MANAGER, GEORGE BOCKHOLD, DURING THIS TIME.

5 A: Yes. In particular, I recall working with Mr. Bockhold on
6 various technical issues associated with the Vogtle emergency
7 diesel generators following a Site Area Emergency that was declared
8 on March 20, 1990.

9 Q: WHAT WERE THE PRIMARY TECHNICAL ISSUES YOU WORKED ON?

10 A: I was a member of the Event Critique Team which evaluated the
11 cause of the event and recommended corrective actions to Mr.
12 Bockhold. As the acting I&C superintendent, I focused on
13 instrumentation-related issues. The two issues that stick in my
14 mind were the Calcon sensors used on the control system for the
15 diesel generators and dew point measurements used to assess the
16 moisture level for the diesel generator air system.

17 CALCON SENSORS

18 Q: WHAT WAS YOUR OPINION OF THE CALCON SENSORS USED ON THE
19 CONTROL SYSTEMS OF THE VOGTLE DIESEL GENERATORS?

20 A: My personal opinion at the time was that the Calcon sensors
21 were the cause of many problems when we performed maintenance
22 overhaul activities on the diesel generators.

1 Q: DO YOU RECALL EXPRESSING THE VIEW THAT THE CALCON SENSORS WERE
2 "JUNK" DURING THIS TIME FRAME?

3 A: I recall having that general view but did not recall using the
4 word "junk" until I reviewed a transcript for Mr. Mosbaugh's Tape
5 No. 10. The transcript I reviewed reflects discussions of the
6 Event Critique Team on or about March 23, 1990. I expressed my
7 dislike for the Calcon sensors because my experience with them was
8 that they were difficult to calibrate and that they frequently
9 required recalibration or replacement at each diesel overhaul
10 period.

11 Q: DID YOU COMPILE THE CALCON SENSOR HISTORICAL SUMMARY THAT WAS
12 USED BY THE NRC IN DEVELOPING NUREG-1410, APPENDIX I?

13 A: As the acting I&C superintendent, I was responsible for
14 compiling this information and was assisted in doing so by several
15 members of the I&C staff.

16 Q: WAS THIS DATA EVER SENT TO THE PLANT SYSTEM ENGINEERING
17 DEPARTMENT FOR REVIEW REGARDING THE APPARENT HIGH CALCON SENSOR
18 FAILURE RATE?

19 A: I do not think I ever formally requested that engineering
20 review this data. However, I am certain I expressed my views to
21 engineering department personnel on several occasions.
22 Furthermore, I believe a deficiency card ("DC") was initiated
23 whenever the I&C department found problems with the sensors. I
24 believed that the DC process would lead to a root cause assessment

1 and appropriate corrective action.

2 Q: DID THE I&C TECHNICIANS EVER DISASSEMBLE CALCON SENSORS TO
3 CHECK FOR DEBRIS?

4 A: I do not believe that disassembly and inspection for debris
5 were part of our normal procedure. However, I do recall
6 disassembling a sensor in the I&C shop while investigating the
7 March 20 event and not finding any significant debris.

8 Q: ARE YOU AWARE OF AN ASSESSMENT OR CONCERN WITHIN THE I&C
9 DEPARTMENT REGARDING THE HANDLING OF THE CALCON SENSORS, THE USE OF
10 EXCESS PIPE DOPE WHEN CONNECTING THE SENSOR TO ITS FITTING, OR
11 INADEQUATE INSTRUCTIONS REGARDING INSTALLATION/REMOVAL OF THE
12 SENSORS?

13 A: No. I do not recall any special precautions or vendor
14 instructions that would have alerted Georgia Power to exercise any
15 special degree of care in these areas. Of course, our technicians
16 followed normal skill of the craft, taking reasonable precautions
17 to prevent the entry of foreign particles into the sensors. In
18 fact, the maintenance procedure at the time used for calibrating
19 the temperature sensors, Procedure No. 22332-C (Rev. 2) at 2,
20 attached hereto as Exhibit B, included a precaution to "[m]inimize
21 entry of foreign materials or dirt into the working parts of the
22 instrument."

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2

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2

1 measurements on all of the diesel air receivers. We initially
2 measured high dew points on all four air receivers of the Unit 1
3 diesels. See MWO 1-90-01651 (Intervenor Exh. II-143) and MWO 1-90-
4 01770 (attached hereto as Exhibit D). We eventually measured the
5 dew points for the four Unit 2 diesel generator air receivers and
6 also found them high. See MWO 2-90-00964 (Intervenor Exh. II-146)
7 and MWO 2-90-001021 (attached hereto as Exhibit E).

8 Q: WHAT ACTIONS DID YOU TAKE WHEN THE DEW POINTS MEASURED HIGH ON
9 ALL OF THE DIESEL GENERATOR AIR RECEIVERS?

10 A: At that time, the I&C technicians routinely used an Alnor dew
11 point measurement instrument. When the dew point measurements on
12 all eight air receivers were out of specification, the technicians
13 and I doubted the accuracy of the readings. With the exception of
14 the Unit 2A air dryers (discovered on April 7 to be powered-up but
15 turned off), we were not aware of any problems with the air dryers,
16 and with the dryers running there was no logical way that
17 independent air systems would be out of specification at the same
18 time. We knew that dew point measurements normally had been within
19 specification in the past, and suspected that the instrument
20 readings were simply wrong.

21 Q: WHAT DID YOU DO TO CONFIRM THE SUSPECTED INACCURACY OF THESE
22 MEASUREMENTS?

23 A: I attempted to verify the accuracy or inaccuracy of the Alnor
24 readings with independent instrumentation. Georgia Power had

1 another "back-up" dew point measurement instrument, an EG&G model,
2 which had never been used by the I&C technicians. We also rented
3 another Alnor dew point measurement instrument from GE, although it
4 was a different model than the Alnor used by Georgia Power. On
5 April 6 and 7, 1990, we used these two instruments to take
6 additional dew point measurements on all eight air receivers.

7 In parallel with taking these measurements, we contacted the
8 I&C department at the nearby V. C. Summer nuclear power plant and
9 asked to borrow one of their dew point measurement instruments. We
10 also requested that V. C. Summer provide information on appropriate
11 use of the loaned instrument.

12 Q: WHAT WERE THE RESULTS OF THIS EFFORT?

13 A: The dew point readings of Georgia Power's Alnor instrument,
14 Georgia Power's EG&G instrument and the "GE rental" instrument are
15 reflected on GPC Exh. II-52 (Bockhold Exhibit F). The exhibit is
16 a copy of my hand-written tabulation of results obtained on April
17 6 and 7, 1990.

18 Q: WHAT CONCLUSION DID YOU DRAW FROM THESE RESULTS?

19 A: I could not draw any definitive conclusions from this data.
20 I knew that the I&C department took diesel generator air system dew
21 point readings on a monthly basis. I was quite familiar with the
22 diesel air system and did not believe that all eight air receivers
23 would be out of specification at the same time. Each unit at
24 Vogtle has two diesel generators and each diesel has two

1 independent air receivers; thus, there are eight independent air
2 supplies for the diesel control systems.

3 My experience was that out of specification measurements were
4 rare, and to my knowledge there were never multiple diesels with
5 air receivers out of specification at the same time. Furthermore,
6 the most recent monthly dew point checks had not revealed any
7 problems. Thus, my experience caused me to doubt the validity of
8 the Alnor instrument readings.

9 Georgia Power's EG&G instrument had never been used by the I&C
10 technicians while I was at Vogtle. The instrument was different
11 from the Alnor instrument. I, along with I&C foreman Scott
12 Hammond, inspected the instrument and attempted to use it the best
13 way we could determine to obtain additional dew point data.
14 However, our inexperience with the instrument caused us to doubt
15 the reliability of the measurements we were getting.

16 The readings obtained using the GE rental Alnor were
17 significantly lower than the readings obtained with the Georgia
18 Power Alnor and EG&G instruments, and were generally more in line
19 with previous dew point measurements than the out of specification
20 high readings. However, the differences between these readings and
21 the other instruments' readings made them inherently suspect.

22 Q: HOW DID YOU RESOLVE THIS PROBLEM OF INDETERMINANT DEW POINT
23 MEASUREMENTS?

24 A: As I stated before, we worked in parallel to borrow an
25 instrument from the V.C. Summer Plant. We received their

1 instrument, an EG&G model identical to our own back-up instrument,
2 along with a users manual on April 7 or 8. The first thing I
3 noticed about the borrowed instrument was that it had a flow meter
4 hooked up to it to precisely monitor the air flow through the
5 instrument. We had not used a flow meter when using our EG&G
6 instrument earlier. This caused me to further doubt the validity
7 of the earlier EG&G data.

8 The information provided by V.C. Summer regarding proper use
9 of the instrument greatly assisted us in learning how to properly
10 use our own EG&G instrument and we obtained in specification
11 readings on seven of the eight air receivers using both
12 instruments. Thus, our own EG&G instrument independently confirmed
13 that seven of the eight air systems were in specification (the
14 exception being the Unit 2A K02 air receiver. See MWO 2-90-00964
15 (Intervenor Exh. II-146)).

16 Q: DO YOU KNOW WHETHER THE AIR RECEIVERS WERE BLOWN DOWN AND
17 RECHARGED IN THE PERIOD OF TIME AFTER THE HIGH READINGS WERE TAKEN
18 ON APRIL 5 AND THE IN SPECIFICATION READINGS WERE TAKEN?

