



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

March 21, 1990

Georgia Power Company
ATTN: Mr. W. G. Hairston, III
Senior Vice President
Nuclear Operations
P. O. Box 4545
Atlanta, GA 30302

Gentlemen:

SUBJECT: NRC PERSONNEL ACCESS (DOCKET NOS. 50-424 AND 50-425)

This letter is to provide information concerning access of NRC employees to your facility for the purpose of conducting an AIT inspection. The onsite phase of the inspection at Vogtle is scheduled for March 22-30, 1990.

The Enclosure lists those NRC employees who will be visiting your facility. For those individuals who have a clearance, we request unescorted access to your vital and protected areas. For those who have no clearance, we request escorted access. This does not preclude the granting of a higher level of access, consistent with your approved Security Plan, if you so choose.

This letter does not supersede our previous correspondence dated January 2, 1990, regarding NRC personnel access; however, as indicated on the Enclosure, it provides identification of additional individuals who should only be permitted access for the dates specified in the above paragraph.

Should you have any questions concerning this matter, we will be happy to discuss them with you.

FOR THE REGIONAL ADMINISTRATOR

Peggy R. Shaw

Peggy R. Shaw
Security Officer

9302170321 901020
PDR FOIA
LAMBERS42-330 PDR

Enclosure:
Access list

cc w/encl:
R. P. McDonald, Executive Vice
President, Nuclear Operations
C. K. McCoy, Vice President,
Vogtle Project
G. Fredrick, Site QA Manager
G. Bockhold, Jr., General Manager,
Vogtle Nuclear Operations
J. P. Kane, Manager, Licensing/Engineering
C. Kitchens, Manager, Nuclear Security
D. A. Gelderman, Nuclear Personnel
Background Investigator

March 21, 1990

ENCLOSURE

VOGTLE

This certifies that the persons listed below are employees of the U. S. Nuclear Regulatory Commission. To the extent of our knowledge, they do not possess adverse character traits or indications of aberrant behavior. These employees have been screened to the national level (including a criminal records check); no disqualifying offenses were noted. Trustworthiness has been determined by a review of his employment records.

Individuals identified by an asterisk have successfully completed the comprehensive training course in radiation protection, emergency response, and physical security referenced in our letter of January 2, 1990, and we request that you limit further training of those personnel to site specific aspects of these areas.

<u>Name</u>	<u>Clearance</u>	<u>NRC Badge No.</u>
*William R. Jones (SS#:	Q	
Rick Kendall (SS#:	L	
*Warren C. Lvon (SS#:	L	
Eugene A. Trager, Jr. (SS#:	L	
*Garmon West, Jr. (SS#:	L	

A "Q" access authorization is based on a full-field investigation conducted by the Office of Personnel Management (OPM), the Federal Bureau of Investigation (FBI) or another U. S. Government agency which conducts personnel security investigations. The other, an "L" access authorization, is based on a National Agency Check (NAC) conducted by the Office of Personnel Management.

A "L" access authorization, is based on a National Agency Check (NAC) conducted by the Office of Personnel Management.

The above individuals have observed exercises or conducted appraisals at NRC licensed commercial nuclear power plants.

They have demonstrated themselves to be dedicated professionals with no adverse character traits or indications of emotional instability which would impact on their ability to perform their duties in a responsible manner.

STATUS

VOGTLE ELECTRIC GENERATING PLANT
CORRECTIVE ACTIONS FOR SITE AREA EMERGENCY

Completed	The truck driver was disciplined for lack of attention and alertness in backing the truck when visibility was impaired.
On schedule	Although the Vogtle site safety manual required the use of flagmen for backing large trucks, this requirement had not been incorporated into site procedures. A memo has been issued to site personnel to ensure understanding of this policy and site procedures have been revised to incorporate this requirement. The use of flagmen will be added to the next cycle of General Employee Training. Security officer training will be revised to emphasize that officers have authority and responsibility to assist vehicle operators to assure safe vehicle operation. Specifically, security escorts will ensure that ground guides (flagmen) are used when large vehicles are maneuvered inside the protected area. This security training will be completed by 6-1-90.
Completed	Outage Area Coordinators have been instructed to stage welding machines and other materials on the east and west ends of the Turbine Building, whenever possible, to avoid unnecessary equipment and vehicle traffic in the low voltage switchyard.
Completed	Maintenance procedures will be revised to restrict staging of equipment in the low voltage switchyard. The procedures will be revised by 6-15-90.
Completed	Barriers were installed with signs which require authorization from the Unit Shift Supervisor for vehicle access to the low voltage switchyard.
Completed	Sensitive plant areas have been identified and plant procedures have been revised to control vehicle access, hazardous materials and transient combustibles in these areas.
Completed	The suspected switches were replaced and extensive diesel generator testing was performed to ensure operability prior to return to service.
Completed	Investigation of the suspect temperature switches has been performed by an independent testing laboratory and a formal report is expected by 5-18-90. The investigation revealed that the temperature switches are sensitive to calibration techniques and foreign material within the switches.
Completed	Maintenance procedures for temperature switches will be revised by 5-15-90 to include lessons learned from laboratory testing. All jacket water high temperature switches will be cleaned and calibrated using the revised procedure by 5-31-90. Other non-essential trip temperature switches will be cleaned and calibrated by the end of the next refueling outage for the associated unit.

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STATUSVOGTLE ELECTRIC GENERATING PLANT
CORRECTIVE ACTIONS FOR SITE AREA EMERGENCY

Completed	Maintenance procedures for temperature switches will be revised by 5-15-90 to include lessons learned from laboratory testing. All jacket water high temperature switches will be cleaned and calibrated using the revised procedure by 5-31-90. Other non-essential trip temperature switches will be cleaned and calibrated by the end of the next refueling outage for the associated unit.
Completed	Vendor failure analysis of a low lube oil pressure switch is expected to be completed by 6-30-90 and results of this analysis will be used to determine if procedure changes, cleaning or re-calibration is necessary for various pressure trip switches on the DG.
On schedule	The Corporate Maintenance Support Department will review the diesel generator instrumentation. This review will include determining the feasibility of upgrading the existing pneumatic sensors to those of a different manufacturer or replacing portions or all of the entire system with either an electrical or electronic system. Corrective actions or improvements will be made if appropriate. This review, along with an implementation schedule, if required, will be completed by 9-1-90.
On schedule	The Under Voltage (UV) diesel start was changed in both Units 1 and 2 to be similar to a Safety Injection emergency start. This provides a higher degree of reliability for UV bus conditions. A broader review of diesel start and trip logic, to be completed by 7-31-90, will determine the need for any further changes.
On schedule	Instructions on the emergency start and restart features of the DG have been provided to operators at shift briefings and have been incorporated into operating procedures. Additional training will be provided in the normal operator requalification program by 9-15-90.
Completed	A policy detailing guidelines for logging pertinent alarms and indications to assist in evaluation of equipment or system malfunctions has been developed and applicable procedures have been revised.
On schedule	After engine overhauls, functional diesel engine testing will be enhanced to include bubble testing to ensure any air logic system leakage is acceptable.
Completed	Trend program data is being reviewed to ensure DG component failures are adequately included. The data review will be completed by 6-5-90.
Completed	The State of Georgia and Burke County have been added to the backup ENN circuit.

STATUSVOGTLE ELECTRIC GENERATING PLANT
CORRECTIVE ACTIONS FOR SITE AREA EMERGENCY

Completed	The General Manager has issued memos to the plant staff to ensure proper understanding of: 1. Assembly and Accountability procedures 2. ENN Communications procedures
On schedule	Battery backup power will be provided to the primary ENN in the control room by 9-1-90.
Completed	An evaluation will be performed to review and recommend further improvements in notification systems. This evaluation will be completed by 6-1-90
On schedule	A memo to all Emergency Directors (EDs) has been issued explaining the communications duties and responsibilities of EDs. The Manager Operations and the Manager Training and Emergency Preparedness will conduct further training for all EDs to review the role and responsibilities of the ED including lessons learned from this event by 8-1-90.
On schedule	Control room communicators and EDs have been informed by memorandum that there are alternative means of making notifications in the event of a failure of the primary ENN circuit. These alternative means are the backup ENN circuit, now extended to include all agencies, or the ENN in the TSC which has a different power supply. Control room communicators and EDs will receive additional training in the operation of and power supplies for emergency communication equipment by 8-1-90.
Completed	The Emergency Preparedness group will establish a monthly test program to validate Emergency Response Facility (ERF) computer data by 6-15-90.
On schedule	The Corporate ERO will be added to the ENN by 7-15-90 to provide another means of ensuring the transmittal of accurate information to the Corporate Office during emergencies.
Completed	The Corporate ERO will be re-trained in the use of available communication systems to talk with the site by 6-15-90.
Completed	A full-scale assembly and accountability drill will be performed by 6-15-90.
Completed	A full-scale assembly and accountability drill will be included as a periodic emergency plan objective. Procedure 91602-C, "Emergency Drills and Exercises", will be changed by 8-1-90 to reflect this commitment.
On schedule	Changes to Emergency Action Levels (EALs) in the Emergency Plan will be requested from the NRC based on NUMARC's EAL report presently under review by the NRC.

VOGTLE ELECTRIC GENERATING PLANT
CORRECTIVE ACTIONS FOR SITE AREA EMERGENCY

On schedule	<p>The Abnormal Operating Procedure covering loss of Residual Heat Removal (RHR) will be revised by 7-1-90 to include various Reactor Coolant System (RCS) and containment conditions present during either an outage or a Loss of Offsite Power (LOSP) event.</p> <ol style="list-style-type: none">1. A loss of power condition will be specifically addressed in the procedure.2. The time-to-boil curves will be adjusted to address a ≤ 100 degree F starting point for accidents.
Completed	<p>An evaluation will be performed for system lineups and power sources during planning for Unit outages. In addition, we will continue to monitor the industry issue of loss of AC power during shutdown modes and will take appropriate actions in response to regulatory initiatives arising from this issue.</p>
On schedule	<p>A study of alternate means of feeding ESF busses has been performed and is being reviewed by management. Initial review of this study indicates that a viable alternate power source is available by backfeeding using the main power transformer and the Unit Auxiliary Transformers. This review will be completed by 6-15-90. As appropriate, procedures will be revised by 8-31-90. A copy of this report will be available at the site for NRC review.</p>
On schedule	<p>A study of alternate sources of cooling water to mitigate a loss of RHR during reduced RCS inventory operation had been performed and included in site procedures prior to this refueling outage. An additional study of alternate sources of cooling water during a loss of all AC power event while at reduced RCS inventory will be performed by 8-1-90. Any appropriate procedure changes will be implemented prior to the next refueling outage.</p>
Completed	<p>A means of closing the equipment hatch without electrical power will be evaluated by the next refueling outage.</p>
On schedule	<p>Senior Reactor Operators will receive training on reduced inventory boiling and cooling mechanisms during the requalification cycle which will be completed by 9-15-90.</p>

VOGTLE ELECTRIC GENERATING PLANT
CORRECTIVE ACTIONS FOR SITE AREA EMERGENCY

STATUS

Completed	Vendor failure analysis of a low lube oil pressure switch is expected to be completed by 6-30-90 and results of this analysis will be used to determine if procedure changes, cleaning or re-calibration is necessary for various pressure trip switches on the DG.
On schedule	The Corporate Maintenance Support Department will review the diesel generator instrumentation. This review will include determining the feasibility of upgrading the existing pneumatic sensors to those of a different manufacturer or replacing portions or all of the entire system with either an electrical or electronic system. Corrective actions or improvements will be made if appropriate. This review, along with an implementation schedule, if required, will be completed by 9-1-90.
On schedule	The Under Voltage (UV) diesel start was changed in both Units 1 and 2 to be similar to a Safety Injection emergency start. This provides a higher degree of reliability for UV bus conditions. A broader review of diesel start and trip logic, to be completed by 7-31-90, will determine the need for any further changes.
On schedule	Instructions on the emergency start and restart features of the DG have been provided to operators at shift briefings and have been incorporated into operating procedures. Additional training will be provided in the normal operator requalification program by 9-15-90.
Completed	A policy detailing guidelines for logging pertinent alarms and indications to assist in evaluation of equipment or system malfunctions has been developed and applicable procedures have been revised.
On schedule	After engine overhauls, functional diesel engine testing will be enhanced to include bubble testing to ensure any air logic system leakage is acceptable.
Completed	Trend program data is being reviewed to ensure DG component failures are adequately included. The data review will be completed by 6-5-90.
Completed	The State of Georgia and Burke County have been added to the backup ENN circuit.
Completed	The General Manager has issued memos to the plant staff to ensure proper understanding of: 1. Assembly and Accountability procedures 2. ENN Communications procedures
On schedule	Battery backup power will be provided to the primary ENN in the control room by 9-1-90.

VOESTLE SITE AREA EMERGENCY
REGION II
BASE TEAM COMPOSITION

BASE TEAM MANAGER: S. EBSATER
ENS COMMUNICATOR: M. SHYMLOCK
EMERGENCY RESPONSE MANAGER: A. BOLAND
PUBLIC AFFAIRS MANAGER: F. CLARK / S. GAGNER
GOVERNMENT LIAISON MANAGER: R. TROJANOWSKI
SAFEGUARDS MANAGER: D. MCGLIRE
PROTECTIVE MEASURES MANAGER: P. STORR
REACTOR SAFETY MANAGER: L. REYES relieved by A. GIBSON
STATUS BOARD FLOTTER: F. BROCKMAN relieved by A. GOODEN
REACTOR SAFETY TEAM: T. PEEPLES, C. JULIAN, B. WILSON,
F. LANDIS, F. BROCKMAN, M. ERNSTES,
A. HERDT
RESOURCE MANAGER: J. LANFORD
PROTECTIVE MEASURES TEAM: W. GLOERSEN, G. FUZE
STATUS SUMMARY OFFICER: W. RANKIN
EMERGENCY RESPONSE ASSISTANT: C. BANKS, L. STRATTON, C. BARBER

A/2

CHRONOLOGY OF MAJOR EVENTS
VOSTLE - LOSS OF ALL VITAL AC POWER
March 20, 1992

TIME	EVENT
NOTE: ALL TIMES ARE PRESENTED IN EASTERN STANDARD TIME	
0958	HQDD Notified - SAE Vogtle U-1. Loss of Off Site Power; U-2 Both Trains Supplied; One Diesel Operable on U-1
1015	Downgraded to an ALERT
1030	States of GA and SC notified
1040	U-2 R- Coolant Pumps 1 & 3 Running; 2 & 4 Loss
1042	FEMA Notified
1045	EPA Notified
1055	2 Residents and Project Engineer (at Hatch) dispatched to the site; Herb Whitener is currently on site.
1048	DOE Notified
1051	Follow-up with FEMA
1059	Breaker will not close on Reserve B Transformer; Efforts continue to restore off-site power via B Transformer.
1100	HR1 and RHR Cooling Available.
1105	NRC Region II enters Standby mode.
1105	GEMA Notified - Follow-up
1110	1st wave of site team organized - L. Reyes, E. Testa, R. Aiello, L. Trocine, K. Brockman, K. Clark, D. Starkey
1112	Follow-up with FEMA
1114	Follow-up with DOE
1115	Follow-up with EPA
1115	TSC evaluating action to restore power.
1120	HD2 GLO not active
1125	HR1 Pumps are operable; no press release issued by VESP - request by Region to review prior to any release (releases via Corporate Offices in Birmingham)

1142 GPC plans a Press Conference for 2:20 PM in Atlanta and
at the VEGP site (arrive at 4:30 PM)

1142 Efforts underway to reenergize the B 4160 vital bus.

Reyes, Brockman, and Testa departed RII for site (GDA
and Brockman's PDA) - Approximately 180 miles
Site Security advised regarding deployment and ETA of
Site Team

A Train RHR running and two others are available

1200 Efforts are underway to start C RHR off B Reserve
Transformer

1302 A Train Bus paralleled onto U-1; Both pumps running

1307 RII no longer in Standby Mode; Will continue to
monitor.

1315 Informed by GPC that Off-site Power has been restored to
both busses; Both RHR trains are operational and the
plant has been restored to a normal refueling status.

1315 -
1320 Notifications (NRC) to State/Federal authorities
completed.

1347 Emergency terminated.

VOGTLE CRITIQUE ITEMS

FAVORABLE ASPECTS OF RESPONSE

Excellent effort by all personnel responding.
Good communications were exhibited by Team members.
DRMA/travel support was commendable. Team was dispatched quickly with orders, money, etc... Other resources were also on stand-by.
Performance of Status Board plotter was excellent considering not a planned response.

ITEMS FOR IMPROVEMENT

Comment

Declaration of Response modes should be better communicated to staff members.

Should announce Fireside immediately upon receipt of notification.

Did not have message centers for phones.

Headquarters had problems with bridges. (Including Licensee)

Reduce noise in BTM room and other support rooms.

New headset for FNS Communicator.

ERC should reduce number people in center early on.

Post listing primaries and alternates outside IRC so people know whether they should enter.

Resolution

ERC will announce over IRC paging system.

Any individual receiving an Alert or above notification should call Fireside. Regional management will evaluate appropriate response after going to IRC.

Ordered - Received/sent back for different model.

Followup with a HQ Memo stating observed problems.

Address in training. Consider cone of silence for communicators. Will address in reconfiguration of center.

Have ordered two-ear noise reduction set, 3/22/90, with mute capability. Mute attachments also ordered for HPN, PMCL and RSCL Communicators.

Agree. Some was done but not enough. Include in training.

Primaries should know who they are, not necessary.

CommentResolution

IR vehicle not in ready condition.
(gas, cleanliness, operability)

DRMA to track and maintain.
Consider keeping in building
cage or removing lights and
putting in garage.

Prior to departure of Site Team
must have all vehicle information
for access.

Add to Resource Manager
briefing for Team prior to
dispatch, coordinate with SGM.

Regional staff and Resident offices
not involved in the event should be
updated periodically.

Not a priority. Will post
status summaries outside IRC,
but Residents will have to wait.
If Residents to be informed,
projects can do.

Step-by-step instructions for phone
usage.

Simplified Merlin instructions
are easy and better than any
secondary written instructions.

Add soluble markers to location of
boards.

Being done with Velcro plastic
bags.

Need turnover briefing for replacement
personnel.

Agree. Address in training.

Need better availability of licensee
telephone numbers directly to TSC, EOF,
etc...

Agree. Should be incorporated
in IRC Supplement. Do not take
numbers out of site books.
Post in IRC and incorporate into
Plan.

More telephone training (Established
HPN and RSCL on wrong lines).

Will conduct hands-on training
(not lecture) over the next few
weeks. Communicator training in
progress.

PMM phone should have ENS.

Remove ENS from SGM and
give to PMM (limited as to the
number of phones it can be on).

Have A/C in IRC evaluated for
adequacy.

Agree.

Make sure times used are consistent
EST or CST.

ERC announce over PA. Address
in training. Use licensee time.

IRC "busy" calls and console problems.

Rollovers were incorrect. Resolved
3/23 with phone company - Fixed;
Not actually all busy.

CommentResolution

Brief onsite inspectors on role during emergency.

Emphasize in Rad-Con Training.

Why was licensee Emergency Director in CR?

OK by Vogtle procedures, can be either place.

Additional space/organization needed for PMT/bulletin boards

Agree. Working on during review of IRC configuration.

Need copies of data sheets for PMT out of PM Manual.

Will do.

Typing support for Public Affairs

See later comment on IRC support.