19 A: I don't know for certain which air receivers were blown down
20 and recharged. The I&C technicians did not perform these blow
21 downs, they were performed by Operations Department personnel. As
22 I stated earlier, my recollection is that the diesel 1A air
23 receiver was blown down and recharged but I don't know about the
24 others.

1 Q: DID YOU INFORM OTHERS THAT THE INITIAL HIGH DEW POINT READINGS
2 WERE DUE TO FAULTY INSTRUMENTATION?

3 A: Yes. Based on the circumstances described above, my
4 professional opinion was that the initial readings taken with the
5 Alnor instrument on March 29, 1990 were higher than the specified
6 range because the instrument was defective. Confirmatory
7 measurements taken with the back-up EG&G instrument in the April 5-
8 7 time frame were not reliable because we did not have experience
9 using this instrument.

10 Q: DID YOU DOCUMENT THIS CONCLUSION IN ANY PERMANENT PLANT
11 RECORD?

12 A: While I have no recollection of this today, I have reviewed
13 plant records that indicate I did. As I stated earlier, MWO 1-90-
14 01513, which measured high dew points on March 29, 1990, indicates
15 that the I&C technician that had taken the measurements initiated
16 a deficiency card. However, the Unit 1 shift supervisor requested
17 that the I&C technician instead write an MWO to investigate and fix
18 whatever was causing the problem. In fact, the dew point readings
19 depicted on GPC Exhibit II-52 were specifically taken as a result
20 of Mr. Hunt's interest in the high readings obtained on March 29.

21 When the same I&C technician that had taken the dew point
22 readings on March 29 measured high dew points on both of the Unit
23 1B air receivers, he wrote another DC. This time, it appears the
24 Unit 1 shift supervisor accepted the DC. The resulting DC, 1-90-
25 186 (Intervenor Exh. II-79), explains what happened as I have

1 described above. The attached root cause determination worksheet
2 further documents my belief that the Alnor instrument was defective
3 and the EG&G instrument had initially been used improperly. It
4 also shows that the dew point measurement checklist was to be
5 revised to require use of only the EG&G instrument in the future.
6 The Alnor was not to be used again and was, thus, effectively
7 removed from the M&TE program at that time.

8 Q: DID YOU INFORM MR. GEORGE BOCKHOLD OF YOUR CONCLUSION THAT THE
9 INITIAL HIGH READINGS WERE DUE TO FAULTY INSTRUMENTATION?

10 A: I am sure I did.

11 Q: WHY DID THE I&C TECHNICIANS NOT INITIATE A DEFICIENCY CARD FOR
12 THE OTHER DIESEL GENERATOR AIR SYSTEMS?

13 A: I do not recall. However, I view a DC as a vehicle for
14 ensuring a potential problem is documented and investigated and a
15 MWO as a method for correcting known problems. In my opinion, this
16 situation called for the latter. We knew the dew point
17 measurements were out of specification and we knew what the
18 recommended actions were to either lower the dew points, if they
19 were indeed high, or to verify the dew points were within
20 specification using alternate measuring equipment. Further, we
21 already had one DC to track this issue (i.e., DC 1-90-186). I also
22 recall that sometime later in 1990, the diesel system engineer, Mr.
23 Ken Stokes, recommended that we not write DCs for high dew point
24 readings and instead, added additional guidance to our dew point

1 checklist procedure. See DC 2-90-231, attached hereto as Exhibit
2 F.

3 Q: ONCE YOU DETERMINED THAT YOU HAD A DEFECTIVE INSTRUMENT, DID
4 YOU UNDERTAKE AN EFFORT TO REVIEW OR RE-EVALUATE PRIOR DEW POINT
5 MEASUREMENTS TO DETERMINE IF THIS CONDITION HAD EXISTED PRIOR TO
6 MARCH 29?

7 A: No. I know that the M&TE program procedure requires such a
8 review when these prior readings are being relied upon to satisfy
9 some operating requirement. However, in this case, the newly
10 obtained readings with the Georgia Power EG&G instrument had become
11 the basis for complying with the dew point specification so there
12 was no reason to go back and reverify prior measurements. Further,
13 I felt that if a problem had existed in the past, signs of
14 moisture-related problems would have been discovered by air
15 receiver blow-downs, control air filter inspections, or maintenance
16 overhaul inspections.

17 Q: WHAT WAS DONE AFTER APRIL 7, 1990 TO CONFIRM WHETHER OR NOT
18 THE ALNOR INSTRUMENT WAS IN FACT DEFECTIVE?

19 A: While I was employed by Georgia Power, I do not believe
20 anything was done. From my perspective, nothing needed to be done.
21 As shown in the revised preventative maintenance checklist for the
22 diesel air system, the Alnor instrument was permanently replaced by
23 the EG&G instrument (see Exhibit F) and the dew points were all
24 within the specified range.

1 Q: WHY DID THE ALNOR INSTRUMENT VP-2466, LATER BELIEVED TO BE
2 FAULTY, HAVE ITS CALIBRATION DUE DATE EXTENDED FROM MARCH 7 TO
3 APRIL 7, 1990?

4 A: As explained above, at the time the Alnor was the only
5 instrument used by the I&C technicians. Instrument VP-2466 was the
6 only Alnor on site because the other two Alnor instruments had been
7 sent off site for calibration. Thus, one of my I&C foremen
8 temporarily extended the calibration due date by one month. See
9 interoffice correspondence from M. J. Wimburn to me, dated March 8,
10 1990 (attached hereto as Exhibit G).

SUMMARY OF PROFESSIONAL QUALIFICATIONS
MARK S. BRINEY

EDUCATION:

8/79 Associate of Science, Electronics Engineering
Technology, IIT Technical Institute, Fort Wayne,
Indiana

EXPERIENCE:

Indiana Michigan Power Company
D.C. Cook Nuclear Plant
Bridgeman, Michigan

9/93-PRESENT Instrument Maintenance Supervisor

9/91-9/93 Senior Project Scheduler

Georgia Power Company
Vogtle Electric Generating Plant
Waynesboro, Georgia

1/91-9/91 Planning and Scheduling Supervisor

8/89-12/90 Acting Instrumentation & Controls ("I&C")
Superintendent

9/86-8/89 I&C Supervisor

9/84-9/86 I&C Foreman

Westinghouse Instrument Service Company


3/84-9/84 Contract I&C Technician, Vogtle Electric Generating
Plant, Waynesboro, Georgia

Butler Service Group

1/83-3/84 Contract I&C Technician, Waterford III Nuclear
Plant, Waterford, Louisiana

Indiana and Michigan Electric Company
D.C. Cook Nuclear Plant
Bridgeman, Michigan

9/80-1/83 I&C Technician

Approval <i>William A. Luffis</i>	Vogtle Electric Generating Plant NUCLEAR OPERATIONS	 Georgia Power	Procedure No. 22332-C
Date 5-30-89	Unit <u>COMMON</u>		Revision No. 2
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VOID

TEMPERATURE SWITCH CALIBRATION

PROCEDURE NO.	REVISION	PAGE NO.
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1.0 PURPOSE

The purpose of this procedure is to provide instructions for Calibration of a Temperature Switch.

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 All steps in this procedure are to be performed in sequence except as noted. []
- 2.2 Performance of procedure step, as identified by a double asterisk (*/*), shall be initialed on "Checklist" except when recording data on Data Sheet.[]
- 2.3 The instrument may be located in a radiation area, service a contaminated process fluid, or be contaminated. If so, follow instructions on "Radiation Work Permit". []
- 2.4 For Safety-Related Systems, an Independent Restoration Verification shall be performed after completion of Test/Calibration and initialed in "Restoration Verification" section of "Checklist". []
- 2.5 Any calculations necessary for the performance of this procedure shall be shown on "Calculation Sheet". []
- 2.6 Ensure that each lead (wire) to be lifted is marked with a completed and installed jumper and lifted wire tag. Instead of "Control No.", the "Procedure No." should be identified on the tag. []
- 2.7 If this procedure is completed and temporary jumper(s) must remain installed and/or lifted wire(s) cannot be reconnected, a Jumper and Lifted Wire Clearance must be obtained per Procedure 00306-C, "Temporary Jumper And Lifted Wire Control". []
- 2.8 Minimize entry of foreign materials or dirt into the working parts of the instrument. []
- 2.9 If, during performance of this procedure, any of the following occur, immediately notify I&C Foreman.
- 2.9.1 Any personnel error, procedure inadequacy, or malfunction is identified which could prevent fulfillment of "Acceptance Criteria". []
- 2.9.2 Any test exceeds specified limits. []

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2.10 This procedure may be performed in any plant operational mode. []

3.0 PREREQUISITES OR INITIAL CONDITIONS

3.1 Notify Shift Supervisor, or designee, of work to be performed and obtain signature authorization. []

3.2 Notify Reactor Operator (RO) that instruments associated with switch may be erratic or inoperable during performance of this procedure and obtain RO signature. []

3.3 TEST EQUIPMENT REQUIRED

3.3.1 Temperature Bath []

3.3.2 Fluke 2175A Digital Thermometer or equivalent []

3.3.3 Triplet Model 630 VOM or equivalent []

3.4 Verify all Prerequisites or Initial Conditions are met. []

4.0 MAIN BODY

4.1 CALCULATIONS

4.1.1 Obtain instrument setpoint Data from appropriate controlled document(s) and record document number(s) in "Comments" section of "Data Sheet". []

4.1.2 Calculate and record input and expected values in "Input" and "Expected" sections of "Data Sheet". []

4.1.3 Calculate Hi and Lo Limits and record in "Hi Limit" and "Lo Limit" sections of "Data Sheet". []

4.2 REMOVAL FROM SERVICE

NOTE

The length of capillary immersed in temperature bath must be the same as length of capillary immersed in process.

4.2.1 Close isolation valve (if applicable). []

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4.2.2 <u>*/*</u>	Disconnect lead wires from switch as required. (Independent Verification required for safety-related systems)	[]
4.2.3	Remove temperature sensing element from thermowell and/or holding apparatus as necessary.	[]
4.3	CALIBRATION	
4.3.1	Place temperature sensing element and Fluke digital thermometer in temperature bath.	[]
4.3.2	Connect VOM across appropriate terminals to monitor contact action of switch under test.	[]
4.3.3	Adjust temperature bath to a point at which VOM indicates contacts are in reset condition.	[]
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">As setpoint is approached temperature bath should be adjusted in smaller increments, allowing temperature to stabilize after each adjustment of temperature bath and prior to obtaining data and switch conditions.</p>		
4.3.4 <u>*/*</u>	Adjust temperature bath to point at which required trip point is indicated by VOM and record temperature bath value in "As Found" section of "Data Sheet".	[]
4.3.5 <u>*/*</u>	Adjust temperature bath to point at which required reset contact action is indicated by VOM and record temperature bath value in "As Found" section of "Data Sheet".	[]
4.3.6	If required, connect VOM to additional switch contacts and repeat steps 4.3.3 thru 4.3.5.	[]
4.3.7 <u>*/*</u>	If As Found readings are within limits specified on "Data Sheet" and more accurate readings are not desired, record readings in "As Left" section of "Data Sheet" and proceed to appropriate subsection.	[]

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4.3.8 If As Found readings are not within limits specified on "Data Sheet", or more accurate readings are desired, proceed as follows:

- a. Ensure that VOM is connected across correct switch terminal. []
- b. Adjust temperature bath to setpoint value as listed on "Data Sheet". []
- c. Adjust switch as required to obtain correct contact action as indicated by VOM. []
- d. Adjust temperature bath to point at which VOM indicates contact trip action and note temperature value. []
- e. Adjust temperature bath to point at which VOM indicates contact reset action and note temperature value. []
- f. Repeat steps 4.3.8b thru 4.3.8e until no further adjustments are necessary. []
- g. Record final values obtained in "As Left" section
/ of "Data Sheet". []

4.3.9 If temperature switch has more than one contact, repeat steps 4.3.8a thru 4.3.8g if appropriate until all contacts have been calibrated. []

4.4 RESTORE TO SERVICE

- 4.4.1 Disconnect all test equipment used in performance of
/ this procedure. []
- 4.4.2 Reinstall temperature sensing element in thermowell
/ and/or holding apparatus as required. []
- 4.4.3 Reconnect switch leads as required. []
/
- 4.4.4 Open isolation valve (if applicable). []
/
- 4.4.5 Verify instrument reflects current plant conditions
/ after it is returned to service. []

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4.4.6 For Safety-Related systems, have an Independent
/ Restoration Verification performed by designated personnel. []

4.4.7 Notify RO that instrument has been returned to service. []

4.4.8 Notify Shift Supervisor, or designee, of completion of
/ work including test results and obtain signature on "Completion Sheet". []

5.0 ACCEPTANCE CRITERIA

5.1 The Acceptance Criteria for this procedure is that the temperature switch is within limits specified on "Data Sheet".

5.2 Satisfactory completion of this procedure has been met when I&C Foreman has evaluated data obtained per Acceptance Criteria of this procedure, reviewed, and signed "Data Sheet" provided.

6.0 REFERENCES

6.1 Instruction Manual for switch under test.

6.2 Procedure 00306-C, "Temporary Jumper And Lifted Wire Control"

END OF PROCEDURE TEXT

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Sheet 1 of 1

DATA SHEET

Inst. No. _____	Location _____	Serial No. _____
Description <u>Temperature Switch</u>	Manufacturer _____	Model No. _____

NOTES: N/A

Action	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Tripped						
Switch Reset						
Action	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Tripped						
Switch Reset						
Action	UNITS	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Tripped						
Switch Reset						

COMMENTS:

TEST EQUIPMENT

I.D. NO.	MODEL NO.	CALIBRATION DUE DATE
		PERFORMED BY: _____ DATE: _____
		REVIEWED BY: _____ DATE: _____
		APPROVED BY: _____ DATE: _____

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Sheet 1 of 1

CALCULATION SHEET

Show all calculations performed during course of this procedure in the space below.

Completed by: _____ Date: _____
Reviewed by: _____ Date: _____
Approved by: _____ Date: _____

Sheet 1 of 1

CHECKLIST

3.1 Shift Supervisor Authorization		/
	Signature	Date
3.2 Reactor Operator (RO) Notified		/
	Signature	Date
STEP VERIFICATION		
Step/Substep	Initial	Step/Substep
Step/Substep	Initial	Step/Substep
3.4 Prerequisites met	_____	4.4.4 Isolation valve open
4.2.2 Leads disconnected	_____	4.4.5 Reflects plant conditions
4.2.2 Independent Verification	_____	
4.4.1 Test equipment removed	_____	
4.4.2 Element installed	_____	
4.4.3 Leads connected	_____	
RESTORATION VERIFICATION		
Initial	Initial	Initial
1. Element installed	_____	3. Isolation valve open
2. Leads connected	_____	
Performed by: _____ Date _____		
Reviewed by: _____ Date _____		

NUCLEAR PLANT MAINTENANCE WORK ORDER

(1 OF 3)

1. CONTROL NO. 19001513 01 2. DATE 03/24/90 3. UNIT 1 4. SYSTEM LIST

5. MPL/TAG NO. LIST

5A. REPAIR TAG

6. PPOB/ PERFORM FOLLOWING P M

WORK

REQ.

NORMS

PM

CONT.

RT # P100243

ESU 04/00/90

DD 04/15/90

LEJ 04/22/90

7. INITIATOR SYS

626

8. SUPRV SYS

LOC LIST

9. MWO CLASS N EQP CLASS LIST 10. UNIT STAT A 11. FIRE PROTECT N

12. DCR N 13. NCR/DR N 14. TYPE MAINT P 15. DURATION 3.0

16. CRAFT MECH(EST/ACT) ELEC(EST/ACT) I&C(EST/ACT) CONT(EST/ACT) HP/OT(EST/ACT)

CREW 0 0 2 2 0 0

HRS. 6.0 6 0 0

EXP. 0 0 0 0

SCHED BEG 1/1 1/1 1/1 1/1 1/1 1/1

SCHED END 1/1 1/1 1/1 1/1 1/1 1/1

RESP FOREMAN

17. CLR Y 18. WELD PERM NA RWP PERM N

19. QC HOLD PTS 20. PROC

QC REVIEWED BY 11/7 25/1 3-24-90 21. PRI 22. LCO NA

23. WORK SEE ATTACHED CHECKLIST(S).

INST.

Maintenance 2005 to 2100 hours

CONT.

----- 24. INITIATE REVIEW ----- 25. SPEC REV REQ N

OPS DATE 3/17/90 4. MNT DATE 3/17/90 26. MWO RELEASE FOR WORK

HP DATE 3/20/90 ENG 25/1 DATE 3/17/90 27. ACT

WORK

PERFORMED

NOI was 30°F and NOI was 60°F. The unit was written but wait for

S. S. John Rowles send per MISO-C 5729-2100 D.C. was not

needed but a MWO should be written. ALRT was written 4/17

05283. DATE used VP 2466 4-7-90. The unit

was 12403G4001K1 & K2.

Cleared 12403G4001K1 & K2.

Maintenance 2005 to 2100 hours.

HIST SUM MWO 19001651 for WAT 8883

28. MTRL REQD NA

29. PERSON PERFORMING WORK (NAME) DATE 30. MAINTENANCE FOREMAN DATE

Marcel Wilkins 3/17/90 Charles Wilkins 3/17/90

31. INSPECTION PERFORMED BY DATE

32. METHOD OF F.T. NONE REQUIRED for PM 2100 hours

33. PROCEDURE # NA 34. PERFORMED BY SEC DIR 29 35. DATE 3/17/90

36. PROVES OPERABILITY NA 37. METHOD USED TO PROVE OPERABILITY NA

38. SATISFY UNSATISFY 39. IF UNSAT. CORR. ACTION

40. UNIT STATUS AT TIME OF FAILURE 41. TYPE FAIL 42. MODE OF FAIL

43. CAUSE OF FAILURE 44. DETECT BY 45. EFFECT ON SYS

46. EFF ON PLANT 47. MWO STAT D 48. CAUSE 49. CORR ACT.

50. NEW MWO 19001651 51. OPER. ACCEPT BY DATE 10/10/90

52. OSOS APPROVAL NA DATE

53. SPEC REV COMP NA DATE

54. CLOSE OUT APPROVAL BY QC DATE

(A) 3/29/90

NUCLEAR PLANT MAINTENANCE WORK ORDER (CONTINUED)

(2 OF 3)

CONTROL NO. 19001513 01

MPL/TAG NO.	SYSTEM EOP CLS	DESCRIPTION	LOCATION
12403G4001K01	2403 626	D G AIR START AIR DRYER	1DB1
12403G4001K02	2403 626	D G AIR START AIR DRYER	1DB1

NUCLEAR PLANT MAINTENANCE WORK ORDER (CONTINUED)

(3 OF 3)

CONTROL NO. 19001513 01

MPL/TAG NO.	SCL NO.	CLS	FREQ	LAST DATE PERFORMED	NEXT DUE DATE
12403G4001K01	SCL00166	C	1-MO	03/09/90	04/09/90
12403G4001K02	SCL00166	C	1-MO	03/09/90	04/09/90

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19001513	SC100166	C	001-MO	1 OF 2
TAG NUMBER	REFERENCE MATERIAL			
12403G4001K01				

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS	SKILL AND INITIALS
--	-----------------------

DIESEL GENERATOR AIR START DRYER MAINTENANCE
(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.
2. CLEAN CONDENSING UNIT.