Periodically verify status of IRC computers.

We do; however had not yet relocated floppy PC and replaced with Compaq - completed 3/21/90

A small inventory of toiletry items should be added to Site Team kits.

Agree. Will order.

Fireside announcement not audible throughout office.

DRMA having all PA boxes checked. In progress.

Fed/State telephone listing should be updated. (EPA, GEMA numbers incorrect)

Just updated 11/89- will do promptly.

Georgia did not receive initial notification from licensee in timely manner.

IIT concern.

2 Fax machines (one incoming and one outgoing)

Will order.

ENS information was not current. Most current data was obtained through licensee management.

Conduct meeting with licensee's to discuss NRC requirements for response (resources, data, personnel, space)

Need Reactor Safety "Think Tank" to address long-term and what-if determinations.

Will implement. To be located outside the IRC with speaker-phone.

Reactor Safety Team should be better organized to include a Team leader supported by technical specialists.

Will do. Requires update of emergency roster.

CommentResolution

Keep Reactor Safety Status Board up-to-date. Data related to power was current by other system status was not posted (ECCS)

Fill out boards completely. Will incorporate into training.

Add a permanent position of status board plotter.

Will be added.

Declaration of Standby delayed

Regional Management decision based upon briefing by licensee. (transformer operability)

Methodology for assessing consequences from accidents at shutdown (open) units

Write Headquarters for support.

Methods for assessing consequences beyond 24-hours-source term.

Write Headquarters for support.

Reactor Safety Team did not use communications forms for questions to be addressed on the ENS.

Increase training.

Need full time operator for telephone.

Yes. Will incorporate.

Need increased training on E-mail use.

Monthly training recently initiated. If needed, more will be provided. Needs management support to ensure attendance.

Need more Incident Response Support personnel (typing, support to technical teams, telephones, etc...).

Consider adding two more EPAs and another ERC.

LIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-IIT-90-02

This preliminary notification constitutes EARLY notification of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the incident investigation team on this date.

FACILITY: Georgia Power Company
Vogtle Unit 1
Docket No. 50-424
Waynesboro, GA

Licensee Emergency Classification:
____ Notification of Unusual Event
____ Alert
____ Site Area Emergency
____ General Emergency
____ XX Not Applicable

SUBJECT: INCIDENT INVESTIGATION TEAM ARRIVES AT VOGTLE SITE

An Incident Investigation Team (IIT) is at the Vogtle site to investigate the event of March 20, 1990, which resulted in a Site Area Emergency when Unit 1 lost offsite and onsite AC power to both vital busses. An Augmented Inspection Team (AIT) has been at the site since March 22, 1990. However, due to the number of past incidents which have occurred at plants while in shutdown conditions and the potential for regulatory concerns, the agency has decided this most recent event, at Vogtle, warrants the more formal and detailed review of an IIT.

The team is composed of members from AEOD, NRR, Region I, and Region V. Under provisions of a Memorandum of Agreement with the Institute of Nuclear Power Operations (INPO), there is also industry participation on the team.

Currently, Unit 2 is operating at full power; Unit 1 is in Mode 5.

This information is current as of 8:00 a.m., March 26, 1990.

CONTACT: A. Chaffee - 404/554-9901 & W. Lazarus - 404-554-9902

DISTRIBUTION:

One White
Flint North
Chairman Carr
Comm. Roberts
Comm. Rogers
Comm. Curtis
Comm. Remick
OGC
OCA
GPA/SLIIP/PA
EDO
NRR

3S

M'land Nat'l
Bank Bldg
IRM
OIG
AEOD
NRC Ops Ctr

Nicholson Lane
RES

L Street

Regions MAIL TO: DCS (Original IE34)
Region I DOT (Trans. Only)
Region II
Region III FAX TO: INPO
Region IV LICENSEE (Corp)
Region V RII Resident

Phillips Bldg
ACRS

EWB

7202190496

A/3

CHARTER ITEM DESCRIPTION

- o Identify any procedural requirements and/or deficiencies associated with the fuel truck's movement in the protected area.
- o Evaluate the potential for fuel detonation in this scenario.

ACTIVITIES COMPLETED

- o Interviewed driver of fuel truck involved in event.
- o Interviewed security officer who escorted fuel truck driver.
- o Interviewed the two primary supervisors of security regarding access and control of vehicles in the protected area.

A/c

- o Interviewed the licensee's person responsible for root cause related to the fuel truck driver initiating the event.
- o Interviewed licensee's safety advisor OSHA requirements and licensee's policy regarding a ground guide when a vehicle is back up backing up.
- o Obtained drug and alcohol results completed on the fuel truck driver.
- o Obtained OSHA standards related to the truck being in the protected area.
- o Obtained the inventory for the fuel truck at the time of the event.

- o Obtained plant-specific policies concerning site access and control of vehicles and flammables.
- o Requested license to provide calculations relevant to the detonation issue (that is, probability and damage expected).
- o Obtained Vogtle's safety handbook, indicating when a truck driver is required to have a ground guide.
- o Reviewed and obtained copies of the fuel truck driver's and security officer's statements about the event, completed shortly after the event.

PRELIMINARY
SUMMARY OF FINDINGS AND CONCLUSIONS

- Procedures do exist for access and control of trucks and flammables. (specifically, location and movement) Regarding control of vehicles, once they enter the protected area, the procedures are inadequate. No corporate policy exists in this area.
- Various flammables on the fuel truck and the 230 KV wire, the potential for detonation existed.
- Regarding fitness for duty, the results of the alcohol and drug tests completed on the truck driver were negative.

o Based on Vogtle safety standard, the truck driver was required to have a ground guide because (a) he was backing up and (b) his rear vision was not clear.

o It appears that some CSHA standards may have been violated.

o From a human factors perspective, the truck driver was performing his refueling function atypically. Normally, he would back into the refueling ^{area} of the switchyard. Prior to the event, he drove into the subject area.

VUGTLE AIT Charter Item 7.

"Evaluate the performance of the control room operators and other key plant personnel who responded to the event, to include at least RCS heatup and potential containment challenges. Conduct interviews as necessary to ascertain both strengths and weaknesses, on personnel training, adequacy of procedures, management control and communications during the event."

Progress:

3-22-98

Made arrangements to interview the operations personnel that were involved in the event. These included the control room operators and shift supervisor present in the control room, the unit supervisors and shift superintendent, and other shift supervisors who were present because of the ongoing outage work and that took part in the event. We stated our need to speak with licensee personnel (1) who were responsible for maintenance work prior to and during the event and (2) who were responsible for training, particularly in loss of power and loss of RHR events.

Inspected the switchyard location where the fuel truck collided with the power line support. Inspected the unit 1 "A" diesel generator room.

3-98

Inspected the control room and instrumentation used during the event.

Conducted interviews of the following licensee personnel:

D.R. Vineyard	-	SS outage support
P.A. Humphrey	-	BOP control room operator
L.P. Nannier	-	Reactor operator
R.B. Snider	-	Unit shift supervisor
K.A. Johns	-	Extra CRD (CR/DG communications)
J.W. Acree	-	Shift supe: or (outage support)
E.K. Pope	-	" " " "
D. DeLoach	-	Plant equipment operator (diesel generator)
S. Whitman	-	" " " "
J.P. Cash	-	Operations superintendent/TSC
W.L. Burmeister	-	" " "
J.D. Hopkins	-	Senior SRD (shift superintendent)

Inspected the unit 1 "A" diesel generator room with the two PED's that have been interviewed.

A/S.



1967 1004 1901

DELIVER TO:

Ken Brockman

DELIVER BY:

--- COS
WITHIN 2 HRS.
☒ IMMEDIATELY
NOT FOR PRINCIPAL OFFICE

SUBJECT:

Equipment Maintenance

A/c

222

UNIT COMMON



Georgia Power

[illegible]

OPENING AND CLOSING CONTAINMENT PROCEDURES: BENCH

171 SET

REV.
0
1

REASONS FOR REVISION

New Procedures
Pre-Order Steps and Pre-Loc Work
Information.

B. Annual review to incorporate
OSMA & I new cover sheet, and
revised notes and cautions

761
03/29/85
12:57:50

4.2.4 Visually check gaskets for defects. Replace as
/ necessary.

4.2.5 Clean, check, and lubricate (never-sees) swing bolt
/ threads.

4.3 CLOSING OF DOOR

CAUTION

The shear/guide lugs may damage the machined gasket sealing surfaces and the removable cover may damage the gaskets.

4.3.1 Carefully lower the cover from the stored position to the opening and align it with the barrel flange. The shear/guide lugs are provided to assist in alignment and final positioning.

4.3.2 Select four (4) eyebolts located equal distances apart, swing these eyebolts into the bolt chairs making sure the spherical washers are inserted between the nut and bolt chair.

4.3.3 Tighten the nuts on the four eyebolts until the gasket
/ sealing surface on the removable cover contacts the gasket.

4.3.4 Swing the remaining eyebolts into their respective bolt chairs, make sure the spherical washers are inserted between the nut and the bolt chair.

4.3.5 Run all nuts down finger tight.

CAUTION

Over tightening nuts more than required for ordinary manual wrenching methods may cause damage.

4.3.6 Tighten all nuts in sequence shown (Figure 1). Repeat sequence until hatch sealing surface makes metal to metal contact with the barrel flange.

4.3.7 Verify double seal is pressure tested.
/

4.3.8 Notify Shift Supervisor that required maintenance is
/ complete.

PROCEDURE NO. VEGP	27505-C	REVISION 2	PAGE NO. 5 of 8
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5.0 ACCEPTANCE CRITERIA

- 5.1 Maintenance performed using this procedure is acceptable when:
- 5.1.1 The "Completion" Sheet is properly filled out.
- 5.1.2 Deviations from the Procedure data and recommended settings have been reviewed on a case-by-case basis with the Maintenance Foreman.
- 5.1.3 Deviations have been identified in the "Comments" section of the "Completion" Sheet.
- 5.1.4 The "Completion" Sheet has been approved.
- 5.1.5 Maintenance Work Orders have been written and submitted for conditions evaluated as needing attention.

6.0 REFERENCES

- 6.1 AX2AG07-38 "Absolute Pressure Test Procedure Double Seal Interspaces"
- 6.2 AX2AG07-210 "Equipment Hatch Operation and Maintenance Manual".

6.3 PROCEDURES

- 6.3.1 25250-C, "General Rigging And Lifting"
- 6.3.2 20427-C, "Maintenance Cleanliness And Housekeeping Control"

END OF PROCEDURE TEXT

COMPLETION SHEET

Procedure No.	Revision	Page
27505-C	2	1 of 2
Tag No.	Description	
	CONTAINMENT EQUIPMENT HATCH DOOR	
Serial No.	Manufacturer	Model
	CHICAGO BRIDGE AND IRON	
Test Equipment Used	M&TE	<input type="checkbox"/> Safety Related QC hold points <input type="checkbox"/> Non-safety Related

<u>PROCEDURE STEP</u>	<u>DESCRIPTION</u>	<u>MAINT. INIT/DATE</u>	<u>HOLD POINT (Yes/No)</u>	<u>QC INIT/DATE</u>
4.1.1	Verify all prerequisites met	<u> / </u>	<u> </u>	<u> / </u>
4.1.2	Notify Shift Supervisor	<u> / </u>	<u> </u>	<u> / </u>
4.2.1	Check sealing surfaces	<u> / </u>	<u> </u>	<u> / </u>
4.2.2	Check threads of nuts and bolts	<u> / </u>	<u> </u>	<u> / </u>
4.2.3	Check mating surfaces	<u> / </u>	<u> </u>	<u> / </u>
4.2.4	Check gaskets	<u> / </u>	<u> </u>	<u> / </u>
4.2.5	Check bolts	<u> / </u>	<u> </u>	<u> / </u>
4.3.3	Tightening Sequence	<u> / </u>	<u> </u>	<u> / </u>
4.3.7	Pressure Test	<u> / </u>	<u> </u>	<u> / </u>
4.3.8	Notify Shift Supervisor	<u> / </u>	<u> </u>	<u> / </u>

PROCESS NO.
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REVISION

2

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Sheet 2 of 2

Comments/additional hold points: _____

QC has reviewed this procedure for hold points _____

Signature

APPROVED ()	DISAPPROVED ()
FORLMAN	DATE

COMPLETED BY	DATE

WORKSHEET FOR TECHNICAL SPECIFICATIONS
AND OTHER REGULATORY REQUIREMENTS

(Contents: 9.0, 10.8, App. H.)

(9.1) While TSs for power operations at nuclear power plants have been supported by extensive safety analyses, TSs for nonpower operation were primarily based on engineering judgement, but on limited safety analyses. Of primary concern are operations involving reduced RCS inventory. Specifically, there are essentially no safety analyses to support equipment configurations (e.g., reduced RCS inventory, open RB, systems needed to supply make-up water) encountered when operating with reduced coolant inventory.

(9.1) Loss of RHRS events have occurred that were more severe than the March 20, 1990 event at Vogtle. Several of them involved the boiling of RCS coolant, with the plants having a limited capability for alternate core cooling and having an open RB. Such events may require a quick response to avoid or mitigate severe consequences. Situations encountered during reduced inventory operation are not bounded by postulated events during power operation because the conditions at reduced inventory, particularly with the water level at mid-loop, are unique and involve both phenomena and plant configurations that are not encountered during power operation.

(9.1) Plant personnel must perform extensive inspections, as well as maintenance resulting from the inspections, during outages to comply with TS surveillance requirements. Meeting these TS requirements requires that equipment be out of service during an outage and often extends the outage. Such TS requirements at Vogtle include inservice, SO, and EDO inspections.

(9.1) It appears that the general design criteria, particularly the single-failure criterion, have not been generally applied to operation in cold shutdown and refueling modes.

(9.2.1) Vogtle TSs require that the RCS coolant level must be above fuel and control rods that are being moved. The only TS restriction on RCS water level is based on fuel movement.

(9.2.2) In Modes 1, 2, 3, and 4, TSs require two sources of water (boric acid storage tank and RWST) be operable. In Modes 5 and 6, only one is required. In addition, the allowable levels in these tanks are substantially lower in Modes 5 and 6 than in Modes 1, 2, 3, and 4.

(9.2.2) At Vogtle, it is possible to add water to the RCS using gravity fill from the RWST if it contains a sufficient volume. Gravity fill is not possible using the boric acid storage tank because it is at a lower elevation. This capability may be needed if additional water is required and electrical power is lost. The Vogtle TSs do not distinguish between these water sources.

(9.2.2) Only one train of charging is required in Modes 5 and 6, while both trains are required in Modes 1, 2, 3, and 4.

11/7

(9.2.2) In Modes 4, 5, and 6 with the head on the RV, all the SI pumps are required to have their pump motor circuit breakers racked out to protect against overpressurizing the RV while the RCS is at low temperatures. However, doing so partially eliminates one additional source of RCS water. If the rest of the SI system is operable, which TSs do not require, the system could be returned to service within 5 to 10 minutes, a period probably adequate to compensate for a loss of the RHRs.

(9.2.2) The capability to add water from the sources and paths required in Modes 5 and 6 is less than that required in Modes 1, 2, 3, and 4. In addition, TSs do not recognize the unique conditions that exist during reduced inventory operations. The TS requirements for coolant makeup sources do not differentiate between Mode 5 and 6 with the RCS filled, and Mode 5 and 6 with reduced inventory.

(9.2.3) The TS prohibition against moving fuel for 100 hours after shutdown places no restriction on reducing the RCS water inventory immediately after shutdown. Vogtle has no TS restrictions regarding permissible activities (e.g., reducing RCS inventory) based on the amount of core decay heat.

(9.2.4) The TSs for RCS cooling differ between Modes 5 and 6 and within Modes 5 and 6. The difference is based on the RCS water level. For Mode 5 conditions with the RCS loops filled (at Vogtle this means water filling the SG tubes), one RHR is required to be operable together with either the other RHR or the secondary side of two SGs, which must be at least 17 percent full, as measured on wide-range indication. Vogtle has no TS requirement to have water on the secondary side of RHR during reduced inventory operation. When the RCS loops are not filled, both RHRs are required to be operable and one is required to be in operation. No minimum RHR flow rate capability is specified for Mode 5.

(9.2.4) In Mode 6, with the water level at 23 feet above the vessel flange, only one RHR is required to be operable with a minimum flow rate of 3000 gpm. When the RCS water level is lower than 23 feet above the vessel flange, both RHRs must be operable and one must be in operation with a minimum flow rate of 3000 gpm. This flow rate is not always required to maintain RCS temperature. The potential for RHR pump air binding and the subsequent loss of RHR capability is increased by operations at higher than required RHR flow rates. The action statements for loss of RHR capability require closure of the RB within 4 hours. Vogtle determined that RB closure was necessary in about 1 hr for the worst case scenario.

(9.2.4) The TS requirement to have a 3000-gpm flow rate for RCS cooling may contribute to RHR pump cavitation. A comprehensive evaluation should be performed to determine if the benefit of the 3000-gpm minimum RHR flow rate to preclude boron dilution is reasonable in light of the additional risk of cavitation of RHR pumps and the consequent loss of shutdown cooling. There appears to be little basis for a flow rate prescribed for Mode 6 when one is not prescribed in Mode 5.

(9.2.4) TSs for the RHRs are the only ones applicable to nonpower operation where a distinction is made within a mode (e.g., RCS level above or below 23 feet above vessel flange).

(9.2.5) TSs do not require RB integrity in Modes 5 and 6 unless core alterations or fuel movement is in progress. The TSs do not require RB integrity during reduced inventory or reduced electrical source situations.

(9.2.5) The safety analysis for a fuel movement incident assumes a maximum release of the fuel-pin gap activity from two fuel assemblies. The consequences of a fuel handling incident are significantly less than those that could occur if shutdown cooling were lost and not recovered. The TSs for fuel movement are inconsistent with those for reduced inventory operations.

(9.2.6) TSs effectively require one-half of the electrical sources and trains of electrical equipment to be in service during Modes 5 and 6 compared with those required during Modes 1, 2, 3, and 4. In fact, were it not for TS 3.9.8.2, which requires that both RHRs be operable in Mode 6 when water level is less than 23 feet above the vessel flange, safety bus B also could have been removed from service (along with the BEDG). TS electrical distribution requirements do not differentiate between the various configurations within Modes 5 and 6 (e.g., RCS level or RB integrity).

(9.2.6) One TS circumstance affecting the situation at Vogtle on March 20, 1990, merits special note. While the 1B RAT could have been returned to service earlier than was the case, it was not returned to service because that action would have required taking the B safety bus out of service while the B RAT was returned to service. This switch would have required voluntary entry into a TS action statement because one RHR would have been out of service while the bus was deenergized. Vogtle's evaluation of the situation resulted in the decision to not return the B RAT to service. This was because the plant staff believed that the configuration with both RHRs powered from the A RAT was more prudent than the action of taking one train out of service and returning the B RAT to service. Thus, an existing TS contributed to inhibiting a potential prudent action.

(9.2.6) With the single exception of the requirement that two RHRs be operable in Mode 6 when the water level is less than 23 feet above the vessel flange, the Vogtle TSs do not consider special situations (e.g., reduced RCS water inventory, the RCS integrity, or the RB being open). In addition, the interrelationships of safety systems (electrical distribution, RB, and RHRs), together with RCS inventory and decay heat level, are not considered in TSs. Additionally, within the Vogtle TSs, inconsistencies apparently exist.