IIC/MW

IIC/MW

NOTE

COMPRESSED AIR OR A VACUUM
CLEANER MAY BE USED TO CLEAN
THE CONDENSING UNIT.

3. START FAN MOTOR.
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.

IIC/MW

IIC/MW

- A. USE ALNOR DEW POINT ANALYZER.
- B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.
- C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.
- D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT.
- E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.

MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE

LAST MINOR CHANGE DATE 05/20/89

REV. 00

08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19001513	SC100166	C	001-MO	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			
1240304001K01				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19001513	SC100166	C	001-MO	1 OF 2
TAG NUMBER	REFERENCE MATERIAL			
12403G4001K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

DIESEL GENERATOR AIR START DRYER MAINTENANCE
(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.

TIC/MD

2. CLEAN CONDENSING UNIT.

TIC/MD

NOTE

COMPRESSED AIR OR A VACUUM
CLEANER MAY BE USED TO CLEAN
THE CONDENSING UNIT.

3. START FAN MOTOR.

TIC/MD

4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.

TIC/MD

A. USE ALNOR DEW POINT ANALYZER.

B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN
TO THE PRESSURE INDICATOR ON THE RECEIVER.

C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.

D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF
EQUIPMENT.E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING
PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.

MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE

LAST MINOR CHANGE DATE 05/20/89

REV. 00

08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19001513	SC100166	C	001-MD	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			
1240304001K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY
NUCLEAR PLANT MAINTENANCE WORK ORDER (1 OF 2)1. CONTROL NO. 19001770 00 2. DATE 04/05/90 3. UNIT 1 4. SYSTEM LIST
5. MPL/TAG NO. LIST
6. PROB/ PERFORM SCL00166
7. INITIATOR J S KITCHENS 8. SUPRV J S KITCHENS 9. LOC LIST
10. UNIT STAT 11. FIRE PROTECT N
12. DCR N 13. NCR/DR N 14. TYPE MAINT P 15. DURATION 2.0
16. CRAFT MECH (EST/ACT) ELEC (EST/ACT) I&C (EST/ACT) CONT (EST/ACT) HP/OT (EST/ACT)
CREW 0 0 2 1 0 0
HRS. 2.0 16
EXP. 0 0 0 0
SCHED BEG
SCHED END
RESP FOREMAN
17. CLR N 18. WELD PERM N RWP PERM N NA
19. QC HOLD PTS 20. PROC
QC REVIEWED BY W.D. Smith 4/5/90 21. PRI 30 22. LCO NA
23. WORK
INST. PERFORM DEW POINT CHECK PER SCL00166
MAINTAIN ZONE TO MAINTAIN KEEPING, RGL 4-5-90

ORIGINAL

7. INITIATOR J S KITCHENS 8. SUPRV J S KITCHENS 9. LOC LIST
10. UNIT STAT 11. FIRE PROTECT N
12. DCR N 13. NCR/DR N 14. TYPE MAINT P 15. DURATION 2.0
16. CRAFT MECH (EST/ACT) ELEC (EST/ACT) I&C (EST/ACT) CONT (EST/ACT) HP/OT (EST/ACT)
CREW 0 0 2 1 0 0
HRS. 2.0 16
EXP. 0 0 0 0
SCHED BEG
SCHED END
RESP FOREMAN
17. CLR N 18. WELD PERM N RWP PERM N NA
19. QC HOLD PTS 20. PROC
QC REVIEWED BY W.D. Smith 4/5/90 21. PRI 30 22. LCO NA
23. WORK
INST. PERFORM DEW POINT CHECK PER SCL00166
MAINTAIN ZONE TO MAINTAIN KEEPING, RGL 4-5-90CONT. N
REVIS MWO PM TO TAKE DEW POINT READINGS AS REQD TO DETERMINE IF
ANY MOISTURE IS PRESENT IN RECOVERIES ON 1606 RGL 4-6-90
24. INITIATE REVIEW 25. SPEC REV REQ N
OPS DATE 4/5/90 MN: 83K DATE 4/5/90 26. MWO RELEASE FOR WORK
HP DATE 4/5/90 ENG W.D. Smith DATE 4/5/90 SIG. S.M. Smith DATE 4/5/90
27. ACT
WORK
PERFORMED
Catered permission from unit one S.S. to begin work. Checked the dew point on
air dryer 1-2403-64-002-K01, it was 84°F. Checked the dew point on air
dryer 1-2403-64-002-K02, it was 82°F. MATE USED VP 2466 CC/dia
4-7-90. D.C. was written DC 180-186. A WRT was written WRT 08885.
MATE used to check the housekeeping done before 4-5-90
BLK 26: S.M. 4/7/90
Revised air dryers using 3 different devices. See continuation sheet.CONT. N
HIST SUM
28. MTRL REQD
29. PERSON PERFORMING WORK (NAME) DATE 4/5/90 30. MAINTENANCE FOREMAN
W.D. Smith 4/5/90
31. INSPECTION PERFORMED BY W.D. Smith DATE 4/5/90
32. METHOD OF F.T. None Required 33. PERFORMED BY W.D. Smith DATE 4/5/90
34. PROCEDURE # NA 35. DATE 4/5/90
36. PROVES OPERABILITY NA 37. METHOD USED TO PROVE OPERABILITY NA
38. SATISFY/UNSATISFY NA 39. CORR. ACTION NA
40. UNIT STATUS AT TIME OF FAILURE NA 41. TYPE FAIL NA 42. MODE OF FAIL NA
43. CAUSE OF FAILURE NA 44. DETECT BY NA 45. EFFECT ON SYS NA
46. EFF ON PLANT NA 47. MWO STAT 6D 48. CAUSE NA 49. CORR ACT. NA
50. NEW MWO NA 51. OPER. ACCEPT BY B. Smith DATE 4/5/90
52. OSOS APPROVAL NA 53. SPEC REV COMP NA DATE 4/5/90
54. MEET. # NA DATE 4/5/90
55. CLOSE OUT APPROVAL BY W.D. Smith DATE 4/5/90

** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY ** COPY
NUCLEAR PLANT MAINTENANCE WORK ORDER (CONTINUED) (2 OF 2)

CONTROL NO. 19001770 00

MPL/TAG NO.	SYSTEM	EQP	CLS	DESCRIPTION	LOCATION
12403G4002K01	2403	626		D G AIR START AIR DRYER	1DB1
12403G4002K02	2403	626		D G AIR START AIR DRYER	1DB1

Block 26 E.m. ~~5/2/90~~ 4/6/90

Nuclear Plant Maintenance Work Order Continuation Sheet

①

MPL No. _____

MWO No. _____

19001770

Work Description Block 27:

Trn. B, KO1: ① .65 @ $77^{\circ} = +15^{\circ}\text{F} = 85^{\circ}\text{F}$ DP with Alnor 7200 VP2466
cal due 4.7.90.

② .42 @ $78^{\circ} = -39^{\circ}\text{F} = 18^{\circ}\text{F}$ DP with Alnor 7000 GE rental
ser. # 24901.

③ +10.6 = 80°F DP with EG&G VP1114 cal due 8.3.90

K02 ① .62 @ $75^{\circ} = +7^{\circ}\text{F} = 75^{\circ}\text{F}$ DP with Alnor 7200 VP2466
cal due 4.7.90.

② .42 @ $78^{\circ} = -39^{\circ}\text{F} = 18^{\circ}\text{F}$ DP with Alnor 7000 GE rental
ser. # 24901.

③ +12.1 = 82°F DP with EG&G VP1114 cal due 8.3.90.

Maintained zone 4 cleanliness. JAG 4.7.90

BUC 26: SQ Act 4-7-90

Block 26: Zone 4 4-10-90

BK 27 CONT: CHECKED DEW POINT AT DIESEL GEN 1B

VP 1114 DUE 8-3-90

F53529 (NO SITE CAL)

K02 ——— 41.4 °F

1.4 °C (34.5 °F)

K01 ——— 42.5 °F

3.4 °F (38.1 °F)

Maintained zone IV cleanliness JAG 4-10-90

— AIR DRYERS ARE OPERATING WITHIN ACCEPTABLE LIMITS,

AND WILL BE CLOSED LATE 4-13-90

2

Nuclear Plant Maintenance Work Order Continuation Sheet

MPL No. See list

MWO No. 19001770

Work Description DLK 27. Obtained permission from unit one S.S. to begin work.

Checked Dew Point's on AIR DRYERS 1-2403-64-002-K01 + K02, using

2 (two) C&E DEW-AN'S MOKE 911. VP-1114 cal'd on 8-3-90 and FS3529 cal'd on 10-25-90.

Dew Point on 1-2403-64-002-K01

1-2403-64-002-K02

VP-1114

44.5°F

36.6°F

FS3529

45.86°F (7.7°C)

40.82°F (4.9°C)

Maintained Zone IV Housekeeping 11/2, 4-8-90

FS 3529 IS A PIECE OF BORROWED TEST EQUIPMENT THAT WAS USED FOR INFORMATION ONLY.

IT HAS NO OFFICIAL SITE CAL.

Billy J. McIlwain
4-8-90

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER 19001700	CHECKLIST SCL00166	CLASS C	FREQUENCY N/A	PAGE 1 OF 2
TAG NUMBER 1-2409-64-002-K02	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS				SKILL AND INITIALS
DIESEL GENERATOR AIR START DRYER MAINTENANCE (COMMITMENT 15423, 15068 AND 14831)				
CLEAN CONDENSING UNIT (IEN: 87-028)				
1. STOP FAN MOTOR.				<i>LEC/ABT</i>
2. CLEAN CONDENSING UNIT.				<i>LEC/ABT</i>
NOTE COMPRESSED AIR OR A VACUUM CLEANER MAY BE USED TO CLEAN THE CONDENSING UNIT.				
3. START FAN MOTOR.				<i>LEC/ABT</i>
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.				<i>LEC/ABT</i>
A. USE ALNOR DEW POINT ANALYZER.				
B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.				
C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.				
D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT.				
E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.				
MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE LAST MINOR CHANGE DATE 05/20/89				REV: 00 08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
1901700	SCL00166	C	N/A	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			
1-1409-64-002-K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER 19001700	CHECKLIST SCL00166	CLASS C	FREQUENCY N/A	PAGE 1 OF 2
TAG NUMBER 12403-64-001-K01	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS	SKILL AND INITIALS
DIESEL GENERATOR AIR START DRYER MAINTENANCE (COMMITMENT 15423, 15068 AND 14831)	
CLEAN CONDENSING UNIT (IEN: 87-028)	
1. STOP FAN MOTOR.	LEC/ABT
2. CLEAN CONDENSING UNIT.	LEC/ABT
NOTE COMPRESSED AIR OR A VACUUM CLEANER MAY BE USED TO CLEAN THE CONDENSING UNIT.	
3. START FAN MOTOR.	LEC/ABT
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.	LEC/ABT
A. USE ALNOR DEW POINT ANALYZER.	
B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.	
C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.	
D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT.	
E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE CHART IN ALNOR INSTRUCTION MANUAL.	
MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE LAST MINOR CHANGE DATE 05/20/89	REV. 00 08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER 1900 1700	CHECKLIST SCL00166	CLASS C	FREQUENCY N/A	PAGE 2 OF 2
TAG NUMBER 1-2403-64-002-K01	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER 19001770	CHECKLIST SCL00166	CLASS C	FREQUENCY N/A	PAGE 1 OF 2
TAG NUMBER 12403 G4002 K01	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

DIESEL GENERATOR AIR START DRYER MAINTENANCE
(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.
2. CLEAN CONDENSING UNIT.

ICC / BJR

ICC / BJR

NOTE

COMPRESSED AIR OR A VACUUM
CLEANER MAY BE USED TO CLEAN
THE CONDENSING UNIT.

3. START FAN MOTOR.
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.

ICC / BJR

ICC / BJR

- A. USE ALNOR DEW POINT ANALYZER.
- B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.
- C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.
- D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT.
- E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.

MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE
LAST MINOR CHANGE DATE 05/20/89

REV. 00
08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
	SCL00166	C	N/A	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER <u>19001770</u>	CHECKLIST SCL00166	CLASS C	FREQUENCY N/A	PAGE 1 OF 2
TAG NUMBER <u>1240364002K02</u>	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS	SKILL AND INITIALS
DIESEL GENERATOR AIR START DRYER MAINTENANCE (COMMITMENT 15423, 15068 AND 14831)	
CLEAN CONDENSING UNIT (IEN: 87-028)	
1. STOP FAN MOTOR.	<u>14C / BGL</u>
2. CLEAN CONDENSING UNIT.	<u>14C / BGL</u>
NOTE COMPRESSED AIR OR A VACUUM CLEANER MAY BE USED TO CLEAN THE CONDENSING UNIT.	
3. START FAN MOTOR.	<u>14C / BGL</u>
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.	<u>14C / BGL</u>
A. USE ALNOR DEW POINT ANALYZER.	
B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.	
C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.	
D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT.	
E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.	
MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE LAST MINOR CHANGE DATE 05/20/89	REV. 00 08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
	SCL00166	C	N/A	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

REV. 00

Replaced Temp Sensor. Installed
Flow meter & Filter.

[illegible]

VEGP FIRE PROTECTION CHECKLIST

1. MWO NO. 9001770 2. MPL/TAG NO. 1-2403-GV-002-K01, K02
3. LOCATION D/B - B

4. WILL THE WORK INSTALL, IMPAIR, MODIFY, ISOLATE, DEFEAT, OR REMOVE ANY OF THE FOLLOWING? IF THE ANSWER IS "YES" CHECK THE BOX, AND INDICATE APPROPRIATE DETAILS.

- () SPRINKLER SYSTEM _____
() INTERIOR HOSE STATION _____
() HALON SYSTEM _____
() DETECTION SYSTEM _____
() EMERGENCY LIGHTING SYSTEM _____
() PERMANENT COMBUSTIBLES (CABLE, WOOD, PLASTIC, ETC.) _____
() STRUCTURAL STEEL, OR RACEWAY FIREPROOFING _____
() FIRE SUPPRESSION SUPPLY SYSTEM (PUMPS, TANKS, ETC.) _____
() CONDUIT SEALS OR EQUIPMENT ENCLOSURE (CABINET HOUSING) _____
() FIRE EXTINGUISHER _____
() COMMUNICATIONS SYSTEM _____
() RCP OIL COLLECTION SYSTEM _____
() SEISMIC STANDPIPE SYSTEM _____

5. WILL THE WORK DEFEAT, MODIFY OR IMPAIR ANY OF THE FOLLOWING FIRE SEPARATION FEATURES? IF THE ANSWER IS "YES" CHECK THE BOX, AND INDICATE APPROPRIATE DETAILS.

- () A. FIRE AREA BOUNDARY (WALL, ETC.) _____
() B. PASSIVE AREA BOUNDARY PENETRATION SEAL ASSEMBLY.
PENETRATION SEAL _____
WALL BLOCKOUT _____
FLOOR PLUG OR HATCH _____
CABLE TRAY OR CONDUIT WRAP _____
RADIANT ENERGY SHIELD _____
() C. ACTIVE FIRE AREA BOUNDARY PENETRATION SEAL.
FIRE DOOR _____
FIRE DAMPER _____

6. IF ALL THE ANSWERS IN BLOCKS 4 and 5 ARE "NO", STOP THE EVALUATION HERE, AND ENTER "NO" IN BLOCK 11 OF THE MWO FORM.
IF ANY QUESTIONS WERE ANSWERED "YES", ENTER "YES" IN BLOCK 11 OF THE MWO FORM.

EVALUATOR J. R. Smith DATE 4-5-90

POST WORK REVIEW (COMPLETE "A, B, OR C" BELOW)

(A) THE CONDITION IMPACTING THE FIRE PROTECTION COMPONENTS LISTED ABOVE HAS BEEN REMOVED. FPE _____ DATE _____

(B) THE FIRE PROTECTION COMPONENT IS STILL IMPAIRED. FPE _____ DATE _____

(C) RESTORATION OF THE IMPAIRMENT HAS BEEN TRANSFERRED (Ref: _____) AND THE FIRE PROTECTION DCO LOG HAS BEEN CHANGED TO REFERENCE THE NEW MWO FOR THIS IMPAIRMENT. FPE _____ DATE _____

NORMS

(1 OF 3)

NUCLEAR PLANT MAINTENANCE WORK ORDER

1. CONTROL NO. 29001021 01 2. DATE 04/06/90 3. UNIT 2 4. SYSTEM LIST

5. MPL/TAG NO. LIST

6. PROB/ PERFORM FOLLOWING P M
WORK
REQ.

5A. REPAIR TAG

P M

CONT.

RT # P100413 ESD 04/06/90 DD 04/13/90 LED 04/20/90
7. INITIATOR SYS 626 8. SUPRV SYS LOC LIST
9. MWO CLASS N EQP CLASS LIST 10. UNIT STAT (N) 11. FIRE PROTECT N
12. DCR N 13. NCR/DR N 14. TYPE MAINT P 15. DURATION 4.0
16. CRAFT MECH (EST/ACT) ELEC (EST/ACT) ILC (EST/ACT) CONT (EST/ACT) HP/OT (EST/ACT)
CREW 0 0 2 1.0 0 0
HRS. 8.0 1.0 0 0 0 0
EXP. 0 0 0 0 0 0
SCHED BEG SCHED END
RESP FOREMAN
17. CLR N 18. WELD PERM NA RWP PERM N
19. QC HOLD PTS 20. PROC JA
QC REVIEWED BY NA KSH 4-6-90 21. PRI 1 22. LCO NUC
23. WORK SEE ATTACHED CHECKLIST(S).
INST. Maintained Zone II cleanliness. KSH 4-6-90

CONT.

Check Newpoint with EG&G Drawalls & record data

24. INITIATE REVIEW 25. SPEC REV REQ N
OPS DATE 4/6/90 MNT MHE DATE 4/6/90 26. MWO RELEASE FOR WORK
HP DATE 4/6/90 ENG RIA DATE 4/6/90 SIG R. Verna DATE 4/6/90
27. ACT WORK PERFORMED
I changed the Condensing Unit on 2240164002101 and
2240164002102 as per PM checklist 5600106. The New
point readings were not taken at this time.
Maintained Zone II cleanliness. KSH 4-6-90 Risky 23 May 90 4-6-90

CONT.