(9.2.6) At Vogtle, the plant outage planning staff relied upon a combination of the TSs and their experience and judgment to designate the equipment that should be available during the outage. However, during reduced inventory operations, absent other restrictions, TSs for nonpower operations would not ensure prudent equipment availability. In addition, the Vogtle staff places a high reliance on its TSs by commonly referencing TSs in both procedures and training.

(9.2.6) TSs for nonpower operations and, in particular, for reduced water inventory operation, have been developed with little consideration of their analytical or safety basis. TS requirements for Modes 5 and 6 may be adequate for many nonpower situations. However, there are special situations, such as operation at reduced inventory, where greater protection may be warranted.

(9.2.6) The imposition of additional TS requirements is not necessarily the appropriate method for decreasing vulnerabilities during nonpower operations. The diverse situations encountered during such operations would be difficult to fully control solely using TSs. Flexibility is needed during an outage because of the required surveillance and maintenance activities on various systems and components. During an outage, vulnerability and risk should be managed by considering core decay heat level, RCS inventory, RCS integrity, electrical distribution (including EDGs), and RB integrity.

(9.3) The Blackout Rule, 10 CFR 50.63, is intended to achieve an acceptable level of plant susceptibility to blackout. The blackout rule does not consider shutdown conditions. The Vogtle event and other similar events would not have been affected by implementation activities associated with the blackout rule. Thus, the blackout rule should not be assumed to preclude the Vogtle event or similar events occurring during nonpower operation. The rule does not address the matter of how many sources can be removed from service for either at-power or shutdown operations. It would appear that TSs would be a logical link between the process required by 10 CFR 50.63 to achieve the required level of susceptibility and the allowable configurations during shutdown.

(10.8.1) TSs which control nonpower operations, especially reduced inventory operation, have been developed with little analysis or safety consideration. Situations encountered during power operation do not bound situations that could occur during reduced inventory operation. Generally, single-failure criteria have not been applied to shutdown and operations.

(10.8.2) In general, the interrelationships of important systems are not considered in TSs. With the exception of the RHRSs, TS allowable conditions for systems (electrical sources and distribution, the RB) do not recognize vulnerabilities allowed by the status of other systems, or those created by RCS integrity, RCS water inventory, or decay heat generation rate conditions. TS limiting conditions for operation do not preclude increases in vulnerability during certain phases of nonpower operations.

(10.8.3) TSs do not require RB integrity during cold shutdown and refueling operations unless core alterations are in progress. They do not require RB integrity during reduced inventory or with reduced electrical sources.

(10.8.4) TSs effectively require only one-half of the electrical sources and trains of electrical equipment to be in service during Modes 5 and 6 compared with those required during Modes 1, 2, 3, and 4. They do not require additional electrical sources during reduced inventory operation.

(10.8.5) The capability to add water to the RCS is reduced in Modes 5 and 6 relative to Modes 1, 2, 3, and 4. TSs do not recognize increased vulnerabilities and the possible increased need to add water during reduced inventory operation.

(10.8.6) TSs do not impose a required shutdown period or other limit (decay heat level) before reduced inventory operations may be conducted.

(10.8.7) Requirements for RHRs operability and flow rate vary based on RCS water level and mode. These are the only nonpower TSs which vary within mode. However, they may increase the potential for RHR pump cavitation by requiring a minimum RHR pump flow rate which may be unnecessarily high.

(H1.3) LCD 3.5.3.2 in Modes 4, 5 and 6 with the head on requires that all SI pumps be inoperable. The requirement to rack out the pump motor circuit breakers would delay use of these pumps for water addition to the RCS for 5 to 10 minutes.

(H2) LCD 3.9.3 requires that fuel not be moved until the reactor has been subcritical for 100 hours. It does not specify a time limit before operation at reduced inventory.

(H2) LCD 3.4.1.4.2 in Mode 5 with the RCS loops not filled requires that two RHRs be operable and that one RHR be in operation. This TS does not impose a lower limit on RHR flow as does the TS for Mode 6.

(H2) LCD 3.9.8.1 in Mode 6 with water level 23 ft or more above the vessel flange requires that one RHR be operable and in operation with an RHR flow of 3000 gpm or greater. If not, then RB must be closed within 4 hours.

(H2) LCD 3.9.8.2 in Mode 6 with the RCS water level less than 23 ft above the vessel flange requires both RHRs be operable with one providing a flow of greater than or equal to 3000 gpm. The action statement requires increasing water level and (if no RHRs) closing the RB within 4 hours.

(H3) LCDs 3.6.1.1, 3.6.1.5, 3.6.1.7, 3.6.2.1, 3.6.2.3, 3.6.3, 3.6.4.1, and 3.6.4.2 indicate that the following RB-related components are not required in Modes 5 and 6 with a few exceptions during fuel movement or core alterations: primary RB integrity, upper limit on RB temperature, operability of the RB purge and exhaust isolation valve, RB spray system, RB cooling fans, RB isolation valves, RB hydrogen monitors, and hydrogen recombiner systems.

(H4) LCD 3.8.1.1 in Modes 1, 2, 3, and 4, requires (1) two physically independent circuits between the offsite transmission grid and the onsite safety electrical distribution system and (2) that both EDGs be operable.

(H4) LCD 3.8.1.2 in Modes 5 and 6, requires (1) only one circuit between the offsite transmission grid and the onsite safety electrical distribution system and (2) only one EDG be operable. The action statement requires suspension of core alterations, positive reactivity changes, and movement of irradiated fuel or crane operation over fuel. If operating with loops not filled or with the water level less than 23 feet above the top of the vessel flange, corrective action to restore electrical sources must be undertaken. Low temperature overpressure protection of TS 3.4.9.3 is provided.

(H4) LCD 3.8.3.1 in Modes 1, 2, 3, and 4, requires that both trains of the 4160-volt safety buses, both trains of the 120-volt instrument buses, and both trains of dc supplies be operable.

(H4) LCD 3.8.3.2 in Modes 5 and 6, requires that only one train of each of the safety electrical systems in LCD 3.8.3.1 be operable. The action statement requires suspension of core alterations, positive reactivity changes, or movement of irradiated fuel and initiation of corrective action to restore electrical power. Low temperature overpressure protection of TS 3.4.9.3 is required to be provided.

(H4) LCD 3.8.2.1 in Modes 1, 2, 3, and 4, requires that four dc electrical sources be operable.

(H4) LCD 3.8.2.2 in Modes 5 and 6, requires that only two of four battery banks be operable. The action statement requires suspension of core alterations, positive reactivity changes, or movement of irradiated fuel and initiation of corrective action to restore electrical power. Low temperature overpressure protection of TS 3.4.9.3 is required to be provided.

(H5) LCD 3.1.1.2 requires that the shutdown margin for Modes 3, 4, and 5 must be greater than or equal to specific values.

(H5) LCD 3.9.1 in Mode 6 requires that the RCS must meet the more restrictive of k_{eff} of 0.95 or less, or boron concentration of 2000 ppm or greater.

(H5) LCD 3.4.2.2 in Modes 1, 2, and 3 requires that all pressurizer code safety valves be operable.

(H5) LCD 3.4.2.1 in Modes 4 and 5 requires that one pressurizer code safety valve be operable.

(H5) LCD 3.4.4 in Modes 4, 5, and 6 indicates that the pressurizer power operated relief valves (PORVs) need not be operable.

(H5) LCD 3.4.9.3 in Modes 4, 5, and 6 with the vessel head on requires that low temperature overpressure protection systems be in place. (PORVs, RHRS suction relief valves, or RCS depressurized with vent.)

(H5) LCD 3.4.11 in Modes 5 and 6 indicates that the head vent system is not required.

(H5) LCD 3.3.3.5.1 in Modes 4, 5, and 6 does not require that the remote shutdown system be operable.

(H5) LCD 3.9.2 in Mode 6 requires that two source range neutron flux monitors be operable.

(H5) LCD 3.1.3.3 requires that one digital rod position system be operable in Modes 3, 4, and 5 when the reactor trip breakers are closed.

(H5) LCD 3.3.1 requires that the following trip systems be in service during nonpower operations when rods are capable of being withdrawn: source range neutron flux trip, trip breakers, and bypass trip breakers.

5.1.1 Activities Involving the EDG

PAGE 5-1

What is the licensee doing to change the philosophy to automatically acknowledge and reset spurious and nuisance alarms before identifying the cause of the alarm?

5.1.1 Activities Involving the EDG

PAGE 5-1

The operators have a tendency to clear the alarm conditions prior to recording what alarms occurred.

What is the licensee doing to change this philosophy?

5.1.2 Design of Annunciator Panel & Controls

PAGE 5-5

Several factors prevented the operators from identifying the cause of the EDG trip:

- Operators reacted too quickly to the annunciators resulting in failure to identify what tripped the EDG
- Operators were not aware of the "first out" feature

* continued *

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5.1.2 Design of Annunciator Panel & Controls

PAGE 5-5

- Numerous nuisance alarms accompanied each trip.
- Tests concluded that the "first out" feature did not work as intended

* continued *

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5.1.2 Design of Annunciator Panel & Controls

PAGE 5-5

- The visual design of the panels did not help operators to rapidly identify the cause of the trip
- Other equipment, design and procedure deficiencies were identified

Investigate licensee corrective actions.

5.1.3 Analysis

5.1.3.2 First Out Feature

PAGE 5-6

The "first out" feature is intended to identify the condition that first shut down the diesel. However, there are problems in the design of the feature including the flash rate and the low pressure jacket water alarm.

* continued *

* continued *

5.1.3.2 First Out Feature

PAGE 5-6

All 46 remaining alarms that are not part of the "first out" group of 12 flashed at the same fast rate. Therefore the "first out" alarm can be masked.

Investigate licensee corrective actions.

5.1.3.3 Nuisance Alarms

PAGE 5-9

Verify that operators are being trained and that lesson plans are covering "first out" features.

5.1.3.4 Visual Design Does Not Help to Identify Causes of Trips

PAGE 5-9

All the EDG annunciator alarms in the control room, including the trip alarms, flash white (except for one that flashes red and another that flashes amber) rather than flashing red. Most local trip alarms flash red, except one which flashes white (which was an as-built error identified by the team).

* continued *

* continued *

5.1.3.4 Visual Design Does Not Help to Identify Causes of Trips

A printout of trip alarms does not exist to aid the operator to identify trips either locally or in the control room.

Investigate licensee corrective action?

5.2 RCS and CB Boundary Protection

PAGE 5-11

Several problems were encountered regarding the handling of incidents occurring during shutdown operations. They include the transition from a normal to an emergency organizational structure, communications, procedures and training.

Investigate licensee corrective actions.

5.2.1 Equipment Hatch Closure Issues

PAGE 5-13

Although safety power was lost during the incident, non safety power was available for polar crane operation. Loss of non safety power would have required manual rigging that would have taken several hours to close the equipment hatch, according to an estimate by the Vogtle staff. Doubts were raised about whether Vogtle's Procedure 27505-C, "Opening and Closing Containment Equipment Hatch" would ensure that the specified time would be met for the worst-case conditions.

* continued *

* continued *

5.2.1 Equipment Hatch Closure Issues

PAGE 5-13

The inspector forwarded to the GM a suggestion (presented from a rigging mechanic) on how to mechanically close the equipment hatch upon loss of all AC power.

What are the licensee's intentions?

5.2.3 Analysis

PAGE 5-14

As a result of poor communications, an unintended action, closure of the PZR manway, and several delays occurred. Furthermore, the ED in the TSC became aware that the PZR manway was shut and subsequently ordered it open. He later decided to leave it shut.

What is the licensee doing to resolve this confusion?

5.3.2 Administrative Control Problems

PAGE 5-18

The following items were identified as important contributors to the incident:

- No special qualifications and training were required or provided for driving the truck on site (in contrast w\ GA State reqmts for a class 4 license)
- The individual or Vogtle organization responsible for providing a ground guide person was undefined by Vogtle policy and procedure.

* continued *

* continued *

5.3.2 Administrative Control Problems

PAGE 5-18

- Any needed restrictions on access and/or movement of the truck in the switchyard were not covered by procedure.
- The truck had a blind spot that extended to over 200 feet behind it.
- The security officer had no assigned responsibility to ensure that adequate measures were taken to prevent truck damage to the plant.

Investigate the status of the licensee's corrective actions?

5.4.1 Sequencer Operation

PAGE 5-19

During the IITs review of sequencer operations, some procedural and training problems were revealed. Included were the availability of procedures, labeling of panels and the understanding of equipment operations.

The sequencer procedure was neither available nor used by the operator who reset the sequencer during the incident.

* continued *

* continued *

5.4.1 Sequencer Operation

PAGE 5-19

The procedure should be available at the local sequencer panel for all operators. Furthermore, trips to the control room to obtain procedures may cause unnecessary delays.

What action is the licensee taking to address these concerns?

5.5.1.2 Procedures for Mid-Loop Operations and Loss of RHR

PAGE 5-20

The IIT identified that there were no procedures for closing the CB equipment hatch under emergency conditions even though the licensee took actions and were successful.

Determine if procedures have been generated.

5.5.1.3 EDG Operating Procedures

PAGE 5-21

Determine if procedure 13145 has been revised such that it describes steps to be taken if the EDG trips (including steps to be taken to diagnose the problem), data to be examined and recorded, and conditions for initiating an emergency start or an emergency reset. Furthermore, it did not stress the importance of the "first alert" feature in identifying problems.

5.5.2.1 Training to Restore Power to the Emergency Buses

PAGE 5-21

Determine if training has a program in place to fully prepare personnel to deal with problems such as identification of the causes of EDG trips, operation of the sequencer when lockout occurs, etc.

5.5.2.2 Training for Coping with Loss of the RHRS

PAGE 5-22

In evaluating the plant staff's ability to cope with a loss of the RHRS and recognizing that analysis in this area is incomplete, the following areas of concern were identified:

* continued *

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5.5.2.2 Training for Coping with Loss of the RHRS

PAGE 5-22

Personnel generally understood the need for venting to prevent pressure buildup in the reactor coolant system and some of the implications of inadequate venting. However, they frequently did not have an understanding of details, such as possible steam generation rates during boiling and the venting capacities that would be required.

* continued *

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5.5.2.2 Training for Coping with Loss of the RHRS

PAGE 5-22

Most personnel understood that boiling could affect gravity feed, but they did not have a complete understanding of RCS behavior following initiation of boiling and such concepts as effective use of steam generators in a reflux boiling mode.

* continued *

* continued *

5.5.2.2 Training for Coping with Loss of the RHRS

PAGE 5-22

Most personnel did not understand the implications of releasing steam from the RCS and its potential impact upon personnel inside the containment building.

Page

- 6-1 Vogtle could have more thoroughly implemented the guidance provided and have prevented the incident. More focused guidance could have been provided to the industry.
- 6-1 Guidance that focused on controlling activities in the switchyard through the use of signs restricting access and periodic inspections for hazards was not adequately implemented by Vogtle.
- 6-2 The guidance that required both residual heat removal systems to be maintained operational during mid-loop operations discussed support system operability. The evaluation by Vogtle neglected the electrical support systems for residual heat removal, and the industry guidance did not discuss any of the events where residual heat removal was lost because some electrical support system had been removed from service.
- 6-2 During the 7 months after the industry was informed of Calcon sensor problems and requested to implement a surveillance plan to detect sensor problems, Vogtle experienced 29 sensor failures and took little action to determine the root cause, review past experience, or track additional failures.
- 6-4 In evaluating O&MR 272 Vogtle did not consider installing caution tags in the vicinity of the switchyard.
- 6-4 In evaluating INPO SER 17-88, Vogtle personnel focussed on periodic inspections of employee work areas and did not consider inspections of other areas around the plant during outages for developing hazards or improper work practices, such as locating outage support equipment in a hazardous area such as the switchyard.

Page

- 6-1 Vogtle could have more thoroughly implemented the guidance provided and have prevented the incident. More focused guidance could have been provided to the industry.
- 6-1 Guidance that focused on controlling activities in the switchyard through the use of signs restricting access and periodic inspections for hazards was not adequately implemented by Vogtle.
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- 6-4 In evaluating O&MR 272 Vogtle did not consider installing caution tags in the vicinity of the switchyard.
- 6-4 In evaluating INPO SER 17-88, Vogtle personnel focussed on periodic inspections of employee work areas and did not consider inspections of other areas around the plant during outages for developing hazards or improper work practices, such as locating outage support equipment in a hazardous area such as the switchyard.
- 6-6 Based on similar events at other plants, guidance on the importance of not simultaneously removing multiple electrical power sources from services during shutdown was not communicated to the industry.
- 6-8 In addition to the evaluation of scheduling and performing surveillance tests during shutdown and reduced inventory, Vogtle did not address the scheduling and performance of infrequently performed maintenance in their assessment of INPO SER 5-89.
- 6-8 In retrospect, the guidance provided in NRC Information Notice 80-20 and NRC Bulletin 80-12 could have prevented the Vogtle incident, had Vogtle assessed it differently. May be inadequate.
- 6-10 Vogtle evaluation of NRC Bulletin 80-12 may have been inadequate. The plant determined no action was necessary.
- 6-10 Vogtle response to INPO SOER 85-4 may have been inadequate. Their evaluation did not address scheduled maintenance and the removal of the RHR system. Compliance with the TS was considered to ensure sufficient availability of RHR capability.

- 6-6 Based on similar events at other plants, guidance on the importance of not simultaneously removing multiple electrical power sources from services during shutdown was not communicated to the industry.
- 6-8 In addition to the evaluation of scheduling and performing surveillance tests during shutdown and reduced inventory, Vogtle did not address the scheduling and performance of infrequently performed maintenance in their assessment of INPO SER 5-89.
- 6-8 In retrospect, the guidance provided in NRC Information Notice 80-20 and NRC Bulletin 80-12 could have prevented the Vogtle incident, had Vogtle assessed it differently. May be inadequate.
- 6-10 Vogtle evaluation of NRC Bulletin 80-12 may have been inadequate. The plant determined no action was necessary.
- 6-10 Vogtle response to INPO SOER 85-4 may have been inadequate. Their evaluation did not address scheduled maintenance and the removal of the RHR system. Compliance with the TS was considered to ensure sufficient availability of RHR capability.
- 6-11 Vogtle response to Generic Letter 88-17, "Loss of Decay Heat Removal" was inadequate. Electrical power for RHR was not mentioned in the Vogtle response.
- 6-13 Vogtle response to guidance from Calcon was inadequate. Vogtle determined that the problem was only related to the reliability of spare parts. The recommendation to implement a surveillance plan for the sensors was not evaluated.