See continuation sheet

HIST SUM

28. MTRL REQ NA
29. PERSON PERFORMING WORK (NAME) DATE 30. MAINTENANCE FOREMAN DATE 4/13/90
31. INSPECTION PERFORMED BY 4/11/90 32. METHOD OF P.T. 4/11/90
33. PROCEDURE 1 34. PERFORMED BY 35. DATE 4/13/90
36. PROVES OPERABILITY 37. METHOD USED TO PROVE OPERABILITY 38. SATISFY/UNSATISFY 39. IF UNSAT. CORR. ACTION
40. UNIT STATUS AT TIME OF FAILURE 41. TYPE FAIL 42. MODE OF FAIL
43. CAUSE OF FAILURE 44. DETECT BY 45. EFFECT ON SYS
46. EFF ON PLANT 47. MWO STAT D 48. CAUSE 49. CORR ACT.
50. NEW MWO NA 51. OPER. ACCEPT BY R. Verna DATE 4/13/90
52. OSOS APPROVAL 53. SPEC REV COMP 54. MEET. 55. CLOSE OUT APPROVAL BY QC DATE 4/13/90

B KSH 4/6/90

NUCLEAR PLANT MAINTENANCE WORK ORDER (CONTINUED)

(2 OF 3)

CONTROL NO. 29001021 01

MPL/TAG NO.	SYSTEM	EQP	CLS	DESCRIPTION	LOCATION
22403G4002K01	2403	626		D G AIR START AIR DRYER	2DB1-
22403G4002K02	2403	626		D G AIR START AIR DRYER	2DB1-

NUCLEAR PLANT MAINTENANCE WORK ORDER (CONTINUED)

(3 OF 3)

CONTROL NO. 29001021 01

MPL/TAG NO.	SCL NO.	CLS	FREQ	LAST DATE PERFORMED	NEXT DUE DATE
22403G4002K01	SCL00166	C	1-MO	04/02/90	05/02/90
22403G4002K02	SCL00166	C	1-MO	04/02/90	05/02/90

Nuclear Plant Maintenance Work Order Continuation Sheet

MPL No.

MWO No.

29001021

Work Description

Block 27:

Checked dewpoints with 3 different units;
B tra. K01: ① .61 @ 75° = +5°F = 75°F DP with Almor 7200

VP2466 cal due 4.7.90

② .37 @ 77° = -55°F = -10°F DP with Almor 7000

GE rental ser# 24901

③ 16.1 = 25°F DP with EG&G VP1114 cal due 8.3.90

K02: ① .61 @ 74°F = 10°F = 80°F DP with Almor 7200

VP2466 cal due 4.7.90

② .41 @ 75° = -45°F = 10°F DP with Almor 7000

GE rental ser# 24901

③ 14.8 = 80°F DP with EG&G VP1114 cal due 8.3.90

Maintained zone 4 cleanliness. NLP 4.7.90.

Checked dewpoints again with 2 different EG&G 911 DewAlls

Diesel Gen 2B with FS3529 & VP1114

K01 39.5°F 33.7°F

K02 44.6°F 44.4°F

Diesel Gen 2A with FS3529 & VP1114

K01 61.4°F 60.9°F

K02 44.39.7°F 43.9°F

VP1114 cal due 8.3.90

FS3529 cal due 10.25.90

Maintained zone 4 cleanliness NLP 4.8.90.

FS3529 IS A PIECE OF BORROWED TEST EQUIPMENT

THAT WAS USED FOR INFORMATION ONLY. IT HAS

NO OFFICIAL SRE CAL. B. Hy / M. L. 4.8.90

Nuclear Plant Maintenance Work Order Continuation Sheet

MPL No.

MWO No.

29001021

Work Description

Block 26) WP Shot 4/10/90

BLK 27 CONT: CHECKED DEW POINT AT DEVEL GEN 2B

VP IIII DAE 8-3-40

FS 3529 (NO SITE OIL)

K01

39.0°F

2.4°C (36.3°F)

K02

43.2°F

4.6°C (40.3°F)

TEST EQUIPMENT WAS ALLOWED TO STABILIZE FOR

30 MINS. TEST EQUIP. REMOVED; MAINTAINED POWER IV

CLEANLINESS. F86 4-10-90

NOTE: EXH FANS HAVE RUN FOR ENTIRE TEST TIME. F86 4-10-90

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
29001021	SCL00166	C	001-MO	1 OF 2
TAG NUMBER	REFERENCE MATERIAL			
22403G4002K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

DIESEL GENERATOR AIR START DRYER MAINTENANCE
(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.
2. CLEAN CONDENSING UNIT.

TIC / BLTIC / BL

NOTE

COMPRESSED AIR OR A VACUUM
CLEANER MAY BE USED TO CLEAN
THE CONDENSING UNIT.

3. START FAN MOTOR.
4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.
 - A. USE ALNOR DEW POINT ANALYZER.
 - B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN TO THE PRESSURE INDICATOR ON THE RECEIVER.
 - C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.
 - D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT. *Ref. Vol 1149 S&D 4.6.70*
 - E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.

TIC / BLTIC / BL

MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE
LAST MINOR CHANGE DATE 05/20/89

REV. 00
05/19/88

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
29001021	SCL00166	C	001-MO	1 OF 2
TAG NUMBER	REFERENCE MATERIAL			
22403G4002K01				

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS	SKILL AND INITIALS
---	--------------------

DIESEL GENERATOR AIR START DRYER MAINTENANCE

(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.

TIC / SK

2. CLEAN CONDENSING UNIT.

TIC / SK

NOTE

COMPRESSED AIR OR A VACUUM
CLEANER MAY BE USED TO CLEAN
THE CONDENSING UNIT.

3. START FAN MOTOR.

TIC / SK

4. MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.

TIC / SK

A. USE ALNOR DEW POINT ANALYZER.

B. CONNECT ALNOR THROUGH A PRESSURE REGULATOR, THEN
TO THE PRESSURE INDICATOR ON THE RECEIVER.

C. ADJUST PRESSURE TO APPROXIMATELY 80 PSIG.

D. USE ALNOR INSTRUCTION MANUAL FOR OPERATION OF
EQUIPMENT. *Ref VM 1149 Day 16-90*E. CONVERT READING TAKEN FROM THE ALNOR TO OPERATING
PRESSURE PER CHART IN ALNOR INSTRUCTION MANUAL.

MAINTENANCE ENGINEER/SUPV. APPROVAL R H WYRE

LAST MINOR CHANGE DATE 05/20/89

REV. 00
08/19/88

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
29001021	SCL00166	C	001-MO	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			
22403G4002K01				

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS	SKILL AND INITIALS
--	-----------------------

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES
FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

<i>Chap. 10</i>	

REV. 00

VEGP FIRE PROTECTION CHECKLIST

1. MWO NO. 92026-C 2. MPL/TAG NO. 22403690301 22403690302
 3. LOCATION Unit 1111 - Radiator Room - 7F

4. WILL THE WORK INSTALL, IMPAIR, MODIFY, ISOLATE, DEFEAT, OR REMOVE ANY OF THE FOLLOWING? IF THE ANSWER IS "YES" CHECK THE BOX, AND INDICATE APPROPRIATE DETAILS.

- () SPRINKLER SYSTEM _____
- () INTERIOR HOSE STATION _____
- () HALON SYSTEM _____
- () DETECTION SYSTEM _____
- () EMERGENCY LIGHTING SYSTEM _____
- () PERMANENT COMBUSTIBLES (CABLE, WOOD, PLASTIC, ETC.) _____
- () STRUCTURAL STEEL, OR RACEWAY FIREPROOFING _____
- () FIRE SUPPRESSION SUPPLY SYSTEM (PUMPS, TANKS, ETC.) _____
- () CONDUIT SEALS OR EQUIPMENT ENCLOSURE (CABINET HOUSING) _____
- () FIRE EXTINGUISHER _____
- () COMMUNICATIONS SYSTEM _____
- () RCP OIL COLLECTION SYSTEM _____
- () SEISMIC STANDPIPE SYSTEM _____

5. WILL THE WORK DEFEAT, MODIFY OR IMPAIR ANY OF THE FOLLOWING FIRE SEPARATION FEATURES? IF THE ANSWER IS "YES" CHECK THE BOX, AND INDICATE APPROPRIATE DETAILS.