- 6-14 Vogtle evaluation of NRC Bulletin 83-51, "Diesel Generator Events" was inadequate. Plant personnel took no action because the problems outlined in the bulletin were addressed in an owners group study. The development of a maintenance and inspection program to develop trends for failures was not evaluated.
- 6-14 INPO O&MR "Diesel Generator Starting Air System Dryers" was not evaluated by plant personnel.
- 6-15 INPO SOER 83-6 may have not been addressed adequately. Pre-existing alarm conditions on the EDG do not cause an alarm prior to startup
- 6-17 As a result of implementing NRC and INPO documents Vogtle personnel were prepared to prevent the loss of the RHR system caused by pump cavitation; however, they were not fully prepared to cope with alternate core cooling methods if the RHR system could not be restored.
- 6-18 Vogtle had not assimilated operating experience documents from the nuclear industry into the operating standards for the plant.
- 8-1 Evaluate alternate methods of core cooling and how to cope with phenomena which may occur until power can be restored.
- 8-5 Plant thermodynamic behavior involving boiling during a shutdown is not well understood.
- 8-19 Training is needed on plant thermodynamic behavior involving boiling during a shutdown.
- 8-8 Alternate method of RCS cooling-Low, Pressure Feed and Bleed Cooling - Allowing water to drain from the RWST into the RCS. (procedure, training?)
- 8-9 Low Pressure Feed, High Pressure Bleed Cooling (gravity feed from RWST with pressurizer manway closed) (procedures, training)

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- 8-10 and 8-19 Some mid-loop level instrumentation may provide ambiguous indications because it will not indicate actual reactor vessel water level under many conditions.
- 8-11 The potential reactor coolant system pressure, temperature, and level behavior at Vogtle are not fully analyzed nor are they well understood during a loss of RHR.
- 8-12 and Procedures emphasize RHR system restoration, with some guidance provided for alternate cooling if electrical power is available. Losses where

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guidance was provided except to restore
level above "mid-loop".

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procedure is not clear.

8-12 Procedures to cope with loss of the RHR
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and with the conditions that may occur.
8-19

8-14 The actual time the PDP can be operated
without cooling has not been determined.

8-16 Failure of the temporary thimble tube
seals because of overpressurization
and could open a break that is effectively
in the bottom
8-19 of the reactor vessel.

8-16 Closure of the containment building on
loss of RHR before containment
building environmental conditions
prevent its closure is of significant
safety importance. (High temp
environment, polar crane high
in containment, high velocity steam from
pressure manway, dense fog).

8-17 Containment building closure criteria
and time requirements may not be fully
evaluated, and procedures to accomplish
this in the required time have
8-19 not been tested.

8-17 The plant staff didn't have information
concerning vent needs for operating in a
once-through cooling mode with either a
single phase or with boiling.

8-17 The plant staff did not have information
concerning flow-rates to prevent boiling
or to prevent the core from becoming
uncovered.

8-17 The plant staff did not have information
concerning gravity flow rates possible
for the typical flow paths.

8-17 The plant staff did not have information
concerning the potential for bypassing
the core by using cold leg drain paths
during once-through cooling, and the
implications of draining water from the
RCS.

8-17 The plant staff did not have information
concerning the effective vent size of
common RCS penetrations, such as
conoseals and reactor head vents, and
the implications of whether they are
open or closed.

8-17 The plant staff did not have information
concerning the potential impact on vent
capability of plastic covers or plywood
over vent openings.

8-17 The closure of the RCS was not addressed
in Vogtle's procedures, nor has it
been discussed in industry and NRC
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NUREG 1410

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- Item 1. Background material from licensee ~ 90% complete. Not reviewed for adequacy. I will be asking licensee for additional details. This is to be determined.
- Item 7. Interviews ~ 12 people formally, + ~ 6 during walk-thru activities.
 - Actual event was not a significant risk of core melt or release. Preliminary estimate - 1 to 2 days with little operator action and no AC power restoration → No fuel damage. Need further study to confirm. Options existed to provide more time.
 - Potential problems exist had several conditions been different.
 - Procedures strengths and weaknesses have been identified - evaluation continuing. Generic implications.
 - Understanding - same as procedures.
 - Containment walk-thru, control room walk-thru on mid-loop instrumentation and containment/RCS closure activities completed.

24 MAR 90 - 1000 Hrs

THE LICENSEE IS MAINTAINING THE FOLLOWING
ITEMS QUARANTINED

- 1) MID LOOP INSTRUMENTATION STILL CONNECTED
- 2) PERMS
- 3) MET TOWER (TO INCLUDE DATA TRANSMISSION CAPABILITY)
- 4) POL TRUCK (AVAILABLE TO USE FOR NORMAL ROUNDS)
- 5) ENN (Notification Procedures excluded)
- 6) 230 KV BROKEN INSULATOR (1A RAT)
- (ALL REPLACED CALSON SWITCHES
- ~~8) ALL CALSON~~

THE FOLLOWING RESTRICTIONS CONCERNING D/G TRBSHTG
AND REPAIR AND TESTING ARE AGREED TO:

1. ANY COMPONENT REPLACEMENTS WILL BE CONCURSED
WITH BY THE TM LDR PRIOR TO PERFORMING WORK.
ALL REPLACED COMPONENTS WILL BE RETAINED FOR INSPECTION
UNTIL RELEASED BY THE TEAM LEADER.
2. THE FOLLOWING TESTS PROCEDURES WILL BE
REVIEWED BY THE TEAM PRIOR TO PERFORMANCE
 - a) 1B UV Test
 - b) 1A UV Test (#1)
 - c) " " " (#2)
3. THE FOLLOWING TESTS WILL BE ANNOUNCED TO THE
TEAM LEADER, OR DESIG REP, 4 HOURS PRIOR

TO INITIATION. IT WILL NOT BE PERFORMED UNTIL APPROVED BY THE TEAM LEADER.

- a) IB SEQUENCER TEST
- b) IB UV TEST
- c) 1A UV TEST (#1)
- d) 1A UV TEST (#2)

THE FOLLOWING PERSONNEL WILL NOT TAKE VACATION UNTIL APPROVED BY THE TEAM LEADER (NORMAL LFF DAYS ARE ACCEPTABLE)

- (•) ALL OPERATIONS MANAGEMENT
-) ALL OPERATORS (LICENSED & NON LICENSED) ON DUTY DURING THE 20MAR90 EVENT.
-) ALL EVENT CRITIQUE TEAM MEMBERS

What caused the 1st 1A EDG trip?

Presently the cause of the trip is unknown. It is suspected the jacket water pressure switch caused both trips but this has not been determined. The investigation is continuing. A special test is being developed to duplicate the event and identify the cause of the trip.

What was the RWST lvl at the time of the SAE?

Approximately 78%

Which Accum iso valves were open/worked on?

At the time of the event only 1HV-8808D was being worked on.

What (related) CVCS check valves were open for maint?

1-1208-U4-036 (Normal charging check valve) was open

*** 1-1201-U4-007 and 1-1201-U6-144 (RTD bypass manifold isolation valves) were being worked but the valves had not been breached at the time of the event ***

What man/auto valves must be operated to gravity feed from RWST?

There are several gravity feed paths, but with respect to this event the valves that would have to be open to gravity feed through RHR are 1HV-8812A or 1HV-8812B.

REPORT TO CONGRESS ON ABNORMAL OCCURRENCES
JANUARY-MARCH 1990

NUCLEAR POWER PLANTS

The NRC is reviewing events reported at the nuclear power plants licensed to operate. For this report, the NRC has determined that the following event was an abnormal occurrence:

90-1 Loss of Vital AC Power with Subsequent Reactor Coolant System Heat-up at Vogtle Unit 1 During Refueling

The following information pertaining to this event is also being reported concurrently in the Federal Register. Appendix A (see the second general criterion) of this report notes that a major degradation of essential safety-related equipment can be considered an abnormal occurrence. In addition, there were generic regulatory concerns because of several previous incidents that have occurred at plants while in shutdown conditions.

Date and Place - March 20, 1990; Vogtle Unit 1, a Westinghouse-designed pressurized water reactor, operated by Georgia Power Company and located in Burke County, Georgia.

Nature and Probable Consequences - At the time of the event, Unit 1 had been in a refueling outage for about 25 days with its reactor coolant system (RCS) level reduced to "mid-loop" (below the top of the pressure vessel nozzles) to facilitate maintenance activities. Decay heat in the core was being removed by one train of the residual heat removal (RHR) system. Several pieces of equipment were out of service for maintenance, including one of Unit 1's two emergency diesel generators (EDGs). As described in more detail below, the event involved a loss of all safety power to Unit 1 and difficulties in starting the one available EDG with a consequent loss of shutdown cooling. Non-safety power remained available. The significance of the event is that had the licensee been unable to restore power within about 1.5 hours, the plant would have been in an inadequately analyzed condition and personnel would not have had adequate procedures and training to deal with the situation. (Had the incident occurred two days after shutdown, the 1.5 hours would have been reduced to 15 or 20 minutes.) This status of analysis, procedures, and training is believed to be typical of industry preparedness. One alternate source of RCS makeup was available that did not require ac power and would increase the time available for the licensee to restore ac power. This involved gravity feed of borated water from the refueling water storage tank to the RCS.

Plant equipment conditions at the time of the event were as follows:

- o The Unit 1 B reserve auxiliary transformer (RAT) was tagged out of service for maintenance.
- o The Unit 1 B EDG was tagged out of service and disassembled for maintenance.
- o The Unit 1 A RAT was supplying offsite power to the crosstied Unit 1 A and B vital buses.

- o The RCS temperature was being maintained at around 90°F via the train A RHR pump; the train B pump was in standby.
- o The vessel head was in place with the studs not fully tensioned.
- o The pressurizer manway cover was removed.
- o The manways for steam generators 2 and 3 were partially bolted in place and the manways for steam generators 1 and 4 were in place with bolts fully tensioned.
- o The inboard charging line check valve and an accumulator isolation valve were open for inspection.
- o The containment equipment hatch and the containment personnel hatch were open.

At about 9:20 a.m., EST, on March 20, 1990, a truck carrying gasoline, diesel oil, and lubricants in the plant low voltage switchyard backed into a support column for the feeder line supplying power to the Unit 1 A RAT and the Unit 2 B RAT. The insulator for the C phase of the feeder line fractured and initiated a phase-to-ground electrical fault. The fault resulted in a loss of power to the Unit 1 A RAT and the Unit 2 B RAT. The Unit 2 B EDG started and loaded on to the deenergized Unit 2 B vital bus. However, Unit 2, which was operating at 100% power, experienced a turbine trip and reactor trip because of an improperly connected (wrong tap) differential current transformer (DCT). The DCT initiated the trip when the current surge associated with the phase-to-ground fault was sensed. The Unit 2 trip was relatively uncomplicated.

Because both of the Unit 1 vital buses were crosstied and being supplied by the Unit 1 A RAT, the loss of this transformer deenergized both vital buses. Deenergizing these buses resulted in the loss of power to the operating RHR pump. Since the Unit 1 B EDG was tagged out of service and disassembled for maintenance, the emergency power supply for the B vital bus was unavailable and the standby B RHR pump could not be started.

The available Unit 1 A EDG started on bus undervoltage, but for unknown reasons, it shut down automatically after 1 minute and 20 seconds. At 9:40 a.m., plant operators declared a "Site Area Emergency." (A loss of all onsite and offsite ac power at Vogtle for more than 15 minutes is classified as a "Site Area Emergency." The licensee made its declaration because all vital ac power was lost for greater than 15 minutes.) Non-safety power remained available. Approximately 18 minutes after the first start of the A EDG, the operators locally reset the load sequencer which automatically restarted the A EDG on undervoltage. However, after 1 minute and 10 seconds, the diesel again shut down automatically. At 9:56 a.m., plant operators performed an "emergency" manual start of the diesel, which bypassed most of the diesel's protective trips. The diesel started and loaded to the bus, the A RHR pump was restarted, and core cooling was reestablished to Unit 1. According to control room indication, RCS temperature increased from 90° to 136°F during the 41 minutes required to reenergize the A bus (1.12°F/minute). With the start of the diesel, the "Site Area Emergency" was downgraded to an "Alert" at 10:15 a.m.

The critical path item for containment closure, the containment equipment hatch, was closed by approximately 10:40 a.m. This was within the time recommended by the NRC for the existing conditions of the RCS. (There are no regulatory requirements for a closed containment under these conditions.)

Plant personnel returned the Unit 1 B RAT to service after completing formal tagout removal procedures. However, attempts to energize the transformer were delayed for several minutes because of a sticking mechanical interlock in the control circuitry for a motor-operated disconnect switch on the high side of the B RAT. Power was restored to the B vital bus via the B RAT at 11:40 a.m. At 12:38 p.m., core cooling was shifted to the B RHR train to facilitate subsequent electrical alignment changes.

Throughout the event, non-vital power was continuously provided to Unit 1 from offsite sources via backfeed through the main generator transformer. Also, the Unit 2 electrical distribution system remained energized (aside from the momentary loss of power before the reactor trip). However, the Vogtle electrical system was not designed for interconnection of the Unit 1 vital buses to nonvital power or to the Unit 2 electrical buses. Therefore, there were no procedures in place to provide guidance on interconnecting the Unit 1 vital and nonvital buses or for interconnecting the Unit 1 electrical distribution system with the distribution system at Unit 2. (There are no regulatory requirements that direct the licensee to develop interconnection procedures.)

The licensee restarted Unit 2 and returned it to full power operation. Unit 1 remained shut down to investigate and correct the problems during the event and to complete refueling activities.

On March 20, 1990, NRC Region II sent a team to the site to review the event and the actions taken by the licensee. On March 21, 1990, this was upgraded to an Augmented Inspection Team (AIT) consisting of Headquarters and Region II personnel. However, due to the number of past incidents that have occurred at various plants while in shutdown conditions and the potential for regulatory concerns, NRC management decided that the Vogtle event warranted the more formal and detailed review of an Incident Investigation Team (IIT). The IIT consisted of NRC members (Headquarters, Region I and Region V) and industry members (a member from the Institute of Nuclear Power Operations, and two consultants). The licensee agreed that Unit 1 would not be restarted until approved by NRC management. This approval was granted on April 13, 1990. Criticality was attained on April 16, 1990, and the plant was connected to the electrical grid on April 21, 1990.

The IIT remained at the Vogtle site until April 2, 1990. The team returned to the NRC Incident Response Center in Bethesda, Maryland to continue evaluation of the event, formulate findings, and to prepare a formal NUREG report.

Cause or Causes - The direct cause of the loss of offsite Class 1E ac power was a personnel error by the driver backing the truck into the pole supporting a 230 kV line for the Unit 1 A RAT and the Unit 2 B RAT; site safety rules, which require a flagman for backing vehicles when viewing is impaired, were violated. The direct cause of the loss of onsite Class 1E ac power was the failure to make the only available EDG operational. The licensee concluded that the EDG trips were most likely due to faulty jacket water high temperature switches.

Actions Taken to Prevent Recurrence

Licensee - The licensee established a management policy on control and operation of vehicles. The defective EDG temperature switches were replaced and a test program was planned to investigate the reliability of this type of temperature switch under various conditions. The loss of offsite power (LOSP) diesel start and trip logic was modified for both Unit 1 and Unit 2 so that an automatic "emergency" start will occur upon LOSP; therefore, non-essential diesel engine trips are blocked upon LOSP. The Unit 1 A EDG test frequency was increased until seven consecutive valid tests were completed with no more than one valid failure in the last 20 valid tests.

NRC - The NRC IIT is completing its investigation and will issue a formal report.

On April 26, 1990, the NRC issued Information Notice No. 90-25, "Loss of Vital AC Power with Subsequent Reactor Coolant System Heat-up," that described the Vogtle event. The Notice advised licensees that the Vogtle event reemphasized the need for careful planning of equipment outages during shutdown.

Future reports will be made as appropriate.

* * * * *

March 20, 1990

SE

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-II-90-16

Is preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region II staff on this date.

FACILITY: Georgia Power Company
Vogtle Unit 1
Docket No. 50-424, 50-425
Waynesboro, GA

Licensee Emergency Classification:
Notification of Unusual Event
☒ Alert
☐ Site Area Emergency
☐ General Emergency
☐ Not Applicable

SUBJECT: SITE AREA EMERGENCY AT VOGTLE UNIT 1 LOSS OF OFFSITE POWER

At 9:58 a.m., EST the licensee notified the NRC they were in a Site Area Emergency for Unit 1 due to a loss of offsite power with a concurrent loss of onsite emergency diesel generator capability. The loss of offsite power was caused by a truck accident onsite. Unit 1 was in cold shutdown at the time of the incident for refueling. Reactor coolant temperature peaked at 136°F and stabilized at 100°F after AC power was restored. The licensee has downgraded to an Alert at 10:15 a.m. EST based on restoration of onsite diesel power.

Unit 2 was at 100 percent power at the time, tripped normally, and was unaffected by the loss of offsite problem of Unit 1.

(Region II has dispatched a team to the site headed by L. Reyes

The State of Georgia has been notified.

This information is current as of 11:20 a.m. on 3/20/90.

CONTACT: S. Ebnetter - 841-5089

DISTRIBUTION:

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Flint North
Chairman Carr
Comm. Roberts
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Region III
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Region V

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MAIL TO: DCS (Original IE 34)
DOT (Transportation Only)
FAX TO: INPO
LICENSEE (Corporate)
RII Resident

5/90 @ TO REGIONS AND HQ

9604030129

A/10

Georgia Power Company
Vogtle Electric Generating Plant
Unit 1 Control Log

No 528

Time

Tuesday

Date 3/20/90

0007 1400' complete heat
0103 RHR ~~TR~~ CB 2457 @ 0005 CST - WILLIAMS
0301 Tygon tube 187'8"
0350 OSP 14801 complete + sat for NSEW transfer pump #8.
0409 14001-1 complete
0452 ~~TR~~
0452 ~~TR~~
0452 ~~TR~~
0523 Tygon tube @ 187'8" - narrowed continuously
0527 OSP 14811-1 complete + sat for RA xfr. pump #6.
0558 ~~TR~~
0623 ~~TR~~
0703 Arrived for 3/20/90 night shift of relieved by P. Vanner - J. Kinsley
0703 Day Shift ON: RO LP Vanner BOP PA HUMPHREY
Plant Status: Mode 6 100 cpi RS BOP 2457 RHR Train A in
service for core cooling. Vessel at mid loop operation.
0816 OSP 14225-1 OPS Weekly Surveillance Logs Complete & Sat
0820 LOSP occurred. Lost A RAT - D/G 1A TIED and tripped. Entered
AOP 1808K and 1809K
0841 D/G 1A Auto started after Sequencer reset & tripped on low Tank
water pressure.
0859 Site Area Emergency Declared. Loss of Acc 710 min.; Loss of
offsite & onsite power.
0856 D/G 1A Emergency Break class START locally; new pumps 103 started & new pump
0900 RHR pump A started for shutdown cooling - core exit thermocouple @ 13
and core cooling commenced.
0917 Emergency downgraded to an Alert
0937 Shutdown Hot Cooling Train A restored to service
0942 Equipment Hatch sealed in place
1029 RAT B Energized
1030 Normal Chiller No. 1 placed in service
1038 ANA01 Reenergized to start River Water Pumps
1040 18A03 Energized from B RAT.
1059 NSEW Train B Pumps 2 & 4 started
1103 CCW Pumps 2 & 4 started
1131 RHR pump B started
1158 RHR pump B placed in service for shutdown cooling and RHR pump
removed from cooling mode & placed on recirc.