- () A. FIRE AREA BOUNDARY (WALL, ETC.) _____
- () B. PASSIVE AREA BOUNDARY PENETRATION SEAL ASSEMBLY.
 PENETRATION SEAL _____
 WALL BLOCKOUT _____
 FLOOR PLUG OR HATCH _____
 CABLE TRAY OR CONDUIT TRAP _____
 RADIANT ENERGY SHIELD _____
- () C. ACTIVE FIRE AREA BOUNDARY PENETRATION SEAL.
 FIRE DOOR _____
 FIRE DAMPER _____

6. IF ALL THE ANSWERS IN BLOCKS 4 and 5 ARE "NO", STOP THE EVALUATION HERE, AND ENTER "NO" IN BLOCK 11 OF THE MWO FORM.
 IF ANY QUESTIONS WERE ANSWERED "YES", ENTER "YES" IN BLOCK 11 OF THE MWO FORM.
 EVALUATOR John J. [Signature] DATE 4-6-70

POST WORK REVIEW (COMPLETE "A", "B", OR "C" BELOW)

(A) THE CONDITION IMPACTING THE FIRE PROTECTION COMPONENTS LISTED ABOVE HAS BEEN REMOVED. FPE _____ DATE _____

(B) THE FIRE PROTECTION COMPONENT IS STILL IMPAIRED. FPE _____ DATE _____

(C) RESTORATION OF THE IMPAIRMENT HAS BEEN TRANSFERRED (Ref: _____) AND THE FIRE PROTECTION LOG LOG HAS BEEN CHANGED TO REFERENCE THE NEW MWO FOR THIS IMPAIRMENT. FPE _____ DATE _____

FIGURE 1

Deficiency Card

PMK

20135

Completed By Initiator	Card #	290-231		<input type="checkbox"/> Unit 1 <input checked="" type="checkbox"/> Unit 2 <input type="checkbox"/> Common
	1: Description of Deficiency	<p>FORMS</p> <p>THE DEW POINT READINGS OBTAINED PER PM 29004432 ON D.G. AIR DRYER 2-2403-64-002-K01 WERE HIGHER THAN ALLOWED PER ACCEPTANCE CRITERIA. THE ACCEPTABLE RANGE IS BETWEEN 32 DEGREES F AND 50 DEGREES F. ACTUAL READING WAS GREATER THAN 74.8 DEGREES F. WRT #12866 WRITTEN.</p>		
	Location Of Deficiency?	D.G. 2R		
	What Is Affected By The Deficiency?	Commitment 15423, 15068 AND 14831		
Completed By USS Within 2 Hours	How Was The Deficiency Discovered?	DURING PERFORMANCE OF PM 29004432		
	Event Time	120000T	Date	10-10-70
	Discovery Time	073000T	Date	10-10-70
	Discovered By?	THOMAS H. JAMES	Work #	29004432
	Dept.	I&C		
	2: Shift Supervisor Review			
	Name Of USS Reported To?	W L BARGERON	Time	1411
	Date	10/10/70		
	Plant Mode/Condition:	6/38 CPS		
	Is Immediate Notification Required?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
If Yes, <input type="checkbox"/> 1 Hour, <input type="checkbox"/> 4 Hour, or <input type="checkbox"/> 24 Hour	N/A	Reported: Date	Time	
Tech. Spec. Required Action Taken?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
List Applicable Tech. Spec. Section(s)	N/A			
Summarize Compensatory Action Taken:	ENGINEERING TO EVALUATE/MAINT. TO INVESTIGATE AIR DRYER PM WRT 12866.			
LCO Initiated:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Type: Info	N/A	
WRT Initiated:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		12866	
Signature Of USS	WLB	Date	10/10/70	
		Time	1413	

706686 (238)

Completed in 1 Day	3: Technical Support Review		
	NSAC Evaluation/Review (Check Appropriate Box)		Date Received: 10-11-90
	A.	No Deficiency Care Required. Send Copy To Responsible Dept., Close Original	
	B.	Reportable Deficiency. Report #	
	C.	<input checked="" type="checkbox"/> Deficiency. Not Reportable.	
	Explanation: <i>SA. PM was contacted on 10-11-90 re: report to G-1, 2P-10 and 151157-2P. The air dryer was in safety - position and was not working. The report was per the G-1, 151157-2P Tech Spec.</i>		
	Responsible Dept.: <i>Eng. Support</i>		
	NSAC Reviewer:	<i>Tom Webb</i>	Date: 10-11-90
	NSAC Supervisor:	<i>R. Madan</i>	Date: 10-11-90
Completed in 1 Month By Responsible Dept.	4: Disposition, For Deficiencies in Item 3C Above Only. - USE AS IS -		
	<i>WRT # 12P66 initiated to determine problem with Air Dryer. MWO 2900 4639 was initially tested by I+C and found dew point high. MWO was turned over to electrical and dewpoint checked prior to performing work on the dryer. The dewpoint checked out within acceptance criteria.</i>		
	Cause Code: E1	Event Code: ZC	(Attach Sheets From 00058-C)
	Causing Dept(s): <i>[Signature]</i>		
	Department Manager:	Date: 1/25/91	

PROCEDURE NO. VEGP	00058-C	REVISION 3	PAGE NO. 7 of 14
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DC # 2-40-231

ROOT CAUSE DETERMINATION WORKSHEET

UNIT 2

SHEET 1 OF 2

1. EVENT INVESTIGATED: Dewpoint readings taken per PM MWO 29004432 were 74.8 degrees. Acceptance Criteria is 32°F to 50°F.
2. EVALUATOR(S)/INVESTIGATOR(S): Ken Stokes
3. RESULTS OF INVESTIGATION/REVIEW (Include references and attach continuation sheets if needed)
 - a. CAUSE: The following summarizes the events that took place: ITC took initial dew point readings on 10-6-90 per DE 2811-1550 mwo 29004432 and readings were 74.8 degrees. They initiated another mwo 29004434 for corrective maintenance. ITC again took readings on 10-24-90 and dew point was 55.9°F. ITC then transferred the MWO to Electrical. They took dew point reading prior to performing any corrective maintenance. Dew Point reading was 38.4°F, therefore they closed the MWO. (Cont)
 ROOT CAUSE CATEGORY/EVENT CODE: E1 2811-1550 2C
 - b. RECOMMENDED CORRECTIVE ACTION(s): Proper training should be given to a specific group of people and those people should take all dew point measurements. Also, The PM has been marked-up to provide additional guidance to test personnel in the event dew point is found out of acceptance criteria

CHECKLIST REVISED 11/13/90

- c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)
SEE B ABOVE

Resp. Dept. Mgr. Approval: [Signature] DATE: 1/25/91
 Estimated Completion Date: COMPLETE 1/25/91 OIT Number: 210-46-1/28/91
Ken Stokes 111-1390 SANIT AS RESP. D. & M. 1
 INVESTIGATOR SIGNATURE DATE RESPONSIBLE MANAGER/ERTL DATE

4. OITs initiated; commitments reviewed; corrective action approved.
[Signature] 11-30-91
 MANAGER TECHNICAL SUPPORT DATE
Oct 1/29/91

DC # 2-90-231

SHI 2 of 2

CONTINUATION SHEET

a. CAUSE: This dryer was removed from service during a switchgear outage on clearance 24015214 on 10/23/90. The 2nd dew point reading taken on 10/24/90 was probably just after the dryer was placed back in service and a higher dew point would be expected for several cycles of the Air Compressor. Following these cycles, electrical measured dew point on 10-26-90 and found acceptable. (Cont.)

ROOT CAUSE CATEGORY/EVENT CODE: E1 / 2C

b. RECOMMENDED CORRECTIVE ACTION(s):

N/A

c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)

N/A

Resp. Dept. Mgr. Approval:

DATE:

Estimated Completion Date:

OIT Number:

a. CAUSE: Subsequent readings were taken per PM MWJ 29005015 and found to be acceptable. It can be concluded that original readings were either improperly taken or the dew point analyzer wasn't working. Since no maintenance has been performed on the analyzer, one can say the original readings were taken improperly.

ROOT CAUSE CATEGORY/EVENT CODE: 1

b. RECOMMENDED CORRECTIVE ACTION(s): Proper training should be given to ²

N/A

c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)

N/A

Resp. Dept. Mgr. Approval:

DATE:

Estimated Completion Date:

OIT Number:

FIGURE 1 (CONT'D.)

PLANNED MAINTENANCE CHANGE REQUEST

1. LOG NUMBER _____
2. ☐ MAJOR ☒ MINOR
3. CHECKLIST NUMBER SCL 00166 REV. 02
4. DESCRIPTION OF CHANGE See Attached Mark-Up.
5. REASON FOR CHANGE It is presently unclear as to what action to take when dew point is found out of Acceptance Criteria. Writing a D.C. does not benefit the situation. If these actions are taken as stated on these additional steps, Dew Point within the Control Air system at 60 PSI can be maintained in an acceptable condition. Through previous conversations with Cooper Energy Services, air moisture quality is acceptable as long as no water is found in the Control Air System.
6. SUBMITTED BY Ken Stokes Ken Stokes 11/19/90
7. MAINTENANCE/WPG SUPV.
OR MAINT. ENGINEER _____
TECHNICAL REVIEW 1/1
8. PM COORDINATOR _____
APPROVAL 1/1
9. MAINT. ENGR. _____
APPROVAL 1/1
10. MAINTENANCE
MANAGER/SUPERINTENDENT _____
APPROVAL 1/1
11. IMPACT REVIEW _____ WPG NOTIFIED _____
12. PM COMPUTER DATA BASE REVISED 1/1

COMMENTS _____

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
	SCL00166	C	N/A	1 OF 2
TAG NUMBER	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND SPECIAL INSTRUCTIONS				SKILL AND INITIALS
DIESEL GENERATOR AIR START DRYER MAINTENANCE (COMMITMENT 15423, 15068 AND 14831)				
CLEAN CONDENSING UNIT (IEN: 87-028)				
1. STOP FAN MOTOR.				____/____
2. CLEAN CONDENSING UNIT.				____/____
NOTE COMPRESSED AIR OR A VACUUM CLEANER MAY BE USED TO CLEAN THE CONDENSING UNIT.				
3. START FAN MOTOR.				____/____
MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.				____/____
A. USE EG & G HUMIDITY ANALYZER.				
NOTE WHEN OVERHEAD FAN AND/OR AIR COMPRESSOR RUNS THE DEW POINT READING WILL CHANGE SLIGHTLY. IF READINGS ARE AFFECTED BY OVERHEAD FAN, HAVE OPERATIONS STOP FAN DURING TEST.				
B. USE EG & G INSTRUCTION MANUAL FOR OPERATION OF EQUIPMENT VM-494				
C. CONNECT EG & G TO AIR START RECEIVER PRESSURE GAUGE.				
MAINTENANCE ENGINEER/SUPV. APPROVAL H R VAUGHT LAST MINOR CHANGE DATE 06/06/00				REV. 02 06/11/90

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

TWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
	SCL00166	C	N/A	2 OF 2
TAG NUMBER	REFERENCE MATERIAL			

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

- D. SECTIONS 3.1.2, 3.2 AND 5.1 ARE USED TO OBTAIN DEW POINT READINGS.