Georgia Power Company
Vogtle Electric Generating Plant
Unit 1 Control Log

No 5284

Time

Location

Date 3-20-90

1155	D/G 1A placed back in service
1157	Alternate Incoming Breaker closed on. Paralleling with OG 1A
1211	D/G 1A loaded to 5800w to be run for 45 minutes due to low load operation
1234	OSP 14000-1 Complete + Set Day Shift
1241	Annunciators placed back on normal supply.
1247	Emergency Terminated
1324	D/G 1A TIE Breaker opened
1326	D/G 1A shutdown
1405	D/G 1A placed in standby readiness
1416	AHR Train A placed in shutdown cooling and AHR Train B removal from shutdown cooling & placed on reserve.
1419	AHR Pump B stopped
1514	Normal Chiller aligned in sequence 2-1
1648	WRB
1657	WRB
1705	WRB
LE 1651	Aux Steam Header Pressured to 200 psig from Aux Boiler & control valve to unit Two is opened.
LE 1702	OSP 4415-1 Data sheet 9 complete & out (Air or Sea Temp & TOF)
1720	D/G 1A Declared Inoperable LCO NO.
1741	AHR A Energized.
1812	WRB
1820	MUH
1831	Both Diesel fire water pumps and electric fire pump secured and placed into AUTO.
1855	Relieved by E. Brown LPVanner
1855	Night shift on duty. RU E Brown BOP & High Temp. Mode 6, RHR 'A' In service, Vessel at mid loop, Source range reading 100 cps
1956	Aux boiler being shutdown, 1113 5898 shut
2001	Tec Spec rounds for moles 5+6 complete and SAT test 11400-1
2031	D/G 1A in maintenance mode for moisture check before
2032	Investigation by Pico after CST H VAC depressurized P2 succ. pressure reveals feed pump and feed transfer pump off.
2058	INB11 trouble annunciator and loss of air compressor #2 Started air compressor #4
2119	Started DL 1A

Time 123

Date 3-20-90

0001 New day, New Brox
0025 WMT #9 → River START
0128 BAST 8317 pm sample @ 0030
0149 RCS diluted 775 gal.
0205 RCS diluted 125 gal.
0212 RCS diluted 500 gal.
0227 RCS Diluted 200 gal.
0237 RCS diluted 200 gal.
0249 RCS diluted 200 gal.
0248 WMT #9 → River stop
0300 BAST R 7233 pm
0304 RCS diluted 200 gal.
0345 Started river running NSCW fans with hro. runs
0411 Started CCW pump #1, stopped CCW pump #3.
0437 STATED CCW pump 3, stopped CCW pump 5.
~~0453 STOPPED CCW pump #1, started CCW pump #3.~~
0454 STATED CCW pump #5, stopped CCW pump #1.
0500 Stop
0501 Start
0515 CAP
~~0525 ST. H803-2, CCW Pumps, IST, condit. & set.~~
0611 MS
0620 DAK
0631 Night shift off, relieved by G. Queller, & Wainwright
~~0638 STATED AC #3 for increased demand in web building~~
(grinders, etc.)
0647 Bore 7 gal for temp control
0749 Blowdown for NSCW TR B secured for Chemistry
Request
0803 Dilute 25 gallons
0820 U2 Reactor TRIP due to turbine trip due to loss
of TB RAT Entered EO
0821 Manual MS Isolation to maintain PZR level and
Pressure
~~0827 Transferred to procedure 19001-2~~
0830 Broke condenser VAC due to loss of All but D C
Emergency oil pump (time is approximate)
0851 Secure TDAFW Pump

Georgia Power Company
Vogtle Electric Generating Plant
Unit 2 Control Log

N^o 2602
R

Time	Log	Date
0902	Site Area Delivered due to loss of All AC on U1	3/20/90
0913	Tower energized to T6 up, to m	
0925	Turbine on turning gear	
0928	24 V 17.212 Bypass to circ. water. B D 150/16 due to loss of River pumps	
0930	Site Area down graded to Alert	
LE0830	MFP B miniflo isolated due to loss of EBUP	
LE0845	Cond pump # 2 stopped (# 3 had tripped)	
0945	H ₂ isolated to Main generator	
0945	Page Announcement to Smoking or Grinding Trash Build	
0957	B-Rat manual circuit switches 2HS 21 m.d opened	
1035	Transferred to 1200 G-C	
1100	Trip Circ pump 2 Due to Reported high vibrations	
1111	Plant status 2NAB03 supplied by DG 2 B, 2NAB04 005, 2NAB05, RCP 2-4 005 2NDI Powered by 2N B01	
1127	Stop A CCP	
1134	Start ACW PUG 2 STOP ACW PUG 1 to help keep Diesel loaded	
LE 1053	14005-2 Shut on margin complete & SAT kept .965 SD 3.67% AK/15	
1151	14000-2 Tech Spec Rounds complete except for RCC Leak Rate and SAT for mod 3	
1203	Lockout Policy SRT 1 Man-Gov. P. Off Asset to allow clearing Man-Gov. Output Breakers	
1231	14915-2 Data sheet 3 discontinued due to previous trip	
1235	Mike Wright Chemistry Reports Res Boron Conc 303 ppm taken 3/20/90 1033	
1247	Emergency Terminated	
1402	Running MG Set shut down due to high Room temperature - will restart once CB Hvac unit restart	
1407	2HS 115 and 2HS 7150 Opened to West gas system	
LE0631	Day Shift on RA C Ouellette, Bor RY Smith status BANK 228, Res tour 588.5 no significant problems	
1419	742 30-2 AC Source Verification Complete & SAT	
1434	2HS 115 + 2HS 7150 Closed Per RWO Request	

Time - 1725

Date - 3/20/90

1647 DSP 14423-2 ON N1-31 Complete & SAT

1651

1710

1717

1725

14905-2 Res Leak Rate Complete & SAT

Final Ident .033 final incident .729

1731

Rec Reports from Aux boiler that U2 Rats being
sprayed with fire water - Operator Dispatched

1735

UAT being sprayed down per instruction to isolate fire
water to deluge spray

1730

14525-2 PR low SP. ACOT Complete & SAT

1741

Rat B Energized

1747

CSP 14423-2 SOURCE RANGE NIS ACOT N1-32

1748

2NACH ENERGIZED FROM RAT D

1751

1752

2WAB ENERGIZED

1755

ma - TURBINE ON TURNING GEAR

1759

Start Oil Leak Pump for Repair

1814

1828

Start Accw Pump 1 - Stop Accw Pump 2

1837

Released by Robert Rowland Saw

1837

Night Shift on: R. L. Rowland BARL Overby

Unit Status: O/C Power Temp 557°F

Georgia Power Company
Vogtle Electric Generating Plant
Unit 1 Shift Supervisor Log

Nº 541

Time 0000 Date 3-20-88

0000 New day - same conditions as before
0017 DSP 14005-1 Shutdown Margin Calculation for Mode
entry complete & sat.
0230 JCP
0301 18 MC. Calibration on IRE-003 per 43690-1 comp. & sat.
0355 DSP 14801-1 NSCW XFR PUMP IST complete & sat.
0411 DSP 14001-1 Shift Area Temperature Log complete &
sat. for 0400 hours.

0456

JCP

0501

OLC

0537

0546 Relieved by Bruce Snider David Woodward

0621

DSP 14811-1 0970 - 2nd Check Valve IST review

0720

SHIFT COMPLEMENT (UNIT #1)		DATE	3-20-88
OSOS	Hepkin RO	Vanner	FIRE TEAM
UNIT SS	Under	DOP	Hepkin LEADER
SUPPORT SS	Under	ADO	Under
SIA FUNCTION	Under	DOP	Under
SHIFT CLERK	Under	TBO	Under
RWO	Under	ADO	Under
ADO	Under		
OTHERS			

Mode 1

0740

Bath - 12-1 24125-1 PE-006 ACCT

0830

Loss of "A" RAT - pump in AAD-1 lost - only RHR
train lost. A D/B started - then tripped on 12-1
Entered AAD-1 18011-1 & 18014-1

0841

3/6 1A auto started by something sequencer. Tripped
as low jacket water press

0856

3/6 1A locally emergency started, tied to low auto

0859

Site area emergency declared for Unit 1 - loss of
power - 10 min - loss of offsite & onsite power

0900

RHR pump "A" started - core exit thermal @ 136°

0901

Commenced cooling core via A RHR

0911

Emergency action list

4113

Date 3-20-40

Time 6:17

1/6 manway secured
 Equipment to be tested
 Air test fractional
 Power reduced to "A" RAT
 10A02 emergency from normal service
 "A" train "A" emergency
 "A" RAT started & placed in service
 on minute
 11:57 cancelled "A" 2/6 & A002
 Emergency terminated
 12:48 DSP 14001-1 Temp fault cleared JAT for 10:00
 12:48 DSP 14000-1 Temp fault cleared JAT for Max
 13:26 2/6 A unit fuel from gas & secured in standby
 14:19 "A" RHR on line & "A" train secured
 15:00 DSP 14325-1 "A" per. widely serv. log, secured temp bk
 15:50 2/6 A unit fuel from gas & secured in standby
 16:30 2/6 A unit fuel from gas & secured in standby
 17:15 17:15
 17:30 17:30
 17:41 17:41
 18:24 18:24
 Relieved by B Dickl
 Brown Fowler

Georgia Power Company
Vogtle Electric Generating Plant
Unit 2 Shift Supervisor Log

No 2875

Time 0028 Date 3-20-90

0028 24807-2 RUST L-91 ACOT complete and sat

0050 Enter T.S. 3.2.1 action a, AFD outside target band

0052 AFD restored within target. Exit T.S. 3.2.1 action a (2 penalty minutes)

0058 AFD 3-20-90 Enter T.S. 3.2.1 action a, AFD outside target band

0100 AFD restored within target. Exit T.S. 3.2.1 action a (4 penalty minutes total)

0125 Enter T.S. 3.2.1 action a, AFD outside target band

0126 AFD restored within target. Exit T.S. 3.2.1 action a (5 penalty minutes total)

~~0130 AFD outside band~~

0138 AFD restored within target. Exit T.S. 3.2.1 action (6 penalty minutes total)

0141 AFD outside band

0142 AFD inside band (7 penalty minutes total)

0153 AFD outside band

0154 AFD inside band (8 penalty minutes total)

0155 AFD outside band

0156 AFD inside band (9 penalty minutes total)

0157 14553-2 ESF ROOM COOLER AND SAFETY RELATED CHILLER FLOW PATH VERIF. ^{by rule} complete and sat

0358 14001-2 Shift Area Temp rounds reviewed complete and sat

LE0100 Received ALB10DOG annunciation. Initiated 14915-2 Data Sheet 3.

0458 5091

0503 5091

0522 21 Chk

0522 RELEASED BY G. MOORE for 3

0557 14503 COMD SAT FOR TRAIN A COW PAS

0558 NO FURTHER ENTRIES THIS PAGE

A114

Georgia Power Company
Vogtle Electric Generating Plant
Unit 2 Shift Supervisor Log

N^o 2876

Time

Date 3-20-90

SHIFT COMPLEMENT (UNIT #2)		DATE: 3-20-90	PLANT STATUS 100%, 1180 MW, 2418
OSOS	HOPKINS RO	QUIETE FIRE TEAM	226 STEPS, 588.6 °F
UNIT SS	G. MOORE BOF R.P. SMITH	LEADER CHRISTIANSON	CCS 'U' TRN 'B' CACR HVAC, REOOS,
SUPPORT SS	C. MOORE BOF R.P. SMITH	GRANT	RAV 424, CS SUP PPS 100 MW, DAPT, PUV 100
STA FUNCTION	SWIDER DAO	MCMAHON	PT 435, PVE + 24V, CANT MAX CLP, 24V 433
SHIFT CLERK	P. JOCKINS TBO	GRANT	RE 2535, D' COND. VESSEL, WGS
RWO	HARPER CBO	GRANT	JACKSON
	H. JOHNSON		LEAK TEST
OTHERS			

0656 AUTHORIZED START OF LOOP 1 AT TANG ACOT: 24810

0743 AUTHORIZED START OF 24334 ON CCW PL 1874

0817 24210 COMP SAT

0821 MANUAL MSLI

0827 ENTERED 19001-2

0830 BROKE COND VACUUM DUE TO LOSS OF ALL BUT DC EMER LUBE OIL PP

0851 SECURED TDAFW

0902 SITE AREA OVER DECLARE FOR U1 LOSS OF ALL AC

0930 SITE AREA DOWNGRADED TO ALERT

1100 TRIAGED RUNNING CIRC PP DUE TO REPORTED CIRC PP VIB., PEO DISPATCHED TO PUMP REPORTED BOTH PUMP DISCH'S OPEN AND THE IDLE PP WAS VIBRATING - NEED TO SHUT DISCH. VALVS ON BOTH PP'S PRIOR TO STARTING EITHER

LE1035 ENTERED 12006 - *18*3 RCP'S RUNNING - 2BAD3 OVERGIZED BY THE 'B' D/G

1142 SHUTDOWN MARGIN 14005 COMP SAT.

1247 EMERGENCY TERMINATED

1404 ENTERED LCD 2-90-097

1807 AUTHORIZED START OF 24553 TT-RX TRIP

1432 24230 COMP UNSAT DUE TO 2BAD3 BEING POWERED FROM THE EMERGENCY DIESEL GENERATOR

1446 24555 COMP SAT.

1530 24695 - AUTHORIZED START OF HI Ø AT SD

1545 DANNY JAMES OF THE FAA WAS INFORMED THAT THE UNIT 2 COOLING TOWER LIGHTS ARE OFF

Date 3-20-90

no

1656

1709

CIR B

1740

24696-2 COMP. & SAT FOR U31 & U32

1741

Power restored to RAT "B"

1744

JCR

1822

RELIEVED BY J. ROBINSON

1822

Night shift on: JCR

PRESENTATION TO REGION II
NUCLEAR REGULATORY COMMISSION
ON
VOGTLE SITE AREA EMERGENCY
MARCH 20, 1990

1) Admin Proc 5/15
2) ERT Rpt 5/15
3) IIT feedback W/11
Letter
4) Review Col Proc after
completing W/11
5) ACP on Long Term
GENERIC
LETTER

AGENDA

- OPENING REMARKS C. K. McCoy
- EVENT REVIEW TEAM CRITIQUE G. BOCKHOLD
 - TRUCK/SWITCHYARD
 - OFF-SITE NOTIFICATIONS
 - PERSONNEL ACCOUNTABILITY
 - COMMUNICATIONS CORPORATE/SITE
 - MID-LOOP OPERATIONS
- DIESEL TESTING/OPERABILITY G. BOCKHOLD
- QUARANTINE COMPONENTS G. BOCKHOLD
- UNIT 2 G. BOCKHOLD

INITIATING EVENT

FUELING TRUCK STRUCK INSULATOR SUPPORT INSIDE THE LOW VOLTAGE SWITCHYARD CAUSING A FAULT TO THE 1A RESERVE AUXILIARY TRANSFORMER.

● DIRECT CAUSE

- TRUCK DRIVER AND ESCORT WERE INATTENTIVE TO SAFE OPERATION OF THE TRUCK.

● CONTRIBUTING CAUSES

- CONTROL OF VEHICLES NEAR VULNERABLE AND SENSITIVE AREAS NOT ESTABLISHED.
- MAINTENANCE EQUIPMENT STAGED INAPPROPRIATELY.
- THE USE OF GROUND-GUIDES INSIDE THE PROTECTED AREA WAS NOT CLEAR.

*How? - Station & Reg
How? - Plan & Sign*

SE Does SS know all of those things?
Will he be overloaded?

⊛ Admin Proc Rev Sched?
5/15/90

G.I.E.
Thurs a sensitivity
will of course - site
Should be included in
GET as "case study."

⊛ Event Critique Team
Items & Action Assign
sent to us (v 3 ltr) 2

⊛ ANAL & ID of VULN
AREAS - How to
Who is Respon.

SENS &

Signs say any entry
Intent is vehicular entry!

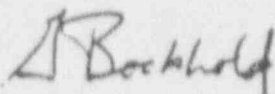
Threat is not a non-compliance by the individuals!

DATE: March 27, 1990
RE: Vehicles In Perimeter Area
FROM: G. Bockhold, Jr.
TO: Site Personnel

Due to the recent plant event of March 20, 1990, the following shall be implemented immediately:

All vehicles within the Perimeter Area (PA) in which the driver does not have rearview visibility OR that are larger than a pickup truck, are required to have a flagman at all times when the vehicle is backing up.

Additional policies/procedures on this issue will be forthcoming.



EMERGENCY PLAN IMPLEMENTATION

DURING THE EMERGENCY, OFF-SITE NOTIFICATIONS WERE LATE AND/OR DELAYED BEYOND THE 15 MINUTE TIME LIMIT.

● DIRECT CAUSES

- POWER TO THE PRIMARY ENN (1E EMERGENCY POWER) WAS LOST.
- ALL EMERGENCY AGENCIES WERE NOT INCLUDED ON THE BACKUP ENN. (BURKE COUNTY AND GEMA ADDED 4/6/90)

*BURKE
GEMA & BURKE Co
Added 4/6/90*

● CONTRIBUTING CAUSES

- CONTROL ROOM COMMUNICATORS AND SUPERVISORS WERE NOT FULLY KNOWLEDGEABLE OF THE COMMUNICATIONS SYSTEM CAPABILITIES. (PRIMARY ENN IN TSC HAD POWER FROM THE SECURITY SYSTEM DIESEL.)
- THE SERIES METHOD OF NOTIFICATION CONTAINED UNSATISFACTORY DELAYS.
- EMERGENCY DIRECTOR DID NOT ENSURE PROMPT NOTIFICATION OF OFF-SITE AGENCIES.
- AMPLIFYING INFORMATION WAS NOT PROVIDED TO LOCAL GOVERNMENT OFFICIALS.

*ED didn't call
more people*

*ERT
(Add GEMA & BURKE Co ✓)
(1) EVAL. Btry B/A Pwr to ENN
(Eng Study)*

*(2) INVEST NEW Equip (Fax) 4
Being looked at
(Add'l TRNG to CR Personnel on
Systems Comm Cnf (GB Memo
+ EPAP Training)
1. R. Memo of Amplifying Info to
Officials
2. Highlighted Evac
EMPH. = ED TRNG*

*PROMPT / ACCUR
TRNG*

DATE: April 4, 1990

RE: Emergency Notification Network (ENN) Communication

FROM: George Bockhold, Jr.

TO: Emergency Directors (ED) and Communicators

To ensure that ENN communication is timely, Emergency Directors will ensure that the following improvements are implemented:

1. immediately upon the declaration of an emergency, the communicator (Shift Clerk) will perform a roll call to determine the operability of the ENN while the message is being prepared by the ED.
2. Burke County and GEMA is in the process of being added to the backup ENN and this will be installed and tested within the next few days.
3. The ED will personally ensure notifications are timely and problems are resolved. The ED will assign extra personnel or use TSC facilities to solve communication problems as necessary.
4. The TSC uses different power supplies than the Control Room and TSC communication systems may be operable when Control Room systems are not.

Since Burke County must respond quickest to most emergencies, ED's will ensure that Burke County receives the highest priority for ENN notifications.

We are investigating improved communication hardware and techniques. In the meantime, your personal attention to ENN communications must ensure that we do not have the problems that we experienced on 3/20/90.

J Bockhold

GB/gww

4/6/90
Requires Deli
SHIFT CLERK UNIT C
IT WHEN THE WEL
GETS STICKY

EMERGENCY PLAN IMPLEMENTATION

DURING THE EMERGENCY, SITE PERSONNEL ACCOUNTABILITY NEEDED IMPROVEMENT.

• DIRECT CAUSE

- ACCOUNTABILITY PROCEDURES DID NOT PROVIDE FOR THE SITUATION OF NOT EVACUATING THE SITE. (GENERAL MANAGER'S MEMO OF 4/6/90)

• CONTRIBUTING CAUSES

- THE INITIAL PAGE ANNOUNCEMENT WAS DELAYED APPROXIMATELY 20 MINUTES.
- PERSONNEL WERE ALLOWED TO RE-ENTER THE PROTECTED AREA.
- PAGE ANNOUNCEMENTS ARE DIFFICULT TO HEAR IN SOME PLANT AREAS.
- THE COMPUTER GENERATED PRINTOUT DID NOT ALLOW QUICK IDENTIFICATION OF PERSONNEL.
- THE EMERGENCY DIRECTOR FAILED TO PROVIDE GUIDANCE AFTER DECIDING NOT TO EVACUATE PERSONNEL.

Why ED decide not to EAC?

wanted to button up - Core Cnds OK
limited work of must

ERT
1) GND Assl
DRILLS
4. Acc

(2)

DATE: April 6, 1990

RE: Accountability During Emergencies
Log: NOY-00426

FROM: G. Bockhold, Jr.

TO: All Emergency Directors
and Site Personnel

In the event of site emergency conditions, we will implement the following revised procedures. These changes will enhance personnel accountability and safety and ensure better information flow for employees. They will also provide flexibility to the plant when responding to emergency situations.

When the Emergency Director (ED) makes an emergency classification, he will make the appropriate tone and page announcement on the plant PA system. He will direct site personnel to the appropriate locations. If you can not hear the page, report to your supervisor. He or she will direct you appropriately. Normally non-essential personnel will report to the Admin. Building auditorium or parking lot. David Phillips, the Financial Services Supervisor, has authority to coordinate with the ED and control the disposition of non-essential personnel. In his absence, the senior person present will contact the Security Captain for additional assistance.

Emergency Response Organization (ERO) personnel should report immediately to the appropriate facility. Other shift personnel, supervisors, and managers on-site should report initially to the OSC. Overflow personnel will assemble in the maintenance machine shop area.

When directed by the ED, the security department will initiate accountability. The security department cannot account for personnel who fail to log into the appropriate ERF (e.g., control room, TSC, or OSC) so it is essential we comply with the ED's instructions as soon as possible.

Your assistance implementing these instructions will ensure we manage emergencies better and provide plant personnel with sufficient information to keep them informed of abnormal plant activities. Thank you for your assistance.

J Bockhold

B/erd

7

xc: Department Heads
NORMS

EMERGENCY PLAN IMPLEMENTATION

COMMUNICATION BETWEEN CORPORATE AND TSC NEEDS
TO BE IMPROVED.

• DIRECT CAUSES

- THE STATUS LOOP TELEPHONE BRIDGE WAS NOT
OPERABLE AT THE BEGINNING OF THE EMERGENCY
BECAUSE OF THE LOSS OF POWER.

⊛ When ENN in CRP Office
(Equip & Proc's issue!)

LCSP cause
problems!
No ENN in the
Corporate Office

OTHER ERT Issues

- (1) CPER TEST PROM for ENN & ENS - CR & TSC & ECF
- (2) Adopt NUMBRC EAL G/L's (once blessed!)
- (3) Proced. Dev -> Confusion
∴ Clear Commo is ESSENTIAL
- (4) ED Dig's & Resp's

GPC response
 & they feel
 helped immensely

MID-LOOP OPERATIONS

ACTIONS TO RESPOND TO LOSS OF CORE COOLING AT
 MID-LOOP SHOULD BE IMPROVED.

• DIRECT CAUSE

- THE "LOSS OF RESIDUAL HEAT REMOVAL" PROCEDURE SHOULD PROVIDE IMPROVED GUIDANCE FOR A LOSP CONDITION.

• CONTRIBUTING CAUSES

- THE "LOSS OF RHR" PROCEDURES ARE TOO NARROWLY FOCUSED FOR MODE 5 & 6 CONDITIONS.
- DIRECTIONS FROM THE EMERGENCY DIRECTOR WERE NOT ALWAYS EXPLICIT.

- (1) Greater breadth of procedural address
- (2) Sequence of Cutage Activities
 ELECTRICAL LRA's
 EQUIPMENT INOPS

(*)
 ECP - LCS
 in Mid Loop
 Ken engineering
 following to OG
 Lead DIT!!
 (This won't be a
 quick fix!!)

VARGA
 Is there a where
 in the TS to all
 this to happen?

ERT

- (1) Row 4 Eval Seq of RIF Activs 9
 "ed/RCS Integ/etc)
 more loss of RHR Proc to
 in SD Oper
- (3) Change Trans on Oper in area
 of SD & Mid loop Bickling Phenom.
 Direct CHs to ensure EQUIP HATCH (*)
 2 w/ 57 min

DIESEL TESTING

- * NORMAL 36 MONTH OVERHAUL AND INSPECTION
- * SPECIAL TESTING

1A

3/20 EVENT
5 STARTS, TROUBLESHOOTING

UV RUN TEST
SENSOR CALIBRATION
LOGIC TESTING
E-RUN BUBBLE TESTING
MULTIPLE STARTS (5)
UV RUN TEST
6 MONTH SURVEILLANCE
DIESEL OPERABLE
HI JACKET WATER RUNS (3)
DCP UV RUN TEST

18 SUCCESSFUL STARTS

Demand Starts
6 since licensing
ALL successful

6/6 17/18

← TOTAL 102 u2 on 3/20

1B

IN OVERHAUL

SENSOR CALIBRATION
LOGIC TESTING
E-RUN BUBBLE TESTING
MULTIPLE STARTS (14)
UV RUN TEST
6 MONTH RUN SURVEILLANCE
DIESEL OPERABLE

LUBE OIL DCP RUN
DCP UV RUN FUNCTIONAL

19 SUCCESSFUL STARTS

10

1A 1B 2A 2
— 11 11 1

1/2 3/3 4/2 1/1

+ 18 + 19

Get u2 Diesel
u2 u2
MWO by
of Month

QUARANTINE COMPONENTS

*4.11 Quality
Thin Point Probe
was a faulty inst.*

TEMPERATURE SWITCHES

- 1A PROBABLE TRIP CAUSE
 - JACKET WATER TEMPERATURE (2/3 LOGIC)
 - 1 INTERMITTENT
 - 1 POST CALIBRATION LOW (186°F & VENTING)
- 1A OTHER TEMPERATURE COMPONENTS
 - 1 LUBE OIL TEMPERATURE (SLUGGISH)
- 1B TEMPERATURE COMPONENTS
 - 4 JACKET WATER TEMP (VENTING)
 - 2 LUBE OIL TEMP (VENTING & CALIB.)

PRESSURE SWITCHES

- 1A
 - 1 LUBE OIL PRESSURE (TRIPPED)
 - 2 LUBE OIL PRESSURE (CONSERVATIVELY REPLACED)
- 1B
 - 2 LOGIC (WOULD NOT TRIP ENGINE)

*WILLIE LHS
(1) Quaker's Vytan O-Ring
check for Temp
Degradation streaks
(2) When are Result
Due !!*

UNIT 2

● UNIT 2 TRIP

- UNIT 2 RAT B TRIP/PRIMARY DIFFERENTIAL TRIP
- TURBINE TRIP/REACTOR TRIP
- SAFETY SYSTEM RESPONSE PROPER

● CAUSE

- DIFFERENTIAL RELAY CT SET 3000/5 VICE 2000/5

● CORRECTIVE ACTIONS

- TEST THE REMAINING RELAYS ON UNIT 2
- UPDATE SWITCHYARD DRAWINGS BASED ON AUDIT
- CLARIFY EXISTING POLICIES FOR SWITCHYARD

3/10/10 The Plant
looked at any other
anticipating relay settings
checked for improper settings?
no - doing slowly
Unit 1 checked for this? - yes

BUS 2
230 KV

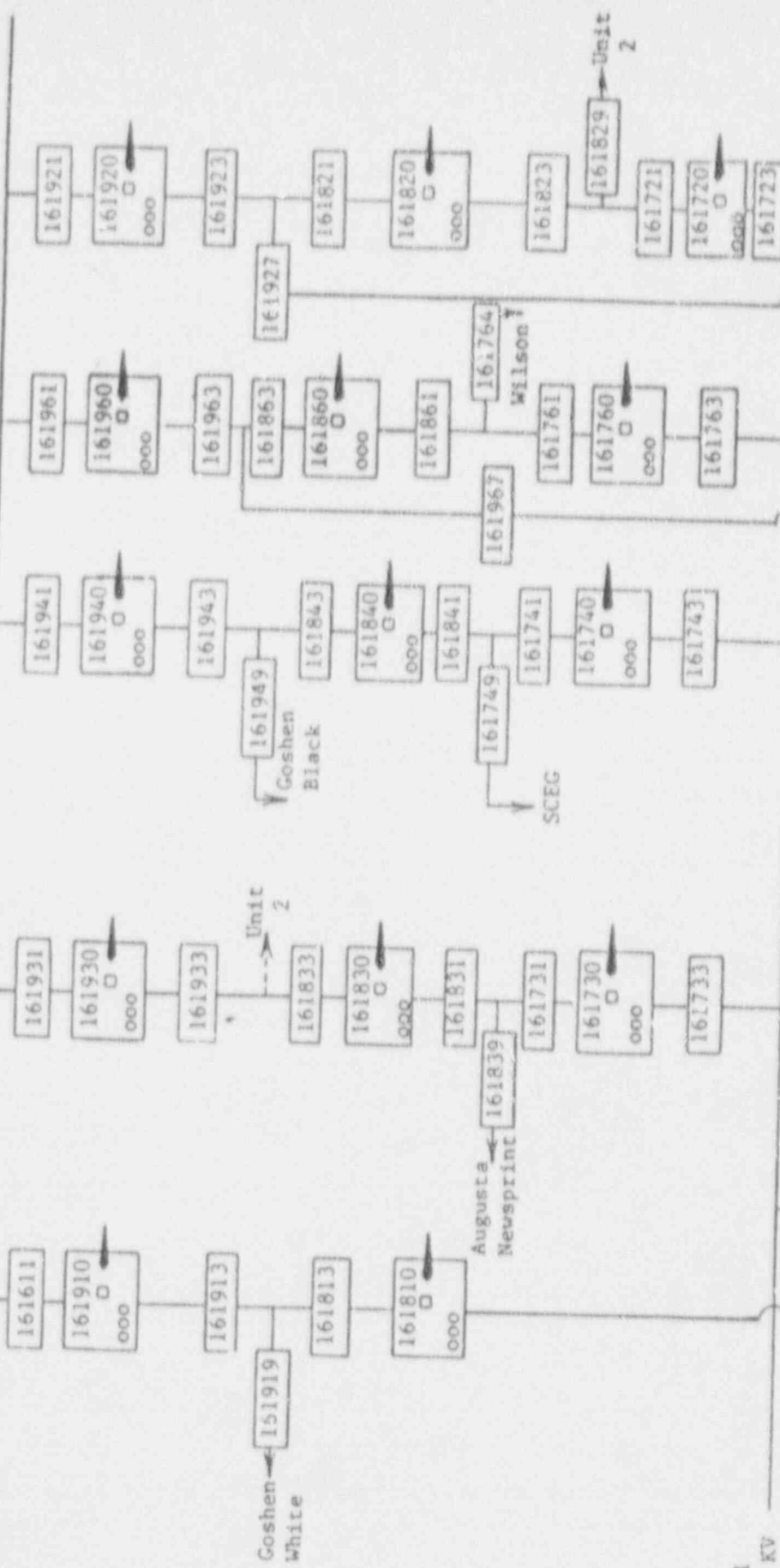


FIGURE 16 - 1
OFFSITE A C

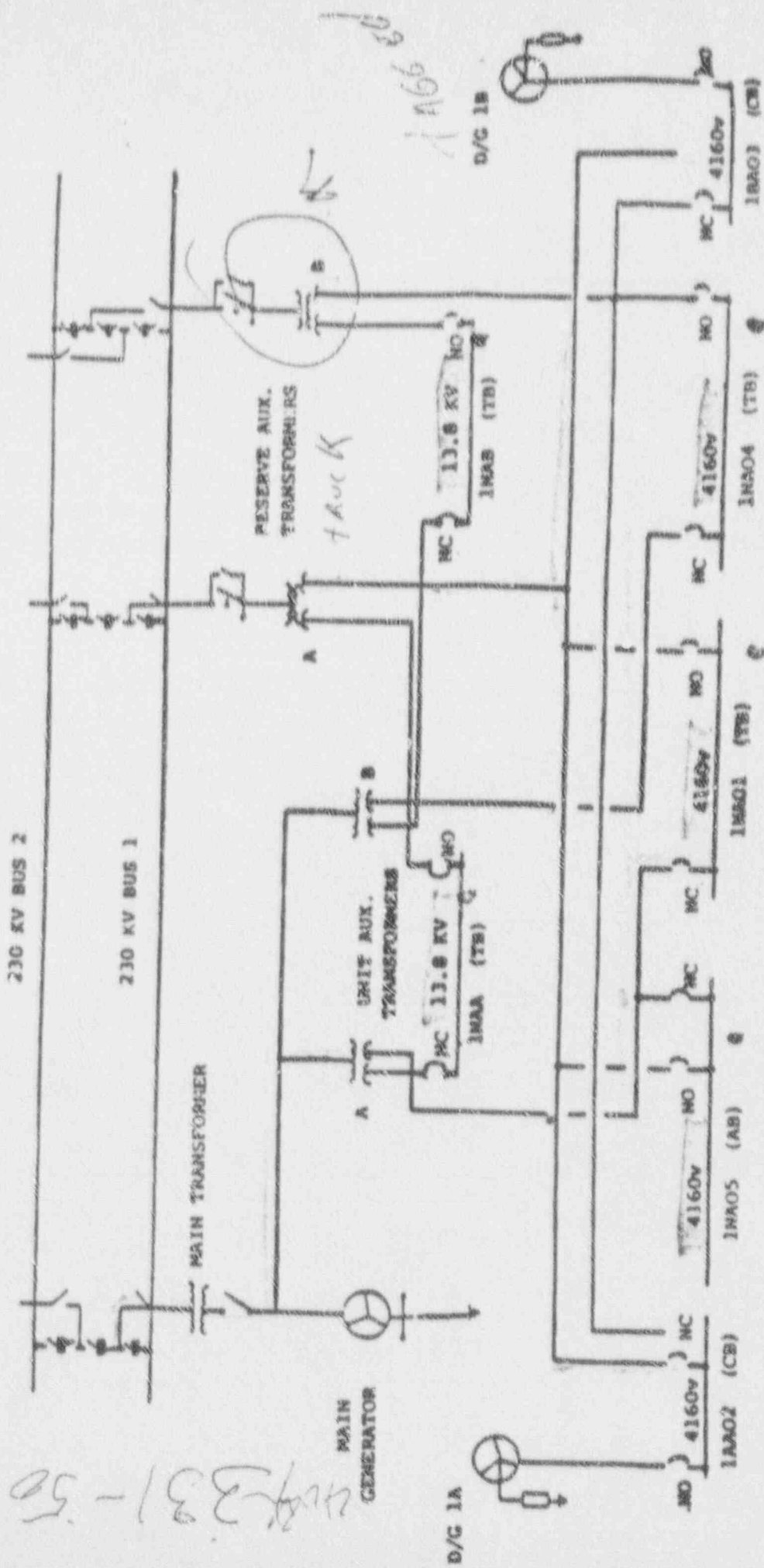


FIGURE 16A-3
ON-SITE AC

SITE AREA EMERGENCY

3-20-90

EST

TIMELINE

0900 Fuel truck entered protected area

0920 Loss of 1A & 2B RAT due to switchyard accident because fuel truck backed into insulator support

0920 Unit 2 Trip - unit stable
Unit 1 DG-1A started, tripped 1 minute 20 seconds after breaker closure. PEO dispatched to investigate DG trip, SRO dispatched to investigate sequence.

0921 Security Diesel started and loaded properly

0940 Site Area Emergency ^(SAE) declared ^{Due to} Loss of power

0941 A train sequencer reset & D/G 1A Auto started and tripped 1 minute 10 seconds after breaker closure.

0957 Start initial notification of SAE using SC Backup
~~ENR~~

0956 Local start of DG-1A - power to 1E Bus, NSCW and CCW pumps on A Train (onsite power restored)

0958 NRC operations center notified of SAE

A/16

EST

TIMELINE

- 1000 Started A Train RHR pump and placed it in the shutdown cooling mode. At this time the maximum core exit T/C temperature was 118° F., RHR inlet was 136° F.
- 1001 Page announcement to site (Site Area Emergency Announcement)
- 1002 Security commenced accountability
- 1002 Security (PESB) notified by ED via communicator
- 1005 General Office Operations Center (Birmingham) activated
- 1009 Visitors Center initial notification (Public Information)
- 1011 GPC Public Information in Atlanta notified by Ray Harris
- 1013 Completed initial notifications to Aiken, Allendale, Barnwell, SRS, S.C. (GEMA and BCEMA not notified)
- 1013 TSC ENN communicator conducts roll call to test TSC equipment

EST

TIMELINE

1015 Called GEMA on commercial phone numbers, did not transmit message due to confusion by communicators

1015 George Bockhold relieves John Hopkins as Emergency Director. #2 Emergency Notification form approved by ED.

1015 Site Area Emergency downgraded to Alert. Diesel Generator maintaining load.

1016 Initial notification made to Burke County EMA on commercial telephone

*1017 Alert Plant Page announcement made.

1020 OSC Activitated

1022 EOF ENN communicator test ENN equipment from EOF

1026 TSC Activated

1030 Personnel dispatched to Met Tower to relay data

1034 Steam generator Primary manways secured

1035 EOF Standby Status

1035 Message #3 started by communicator in Control Room (using BUENN)

1500, 3/23

VR-2

EST

TIMELINE

1035 GEMA received notification message # 1 from South Carolina EPD via FAX

1038 Message #2 complete to all South Carolina Agencies

1040 Initial Notification completed to GEMA

1042 Containment Equipment hatch bolted

1046 Met Data from MET Tower building 10 meter height, 8-9 mph; 340°; Delta T = -3.0

1050 Radiation monitors information received from PERMS; all normal

1050 Message #2 completed to Georgia

1050 Message #3 completed to All South Carolina agencies.

1050 Corporate Office Birmingham contacts Public Information - Atlanta with initial information

1055 ED departs Control Room to TSC.

1056 Message #2 & #3 completed to Burke County. ED at TSC and assumes duties and responsibilities.

1500, 3/23
EST

TIMELINE

VR-2

1059 Message #3 completed to Georgia

1100 Briefing in TSC concerning accountability.
PA announcement made for non-essential personnel
to leave protected area and report to admin bldg
parking lot

1101 Containment personnel hatch interlocks set

1105 Message # 4 initiated by ENN communicator in TSC
using Primary ENN for both Georgia and South
Carolina

1112 Unit 2 in Mode 3

1116 Message # 4 completed to All agencies by TSC ENN
communicator

1130 Unit 1B RAT has offsite power to hi-side

1135 Message #5 initiated by ENN communicator in TSC

1140 1BA03 energized from RAT 1B

1140 Pressurizer manway installed

1141 Message #5 completed by TSC communicator

1500, 3/23

VR-2

EST

TIMELINE

1143 All buses off of 1BA03 energized

1159 Train B NSCW started

1203 Train B CCW pumps started

1205 Message # 6 initiated by TSC ENN communicator

1212 Message # 6 completed by TSC ENN communicator

1222 TSC Briefing

1225 Public information manager leaves EOF and returns
to Visitor Center

1229 TSC receives Status of personnel accountability

1231 Train B RHR pump started

1235 Message # 7 initiated by TSC ENN communicator

1238 ~~RHR~~ Train B place in shutdown cooling mode
~~RHR~~ Train A placed in recirc

1241 Message # 7 completed to All agencies TSC ENN
communicator

1500, 3/23

VR-2

EST

TIMELINE

1257	1AA0Z alternate incoming breaker closed to supply power form RAT 1B/paralled with D/G 1A
1305	Message #8 initiated by TSC ENN communicator
1310	ED conference call to local agencies to discuss termination of emergency
1313	Message # 8 completed to All agencies by TSC ENN communicator
1313	Offsite power restored - plant in normal refueling configuration
1326	104 people unaccounted for by security
1347	Emergency Terminated
1350	Message # 9 (Termination) initiated by TSC ENN communicator
1356	Message # 9 completed to all agencies by TSC ENN communicator
1400	News Release concerning termination of emergency
1430	Press Conference in Atlanta
1545	Joint News Release to Media
1630	Press Conference at Vogtle

March 21, 1990

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-II-90-16A

1 preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region II staff on this date.