NOTE

ALLOW APPROXIMATELY 30 TO 40 MINUTES FOR READING TO STABILIZE.

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

- E. IF DEW POINT IS NOT WITHIN ACCEPTANCE CRITERIA PERFORM THE FOLLOWING:

- a.) Notify System Engineer.
- b.) Initiate corrective action MWO, if required.
- c.) Notify Operations and request Air Dryer and Air Compressor to be tagged out. Inform S.S. of corrective Action MWO Number and request priority.

NOTE

AIR RECEIVER OUTLET VALVE SHOULD NOT BE ISOLATED UNLESS MOISTURE IS NOTICED WITHIN THE CONTROL AIR SYSTEM. THIS SHOULD BE CHECKED BY OPENING FOR A FEW SECONDS TEST CONNECTION VALVE IN LOWER LEFT PART THE ENGINE CONTROL PANEL. THIS MOISTURE CHECK SHOULD BE PERFORMED EVERY 12 HOURS UNTIL DEW POINT IS ACCEPTABLE.

REV. 02

NOTE

A D.C. IS NOT REQUIRED IF DEW POINT IS OUT OF ACCEPTANCE CRITERIA SINCE CORRECTIVE ACTION IS BEING PERFORMED BY STEP E ABOVE.

EQUIPMENT MAINTENANCE CHECKLIST

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19004870	SCL00166	C	001-MO	1 OF 3
TAG NUMBER	REFERENCE MATERIAL			
12403G4002K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

DIESEL GENERATOR AIR START DRYER MAINTENANCE

(COMMITMENT 15423, 15068 AND 14831)

CLEAN CONDENSING UNIT (IEN: 87-028)

1. STOP FAN MOTOR.

FLC / PIC

2. CLEAN CONDENSING UNIT.

FLC / PIC

NOTE

COMPRESSED AIR OR A VACUUM CLEANER
MAY BE USED TO CLEAN THE CONDENSING
UNIT.

3. START FAN MOTOR.

FLC / PIC

MEASURE DEW POINT AND RECORD IN BLOCK 27 OF MWO.

FLC / PIC

A. USE EG & G HUMIDITY ANALYZER.

NOTE

WHEN OVERHEAD FAN AND/OR AIR COMPRESSOR
RUNS THE DEW POINT READING WILL CHANGE
SLIGHTLY. IF READINGS ARE AFFECTED BY
OVERHEAD FAN, HAVE OPERATIONS STOP FAN
DURING TEST.B. USE EG & G INSTRUCTION MANUAL FOR OPERATION OF
EQUIPMENT. VM-494

WORKING COPY	
REVISION	CONTROLLED REVISION
DATE	SIGNATURE DATE
12-31-90	

MAINTENANCE ENGINEER/SUPV. APPROVAL H R VAUGHT
LAST MINOR CHANGE DATE 00/00/00REV. 03
11/13/90

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19004870	SCL00166	C	001-MO	2 OF 3
TAC NUMBER	REFERENCE MATERIAL			
12403G4002K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

C. CONNECT EG & G TO AIR START RECEIVER PRESSURE GAUGE.

D. SECTIONS 3.1.2, 3.2 AND 5.1 ARE USED TO OBTAIN DEW POINT READINGS.

NOTE

ALLOW APPROXIMATELY 30 TO 40 MINUTES FOR READING TO STABILIZE.

NOTE

ACCEPTABLE READING ARE BETWEEN 32 DEGREES FAHRENHEIT AND 50 DEGREES FAHRENHEIT.

E. IF DEW POINT IS NOT WITHIN ACCEPTANCE CRITERIA PERFORM THE FOLLOWING:

A.) NOTIFY SYSTEM ENGINEER.

B.) INITIATE CORRECTIVE ACTION MWO, IF REQUIRED.

C.) NOTIFY OPERATIONS AND REQUEST AIR DRYER AND AIR COMPRESSOR TO BE TAGGED OUT. INFORM S.S. OF CORRECTIVE ACTION MWO NUMBER AND REQUEST PRIORITY.

REV. 03

EQUIPMENT MAINTENANCE CHECKLIST CONTINUATION

MWO-NUMBER	CHECKLIST	CLASS	FREQUENCY	PAGE
19064870	SCL00166	C	001-MO	3 OF 3
T/ NUMBER	REFERENCE MATERIAL			
12J3G4002K02				

MAINTENANCE REQUIREMENTS AND
SPECIAL INSTRUCTIONSSKILL AND
INITIALS

NOTE

AIR RECEIVER OUTLET VALVE SHOULD NOT BE ISOLATED UNLESS MOISTURE IS NOTICED WITHIN THE CONTROL AIR SYSTEM. THIS SHOULD BE CHECKED BY OPENING FOR A FEW SECONDS TEST CONNECTION VALVE IN LOWER LEFT PART OF THE ENGINE CONTROL PANEL. THIS MOISTURE CHECK SHOULD BE PERFORMED EVERY 12 HOURS UNTIL DEW POINT IS ACCEPTABLE.

NOTE

A D.C. IS NOT REQUIRED IF DEW POINT IS OUT OF ACCEPTANCE CRITERIA SINCE CORRECTIVE ACTION IS BEING PERFORMED BY STEP ABOVE.

Added

REV. 03

Deficiency Card

020472

Card # 190412

☒ Unit 1 ☐ Unit 2 ☐ Common

1: Description of Deficiency

(Additional Sheets Attached? ☐ Yes ☐ No

1-2403-64-002-K02

DEW POINT READINGS WERE TOO HIGH (ABOVE TOLERANCE
60.2°F ; 70.8°F)

Completed By Initiator

Location Of Deficiency?

DIESEL BUILDING UNIT I & TRAIN K02

What Is Affected By The Deficiency?

DRY ICE ~~HA~~ IS "11-15-90" COMPRESSOR & DRYER

How Was The Deficiency Discovered?

BY CHECKING DEW POINT READING

WITH VP 1296 DUE DATE 8-17-91 REF: PM SCL00166

Event Time 0900 CST

Date 11-15-90

Discovery Time 1000 CST

Date 11-15-90

Discovered By?

Buddy Berry

Work # 19004394

Dept. I+C

2: Shift Supervisor Review

Name Of USS Reported To?

WP Stephens JR Time 1418

Date 11/15/90

Plant Model/Condition:

MODE 1 / 100 % ROP

Is Immediate Notification Required? ☐ Yes ☒ No

If Yes, ☐ 1 Hour, ☐ 4 Hour, or ☐ 24 Hour

NA

Reported: Date

NA

Time

NA

Tech. Spec. Required Action Taken? ☐ Yes ☒ No

N/A

List Applicable Tech. Spec. Section(s)

3.8.1.1

Summarize Compensatory Action Taken:

Completed By USS Within 2 Hours

LCO Initiated: ☒ Yes ☐ No

Type: info 190737I LCO

Fire

WRT Initiated: ☐ Yes ☒ No

Signature Of USS

WP Stephens JR

Date 11/15/90


Time 1420

708986 0238

3: Technical Support Review	
NSAC Evaluation/Review (Check Appropriate Box) Date Received: <u>11-16-90</u>	
A.	<input checked="" type="checkbox"/> No Deficiency Card Required. Send Copy To Responsible Dept., Close Original
B.	<input type="checkbox"/> Reportable Deficiency. Report #
C.	<input type="checkbox"/> Deficiency, Not Reportable.
Explanation: Another DC (DC 1-90-408) has already been issued to document the fact that the dew point for air receiver 1-2403-64-002-K02 is too high. As noted on the previous DC, the problem is being investigated per MWO 19004394 and LCO 1-90-737I. has been initiated. If any action, other than corrective maintenance action is required, then such action will be noted by the Engineering disposition of DC 1-90-408.	
Responsible Dept.: <u>Eng. Support</u>	
NSAC Reviewer: <u>W. K. Smith</u> Date: <u>11-16-90</u>	
NSAC Supervisor: <u>B. M. O.</u> Date: <u>11-16-90</u>	
4: Disposition, For Deficiencies in Item 3C Above Only.	
N/A	
Cause Code: Event Code: (Attach Sheets From 00058-C)	
Causing Dept(s):	
Department Manager: Date:	

706526 1238

Interoffice Correspondence

Georgia Power 

DATE: March 8, 1990

RE: Alnor Dewpointer Calibration Extension

FROM: J. M. Wimburn

TO: M. S. Briney

I have temporarily extended the calibration period for the Alnor Dewpointer, VP-2466, to 4/7/90. This is an extension of one month. We have three Dewpointers of which two are out for calibration and will not be returned until the end of March. The Dewpointer is used on the weekly PMs for Instrument Air Dryers and Diesel Generators Air Start Dryers. The commitments 16083 and 14831 associated with the PMs do not require tolerances for the measurement or for the Dewpointers.

JMW/jbc