FACILITY: Georgia Power Company
Vogtle Unit 1
Docket No. 50-424
Waynesboro, GA

Licensee Emergency Classification:
Notification of Unusual Event
☒ Alert
☐ Site Area Emergency
☐ General Emergency
☐ Not Applicable

SUBJECT: SITE AREA EMERGENCY AT VOGTLE UNIT 1 LOSS OF OFFSITE POWER

At 12:47 p.m. CST, the licensee secured from the Emergency classification after both onsite and offsite power was restored. There has been extensive news media coverage of the event. Region II Regional and Resident Inspectors are onsite reviewing the event. Activities in Unit 1 are concentrated in filling the reactor coolant system.

A preliminary sequence of events has been prepared by the NRC.

NOTE: All times are presented in Central Standard Time (CST).

Initial Conditions:

Unit 2 was at full power with no significant equipment inoperabilities.

Unit 1 was shut down for refueling, in Mode 6. Fuel had been reloaded with approximately 1/3 of the core being new, unirradiated fuel. The reactor had been shut down for approximately 30 days; therefore, decay heat was not significant. The reactor head was in place and torquing was in process. Reactor Coolant Inventory was at Mid-Loop conditions. Shutdown Cooling was in effect. The "B" Reserve Auxiliary Transformer (RAT) was inoperable due to maintenance (oil change). The "B" Diesel Generator was also inoperable due to regularly scheduled maintenance.

TIME ACTIVITY

0820 Lubricant truck in the Unit 1 switchyard hits supporting tower for the 230 KV feeder to the Unit 1 "A" RAT. The insulator fell off of the tower and the "C" Phase connection was broken. This established a fault to ground. A breaker in the 230 KV switchyard opened, effectively isolating power to the Unit 1 "A" RAT and the Unit 2 "B" RAT.

Turnbine trip - Reactor trip on Unit 2 due to a protective relay actuating as a result of the switchyard transient.

0821 Unit 1 Diesel Generator "A" starts and then trips for unknown reason, and manually started.

Main Steam Line Isolation manually initiated - Unit 2.

10 Site Area Emergency declared - Unit 1.

0856 Headquarters Duty Officer notified of the event. Region tied into the notification.

9004040285

HA/17

0915 Classification downgraded to an Alert due to the recovery of Diesel Generator
"1A."

1" RAT "1B" returned to service. Emergency conditions terminated.

The State of Georgia has been notified.

This information is current as of 10:00 a.m. on 3/21/90.

CONTACT: S. Ebnetter - 841-5089

DISTRIBUTION:

One White
Flint North
Chairman Carr
Comm. Roberts
Comm. Rogers
Comm. Curtiss
Comm. Remick
OGC
OCA
GPA/SLITP/PA
EDO
NRR
S

M'land Nat'l
Bank Bldg
IRM
OIC
AEOD
NRC Ops Ctr

Nicholson Lane
RES

L Street
PDR

Regions
Region I
Region II
Region III
Region IV
Region V

Phillips Bldg
ACRS

EWB
ASLAP

MAIL TO: DCS (Original IE 34)
DOT (Transportation Only)

FAX TO: INPO 310
LICENSEE (Corporate) 305-
RII Resident

5520: 03/21/90 @ 2:30 p.m. TO REGIONS AND HQ

P H

PH-II-90-16A

Subject Site Area Emergency at
Vogtle Unit Loss of Onsite and
Offsite Power.

At 1:47 PM EST the licensee secured
from the emergency classification ~~after~~
after both onsite and offsite power
was restored. There has been extensive
news media coverage of the event.

R II regional and resident inspectors are
onsite reviewing the ~~loss~~ event.

Activities in Unit 1 are ~~concentrated~~
concentrated in filling the Reactor Coolant
System.

A preliminary sequence of event
has been prepared by the HRC.

The Unit 2 Reactor ^{trip} was
the result of the actuation of a
protective relay in the Main Generator.
~~The Unit 2 Reactor~~

SEQUENCE OF EVENTS
LOSS OF A/C POWER - UNIT 1
20 MARCH 1998

NOTE: ALL TIMES ARE PRESENTED IN CENTRAL STANDARD TIME (CST)

INITIAL CONDITIONS:

Unit 2 was at full power with no significant equipment inoperabilities.

Unit 1 was shut down for refueling, in Mode 6. Fuel had been reloaded with approximately 1/3 of the core being new, unirradiated fuel. The reactor had been shutdown for approximately 30 days; therefore, decay heat was not significant. The reactor head was in place but had not been fully torqued. Reactor Coolant Inventory was at Mid-Loop conditions. Shutdown Cooling was in effect. The "B" RAT was inoperable due to maintenance (oil change). The "B" Diesel Generator was also inoperable due to regularly scheduled maintenance.

TIME	ACTIVITY
0820	Lubricant Truck in the Unit 1 Switchyard hits supporting tower for the 230 KV feeder to the Unit 1 "A" Reserve Auxilliary Transformer (RAT). The insulator fell off of the tower and the "B" Phase connection was broken. This established a fault to ground. Two breakers in the 230 KV Switchyard opened, effectively isolating power to the Unit 1 "A" RAT and the Unit 2 "B" RAT. Turbine Trip - Reactor Trip on Unit 2.
0821	Unit 1 Diesel Generator "A" starts and then trips on "Low Jacket Water Pressure" (a non-essential trip). Main Steam Line Isolation manually initiated - Unit 2.
0840	Site Area Emergency declared - Unit 1.
0856	Headquarters Duty Officer Notified of the event. Region tied into the notification.
0915	Classification downgraded to an Alert due to the recovery of Diesel Generator "1A".
1247	RAT "1B" returned to service. Emergency conditions terminated.

EDO

Highlight

Extensive News Media Coverage has resulted from the Site Area Emergency declaration. An AIT is being dispatched to the site to supplement the RII Inspectors

2/14/00 mme 90

Page 1 of 2

- 1B D/G and 1B RAT are Out of Service
- 0820 • 1A RAT tripped DG 1A tied on and then Tripped
- 0841 • A Train Sequencer reset & DG 1A Auto Started and tripped on low jacket water pressure
- ⁴⁰
0858 • Declared Site Area Emergency (by OSOS) because of loss of OFFsite and onsite IE power
- 0900 • Emergency break glass start of D/G 1A to bypass the low jacket water pressure Trip. This start was done to bypass the ~~low~~ normal trips. After the start the diesel parameters were monitored locally. (Normal trip parameters).
- 0856 • Started NSCW pumps and CCW pumps A-train
- 0900 • Started A-Train RHR pump and placed it in the shut down cooling mode. At this time the maximum core exit T/K temperature was 136°F.
- 0917 • Downgraded emergency to Alert Emergency
- 1029 • RAT 1B energized

2/18

1040 • IBA03 Energized from RAT 1B

1059 Train B NSCW Started

1103 Train B CCW pumps started

1131 Train B RHR pumps started

1138 RHR Train B placed in shutdown cooling mode
RHR Train A placed in recirc.

(1157 1AA02 alternate incoming breaker closed in
to supply power from RAT 1B/parallel with DG 1A

1211 Loaded D/G 1A in parallel with offsite power
to 6800 kw in accordance with procedure

1247 Emergency Terminated. Plant was in a
stable configuration. Normal offsite
power was available and shutdown cooling
was available.

[Signature]
Extra CEO 3/20/90

R. Bruce Anderson

[Signature]
Reactor Operator

3/20/90

Phillip A. Hismacher

SITE AREA EMERGENCY
3-20-90

EST	TIMELINE
0920	Lost of 1A & 2B RAT due to switchyard accident.
0920	Unit 2 Trip - unit stable - DG-1A started, tripped because of low jacket water pressure.
*0921	Security Diesel started and loaded properly
0940	Site Area Emergency declared - Loss of power
0941	DG-1A tied to 1E Bus and tripped
0956	Local start of DG-1A - power to 1E Bus, NSCW pumps on (onsite power restored)
0959	Start notification of SAE using SC Backup ENN
1001	Page announcement to site (Site Area Emergency Announcement)
1002	Security (PESB) notified by ED
1003	Emergency Message #2 started

EST

TIMELINE

1005 Accountability commenced by Security

1005 General Office Operations Center (Birmingham) activated

1013 Completed initial notifications to Aiken, Allendale, Barnwell, SRS, S.C. (GEMA and BCEMA not notified)

1014 Called GEMA on primary and Back-up commercial phone numbers, no answer.

1015 George Bockhold relieves John Hopkins as Emergency Director. #2 Emergency Notification form approved by ED.

1015 Site Area Emergency downgraded to Alert. Diesel Generator maintaining load.

1016 Initial notification made to Burke County EMA on commercial telephone

1022 Message #2 completed to Barnwell County

1026 TSC Activated

1029 Messate #2 completed to Allendale and SRS

EST

TIMELINE

1034 Message #2 completed to South Carolina

1035 Message #3 started by communicator in Control Room
(using BUENN)

1038 Message #2 complete to Aiken County

1040 Initial Notification made to GEMA

*1040 OSC Activated

*1040 EOF in Standby

1044 Message #3 completed to Barnwell County

1045 Message #3 completed to Allendale Co.

1046 Message #3 completed to Aiken Co.

1048 Message #3 completed to SRS

1050 Message #2 completed to Georgia

EST

TIMELINE

1050 Message #3 completed to South Carolina.

1050 Corporate Office Birmingham contacts Public Information - Atlanta with initial information which is released to the Media.

1055 ED departs Control Room to TSC.

1056 Message #2 completed to Burke County. ED at TSC and assumes duties and responsibilities.

1059 Message #3 completed to Georgia

1100 Briefing in TSC
PA announcement - accountability announcement

INITIAL PRESS RELEASE

1112 Unit 2 in Mode 3

1130 Second Press Release

1130 Unit 1 RAT has offsite power to hi-side

1140 1BA03 energized from offsite power

1143 All buses off of 1BA03 energized

1222 TSC Briefing

1229 TSC Status of personnel accountability

1302 Loads of 1AA02 transferred to offsite power

1310 ED conference call to local agencies to discuss termination of emergency

1313 Offsite power restored

1347 Emergency Terminated

1400 News Release concerning termination of emergency

-1016
1013 TSC on EN11 - Roll Call
1015-1016 Pauline Jenkins
Le Roy Spriggs

You Can

1019 Duke Garrett called TSC on EN11
This not a dial

1022 Vogle EOF called TSC for comm
check

1025
~~1020-1024~~ Called S.C. EPD on FEMA
circuit.

G. Snyder Saw got it on Backup
EN11

1035 Received ~~traffic~~ Facsimile
from SC/EPD.

March 22, 1990

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE PNO-II-90-16B

1. preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region II staff on this date.

FACILITY: Georgia Power Company
Vogtle Unit 1
Docket No. 50-424
Waynesboro, GA

Licensee Emergency Classification:
 Notification of Unusual Event
 Alert
 Site Area Emergency
 General Emergency
 X Not Applicable

SUBJECT: AUGMENTED INSPECTION TEAM IS DISPATCHED TO VOGTLE UNIT 1

An Augmented Inspection Team is at the Vogtle site to review the event of March 20, 1990, which resulted in a Site Area Emergency when Unit 1 lost its offsite and onsite AC power. The team is composed of members representing AEOD, NRR, and Region II. Extensive media coverage continues.

Unit 2 is operating at 25 percent power after recovering from a reactor trip on March 20, 1990.

The State of Georgia has been notified.

(Information is current as of 10:00 a.m. on 3/22/90.

CONTACT: S. Ebnetter - 841-5089

DISTRIBUTION:


One White	M'land Nat'l	Regions	<u>MAIL TO:</u>	DCS (Original IE 34)
Flint North	Bank Bldg	Region I		DOT (Transportation Only)
Chairman Carr	IRM	Region II	<u>FAX TO:</u>	INPO
Comm. Roberts	OIG	Region III		LICENSEE (Corporate)
Comm. Rogers	AEOD	Region IV		RII Resident
Comm. Curtiss	NRC Ops Ctr	Region V		
Comm. Remick				
OGC				
OCA	Nicholson Lane	Phillips Bldg		
GPA/SLITP/PA	RES	ACRS		
EDO				
NRR	L Street	EWV		
NMSS	PDR	ASLAP		
OE				

5520: 03/22/90 @ 12:30 P.M. TO REGIONS AND HQ

9004050221

H/19

Meeting Attendance Record


Georgia Power 

Meeting Purpose <u>NRC Entrance</u>		File
Date <u>March 22, 1990</u>	Conducted By <u>Ken Brockman</u>	

Name (Print)	Title (Print)	Phone Employee Number	Department/Company
GARMON WESTER	PSYCHOLOGIST ENGINEERING	4249	NRC
RICK KENDALL	SR ELEC. ENGR.	4249	NRC
BILL JONES	SR EXSP ENGR	4249	NRC
GENE TRAGER	NUCLEAR ENGINEER	4249	NRC
Herb Beacher	SR. PLANT ENGR.	3769/138	Tech. Support / GPC
Skip Kitchens	Asst. GM - Ops	3140	Mgt / GPC
GEORGE FREDERICK	SUPR - SAER	X3228	GPC
Allen L. Masbaugh	Asst GM Pt. Support	3143	GPC
GLENN A. McCARLEY	ISGG SUPVR	3239	GPC
HARLES L. COURSEY	GWT. MAINT	3468	GPC
MIKE LAKS	D & P MGR	4209	OP / GPC
Jimmy Gish	OPS Supt.	3330	OPS / GPC
E.M. DANNEMILLER II	NUL SECURITY MANAGER	3637	SECURITY / GPC
G BOCKHOLD	GM	3118	GPC
LEIGH TROCINE	PROJECT ENGINEER	4249	NRC, REGION-II
KEN BROCKMAN	CHIEF, REACTOR PROTECT SECTION 3B	4249	NRC, REGION-II
WARREN C LYON	SR. REACTOR ENG		NRC / NRR / SRXB
ELDAN D. TESTA	SR. Rad Spr.		NRC RII EPS
R.D. STARKEY	RESIDENT INSPECTOR	4249	NRC
R.F. AIELLO	SRI	4249	NRC
C.C. Eckert	M.I.T.	X3360	GPC
Indira Kochery	HR Supt	3229	GPC
J.N. Roberts	Emergency Preparedness Coordinator	3916	GPC
KR Holmes	Mgt Training & EP	3901	GPC
J.G. Aufdenknecht	Mgt Technical Support	3600	Tech Support / GPC
J.E. SWARTZWELDER	OPS. MGR.	2618	OPS / GPC

A/20

Meeting Attendance Record

Georgi: Power 

Meeting Purpose		File
NRC Entrance Meeting		
Date	Conducted By	
3-22-90	Ken Brockman	

[illegible]

23 MAR 90

0800 :	J. Swartzwelder	OPNS MGR
0900 :	D.R. VINEYARD	SS Outage Support +
0930 :	P.A. HUMPHREY	BOP operator
1000 :	L.P. VANNIER	Po
1030 :	R.B. SNIDER	Unit Shift Supvr.
1100 :	K.A. JOHNS	Extra CEO (OP/BA)
1130 :	J.W. ACREE. <i>BA</i>	> Shift Supvr (Outage Support)
1300 :	R.K. POPE <i>signature</i>	
1330 :	D. DeLOACH	> PEO's EDG < Also at 1530 in the D/G 1A Room
1400 :	S. WHITMAN	
1430 :	J.P. CASH	Ops Superintendent / TSC
1500 :	W.L. BURMEISTER	" " "
(? time) ~ 1730 :	J.D. HEPKINS	Senior SBO (Shift Superintendent)

not
TSC?

(? time)

123

People Interviewed - AIT 3/24/90

1. Jim Roberts EPC @ various times notes & contained in results
2. Herb Whitener NRC R2 inspection onsite 3/20/90 during event
3. Ed Kneizsky CR layout drawings
4. Pauline Jenkins Communication
5. Theresa Jones "
6. Jimmy Cash Ops Supt.
7. Wm. Burmeister Plant Duty Mgr.
8. Unnamed Sampling of Service Bldg Employees
9. John Hopkins - Incomplete
10. Capt. Wm. Johnson - Security
11. Lt. Wm. Stewart

Current Status Unit 1

Still in Mid Loop

FOOT RTD BYPASS needs to be spool pieced - MWO

- His w/it Outage

No Equipment Quarantined to Date

CHARTER RESPS

- #1) Warren LYON #2) Ken #3) Garmon WEST
 #4) Eldon TESTA #5) Rick KENDALL #6) Rick KENDALL
 #7) GENE TRAGER

INITIAL CONDITIONS -

- a) Still to Verify whether total or partial loss of
 all AC - Conflicting Facts
 APPARS - Both 13.8KV & All THREE 416KV (NE) Busses WERE
 BEING BACK FED THRU UATS
- b) VERIFYING ELECTRICAL ISOLATION SETPOINTS
 U1 Swyd
 U2 Trip City
- c) OPERATOR INTERVIEWS - TODAY
 C/R WALKDOWN
 FUEL TRUCK INSPECTION
 CNTMT WALKDOWN

} These all
 are Feeders
 to #2 - We
 have ever Rn
 Tms latest!

#4

-) EPIP

No apparent classification of NOUE & ALERT levels
 TSC/CR Communicator Interviews Today
 TRZACOWSKI OBTAINING DATA FROM OFF SITE OREN'S
 to Confirm Notifications

H124

#3 INMATIVE EVENT

Guard has been interviewed
 Arranging for Driver of Truck (has been terminated)
 Getting Copies of Photos / Taking car away!
 State Safety Ofc - NO COORDINANCE
 ON THIS TOPIC

#5 Guard I. Piece

U2 TT Relaying intelligibly not - Too Sensitive
 Gathering data on Bahr Isolation

#6 EDG Responses

Interviews start Today
 Was run 3 Times (Normal Situations)
 on Tues - Worked fine each Time

#7 Personnel Responses / Contact / Tng

Interviews Today / Tomorrow
 Contact w/ B Today PM
 INDIC OF COMM - TUES PM - Mgmt will
 Mgmt will All AC

#8 Report

Sec's support OK at this time

- Notification of the Site Area Emergency was significantly delayed to the State of GA (≈ 1 hr) and local GA County (Banks County). This was due in part to a failure of the Emergency Notification Network (ENN). A back up system BUENN only has the State of S. Carolina and counties of SC on the system. The State of GA and Banks County was notified using commercial phone. Loss of Power to the ENN in CR resulted in only series. The BUENN is powered from the Security Direct and worked. The TSC drop of the ENN would have worked since it is located in the TSC and was powered from the security direct, the loss of power also affected the CR ability to make their copies then the TSC had not been a copy of message #1 the SAE declaration.
- Classification of the event was delayed due to rapidly changing events. The unit 2 trip and the short lived start up of the Direct on Unit 1 contributed to some of the delay. The person making the classification opted to go for SAE and by-pass NOUE or alert because the Direct tripped off and was not reliable at that time.
- The ability to assess actual or potential offsite consequences from the event was severely limited. Meteorological data was lost in the Control Room EKF Computer and the PERKS (vent monitor) was also lost. In effect if a release was on going or about to occur. One problem would have been questioned. A person was dispatched to the Meteorological Tower when it was recognized that information was unavailable about 1 hr after event.
- Activation of Emergency Response Facilities occurred within the time frame of the approved plan; however close to the end limit. One wonders what the results would have been at 2.44 if the event occurred then.
- Accountability was not achieved by event termination. There were still 49 people unaccounted. People were confused as to where they should go and what they should do. Some in the cafeteria took advantage of "free food" when the cooks and other non essential cafeteria people left. People exiting the gate told the guard they were to go and be decontaminated. Security people expressed a real disappointment on how people performed. Security was never officially informed of the event. The PA in the SAS was important. Technical Security was never required to perform accountability.
- Interviews with ^{CP} communists and series of training needs for these people were not as indicated they performed adequately. They were experienced during pasting of ^{actual} NOUE notifications and drill / exercise.

Request for INFO

How many Licenses
have EAC SEC for
LIC? - Illinois SEC

KEN MCCOY

Event Critique Completed
2/11 this wknd.

~~2/15~~ operable

Ken McCoy & Myself POC's

D/G "White Paper"

Today (6 Dec) w/ E.D.O. 951-
6690
Budge

$\frac{30}{A}$ - Conf Call

~~3/11/94~~ - Taylor / Cherie will know

Strike 1

Code / Contingency
Code of Ethics - (Cg in 29 Flr Conf Rm)
Conflict of Interest

ID Inq Scope
TS / CFR /

Entrance

Opns Mgt to Coordinate

Inq Scope

Estab Exit

(1) "Potential" limited to EN.
(2) F/B

⑦ LIST

7 Temp Sw's (JW & LO)

5 Press Sw's (L. JW / L. LO / P3)

1 Logic Board

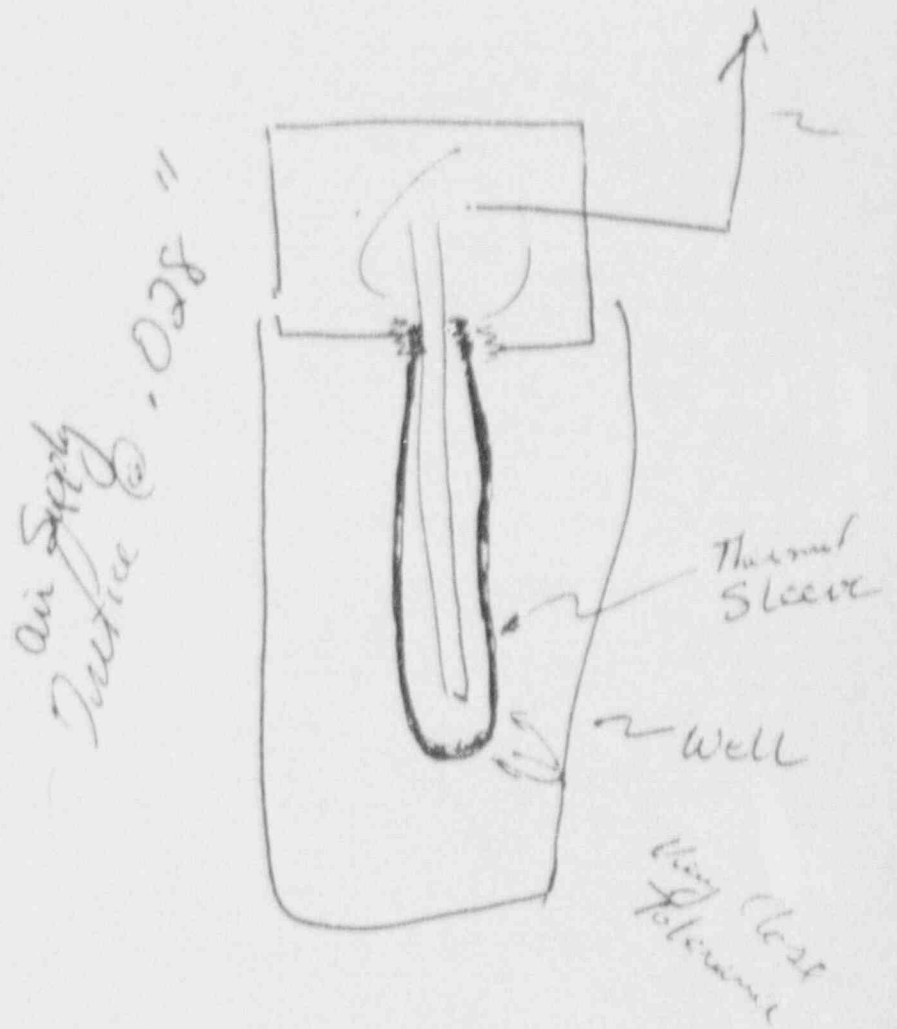
Mixed Bag of AA & AB
Switches

Design

60# \rightarrow 20# @ 20°F \pm 2°F

Time @ 2-10 sec (for Temp Change Prod)

($T_{sp} = 4^\circ$ - Air Bleed Off Starts (= 4 psi))



list of Cont

DEF

1/12/41

all Chappie

George Bosholt + D/G Team

Don Stuking

Milt Hunt on his way

1) Gung: calcon bag

2) Bag of the sensors that would
CAL find a loose thermal sleeve

3/24 - CALCON Calda

3/31 - VEGP could not CAL
(Strategic Response)

4/2 - CALCON tightened sleeve
Then calibrated to SAT

Contmt w/D

Vlv 4u Not Sat

a) Vlv Impwp Posn'd

b) Vlv Impwp Locked, but - Posn
1a) TS neg'd

(b) Pos'd neg'd

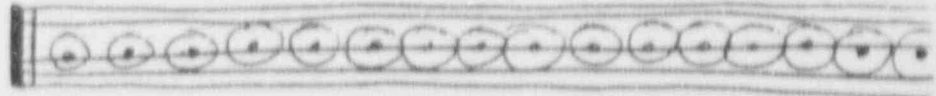
(1) Sensor from W/H 13/24)
CALCON guy loosened & then
retightened

∴ EVIDENCE doesn't follow

It was hand looseable &
should have been torqued

They distorted, bent, hot/cold
and it only loses 10°F accuracy

D/G Test or Hot Water
IIT to Row Sluy Theory



STATUS OF AIT CHARTER ITEM ASSIGNED TO RICK KENDALL (ITEMS NOS 5 & 6)

ITEM 5. A FAULT IN THE UNIT 1 SWITCHYARD CAUSED UNIT 2 TO TRIP. THE CAUSE WAS A "MISWIRED" CURRENT TRANSFORMER. GIVEN THE "WIRING ERROR", THE UNIT 2 TRIP SHOULD HAVE BEEN EXPECTED. THE ERROR APPEARS TO HAVE BEEN DUE TO A MISTAKE MADE WHILE TRANSFERRING GPC DESIGN SPECIFICATIONS ONTO FIELD DRAWINGS. THE FIELD WIRING WAS IN ACCORDANCE WITH THE INSTALLATION DRAWINGS. IT DOES NOT APPEAR THAT UNIT 2 IS OVERLY SUSCEPTIBLE TO UNIT 1 TRIPS OR VISE VERSA. THE UNIT 1 SWITCHYARD BREAKER ACTUATIONS IN RESPONSE TO THE FAULT WERE APPROPRIATE AND EXPECTED. THE REVIEW CONDUCTED FOR THIS ~~SECTION~~ ^{ITEM} HAS EXPANDED BEYOND ITS SCOPE TO INCLUDE 1) IDENTIFICATION OF POSSIBLE ALTERNATE SOURCES OF POWER TO THE UNIT 1 TRAIN A BUS HAD THE EDG NOT EVENTUALLY STARTED OR HAD NOT RESTARTED AFTER IT TRIPPED, AND 2) LICENSEE ACTIONS TAKEN AND BEING CONSIDERED TO MAKE THE SERVICES AVAILABLE. THE "AIT REVIEW" FOR THIS SECTION IS ~90+% COMPLETE AS FAR AS INFORMATION GATHERING, AND ~15-20% COMPLETE AS FAR AS DRAFT WRITUP.

ITEM 6. RESPONSE OF THE 1A EDG. THE "AIT REVIEW HERE HAS NOT GOTTEN VERY FAR. THERE HAS BEEN A SIGNIFIKANT NEW DEVELOPMENT; NAMELY, THE 1B EDG WHICH WAS BEING TESTED ON 23 MAR 90 WAS RUNNING WHEN SEVERAL ALARMS CAME IN (LOW TACKET WATER PRESSURE, AND LOW TURBO OIL PRESSURE) THAT ALSO CAME IN WHEN THE 1A EDG TRIPPED DURING THE 20 MAR 90 EVENT. BOTH EDGs HAD UNDERGONE REFUELING INTERVAL MAINTENANCE (MUCH OF WHICH WAS PERFORMED BY THE VENDOR) AND HAD SUCCESSFULLY PASSED POST MAINTENANCE TESTING. IT APPEARS THAT THE MAINTENANCE MAY HAVE BEEN A FACTOR. THE LICENSEE IS PREPARING FOR THE INITIAL ~~EDG~~ TESTS FOR TROUBLESHOOT. THE VENDOR (COOPER INDUSTRIES, FORMERLY TDI) WILL ARRIVE ONSITE

IS PLANNED TO
TESTING ON THE 1B EDG ~~WILL~~ BEGIN ON 25 MAR 90. EDG 1A
TESTING IS NOT PLANNED UNTIL 26 MAR 90 AT THE LATEST. WE HAVE
MORE OR LESS (?) QUARENTINED EDG 1A, BUT ARE ALLOWING THE
LICENSEE TO DO WORK ON EDG 1B WITHOUT CONSULTING US
FIRST TO ALLOW THEM TO COMPLY WITH TECH SPECS WITH REGARD
TO RESTORING AN EDG TO OPERABILITY. ALL WORK ON THE EDG
REQUIRES A MAINTENANCE WORK ORDER (MWO). WE PREPARED A
CAUTION STATEMENT THAT WILL BE PART OF EACH EDG ^{1B} MWO (AND
ALSO FOR EDG 1A) THAT ADDRESSES NED TO BE CAREFUL NOT TO
DESTROY AND TO CAREFULLY DOCUMENT ANY INFORMATION RELEVANT TO
ROOT CAUSE. WE ARE MONITORING THE LICENSEES ACTIVITIES.
INFORMATION GATHERING PHASE FOR HIT IS ~40% COMPLETE.
WRITUP HAS NOT BEGUN.

ALY KEN EVI

RK
25/MAR/90

25/MAR/90 DISCUSSION w/ PAUL KOCHERT (~10:30 AM)

ON 23/MAR/90 THE 1B EDG WAS STARTED FOR AN 8-HR TEST. THE EDG RAN FINE FOR ~2 HRS AND THEN TRIPPED. THE TRIP ALARMS THAT CAME IN WERE LOW TACKET WATER PRESSURE AND LOW TURBO LUBE OIL PRESSURE (THESE TWO ALARMS, AND OTHERS, ~~WERE~~ ARE BELIEVED TO HAVE COME IN ON THE 1A EDG TRIPS ON 20/MAR/90). THE TRIP SIGNALS WERE RESET, ^{AND} THE EDG (1B) WAS ^{THEN} RUN FOR 8 HRS WITHOUT ANY PROBLEMS.

GPC PLANS TO DO EDG 1B LOGIC TESTING BEGINNING SOMETIME THIS MORNING (MAY HAVE ALREADY STARTED), AND EDG 1B SEQUENCER TESTING THIS AFTERNOON. PAUL CONFIRMED THAT NO TESTING IS PLANNED FOR EDG 1A UNTIL 26/MAR/90 AT THE EARLIEST. THE SEQUENCER TEST WILL BE MADE AVAILABLE ^{TO THE IIT} A PRIOR TO THE TEST. GPC WANTS TO VERIFY PROPER OPERATION FOLLOWING PART REPLACEMENT (DON'T KNOW WHICH PART). THE SEQUENCER WAS NOT ACTUATED OR INVOLVED DURING THE EDG 1B TESTING ON 23/MAR/90 DISCUSSED ABOVE.

IN A PREVIOUS DISCUSSION WITH PAUL (~9:00 AM.), HE CONFIRMED THAT THE VENDOR REPS PERFORMING THE EDG 1B LOGIC TESTS ARE ^{AND ARE THE} THE EXPERTS A MOST QUALIFIED TO DO THE TESTS. THE VENDOR REPS HAVE BEEN CAUTIONED CONCERNING THE NEED TO ENSURE THAT INFORMATION RELEVANT TO THE CAUSE(S) FOR THE 23/MAR/90 EDG 1B TRIP IS NOT LOST BECAUSE OF THE TESTS, AND TO CAREFULLY DOCUMENT ANY INFORMATION THAT MAY BE RELEVANT TO THE CAUSE(S). ALL UNNECESSARY / UNRELATED ACTIVITIES IN THE EDG AREA HAVE BEEN STOPPED TO ALLOW THE VENDOR REPS TO PROCEED WITHOUT DISTRACTIONS.

7/4/90

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Memorandum from J. Taylor to the Commission dated 3/23/90:
Subject: Investigation of March 20, 1990 Event at Vogtle Nuclear Power
Plant Involving loss of offsite Power on Demand at Unit 1

2. Documents Collected and Provided by Augmented Inspection Team (AIT)

- 2-1 Instruction Manual For S & C Circuit Switches (Outdoor 230kv)
- 2-2 Instruction Manual For Westinghouse Type Co Overcurrent Relays
- 2-3 Instruction Manual For ASEA Type RADSE Transformer Differential Protective Relays
- 2-4 Instruction Manual For Brown Boveri Type AOT, AOK & AOS High Voltage Current Transformer
- 2-5 Instruction Manual For General Electric Type PVD Differential Voltage Relay
- 2-6 Nuclear Plant Maintenance Work Order No. 28900466
- 2-7 Bechtel Drawings 1X3D-AA-A01A (Main One Line - Unit 1)
- 2-8 Bechtel Drawings 2X3D-AA-A01A (Main One Line - Unit 2)
- 2-9 Bechtel Drawings AX3D-AA-A01A (Main One Line - Common Units 1 & 2)
- 2-10 Bechtel Drawings AX3DL060 (Switchyard General Arrangement)
- 2-11 Bechtel Drawings 1X3DH7A1 (Low Voltage Switchyard Plan)
- 2-12 Bechtel Drawings 1X3DH7A3 (Low Voltage Switchyard Details - Sheet 2)
- 2-13 Bechtel Drawings 2X3D-BB-BOIL (Elementary Diagram - Electrical System Generator Tripping)
- 2-14 Southern Company Services/GPC Drawing AX3D-BA-L57D (500kv PCB No. 161520 Close & Trip No. 1)
- 2-15 Southern Company Services/GPC Drawing AX9D-AA-L50T (500kv PCBs No. 161520/161620/161660 Single Line)
- 2-16 Southern Company Services/GPC Drawing AX3D-BA-L55A (230kv Offsite Source No. 1 C.T. & P.T. Connecting - Sheet 1)
- 2-17 Southern Company Services/GPC Drawing AX3D-BA-L55B (230kv Offsite Source No. 1 C.T. & T. Connecting - Sheet 1)
- 2-18 Southern Company Services/GPC Drawing AX3D-BA-L55C (230 Offsite Source No. 1 Diff. & Backup Relaying)
- 2-19 Southern Company Services/GPC Drawing AX3D-AA-L50B (230kv Single Line For PCBs 161760/161860/161960)
- 2-20 Bechtel Drawings 2X3D-AA-B04A (Three Line Diagram - Unit 2 AC Generator)

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 RATs)
 2-22 Bechtel Drawings 2X3D-AA-B01A (Relays & Meters - Generator,
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 2-23 Bechtel Drawings 1X3D-BA-B55B (Res. Aux. XFMR INXRB CRT
 Switcher)
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 230kv Sunstation Single Line Index Drawing)
 2-25 Nuclear Plant Maintenance Work Order No. 18906364
 2-26 Southern Company Services/GPC Drawing AX3D-BA-L52R
 2-27 Southern Company Services/GPC Drawing AX3D-BA-L52N Elementary
 2-28 Southern Company Services/GPC Drawing AX3D-BA-L52P Diagrams For
 230kv PCB
 2-29 Southern Company Services/GPC Drawing AX3D-BA-L52Q No. 161860
 2-30 Southern Company Services/GPC Drawing AX3D-BA-L52S
 2-31 Southern Company Services/GPC Drawing AX3D-BA-L52H
 2-32 Southern Company Services/GPC Drawing AX3D-CA-L72K
 2-33 Bechtel Drawing 1X3D-AA-D03B (4160 V Switchgear 1BA03)
 2-34 Bechtel Drawing 1X3D-AA-D03A (4160 V Switchgear)
 2-35 Bechtel Drawing 1X3D-AA-D02B (4160 V Switchgear 1AA02)
 2-36 Bechtel Drawing 1X3D-AA-D02A (4160 V Switchgear 1BA03)
 2-37 Bechtel Drawing 1X3D-AA-D01A (4160 V Switchgear 1NA01)
 2-38 Bechtel Drawing 1X3D-AA-D04A (4160 V Switchgear 1NA04)
 2-39 Bechtel Drawing 1X3D-AA-D02A (4160 V Switchgear ANA02)
 2-40 Bechtel Drawing 1X3D-AA-D03A (4160 V Switchgear ANA03)
 2-41 Bechtel Drawing AX3D-BA-D02C (4160 V Breaker ANA0203)
 2-42 Bechtel Drawing AX3D-BA-D03C (4160 V Breaker ANA0303)
 2-43 Bechtel Drawing AX3D-BA-D03B (4160 V Breaker ANA0301)
 2-44 Bechtel Drawing 1X3D-BA-D01J (4160 V Breaker 1NA0111)
 2-45 Bechtel Drawing 1X3D-BA-D04D (4160 V Breaker 1NA0412)
 2-46 Bechtel Drawing 1X3D-BA-D02C (4160 V Swgr 1AA02 INCM Brkr 1NXRB)
 2-47 Bechtel Drawing 1X3D-BA-D02B (4160 V Swgr 1AA02 INCM Brkr 1NXRA)
 2-48 Bechtel Drawing 1X3D-BA-D02D (4160 INCM Brkr 152-1AA0219 EDG)
 2-49 Bechtel Drawing 1X3D-BA-D01C (4160 Swgr 1NA01 INCM Brkr 1NXRA)
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 2-51 GPC Procedure No. 24614-1 "Train B Sequencer ACOT & CAL"
 2-52 GPC Procedure No. 27563-C "Generator And Engine Control Panel
 Functional Test"
 2-53 Delaval Drawing 09-500-76021 Sh 1
 2-54 Delaval Drawing 09-500-76021 Sh 2
 2-55 Delaval Drawing 09-500-76021 Sh 3 Diesel Generator
 2-56 Delaval Drawing 09-500-76021 Sh 4 Engine Control
 2-57 Delaval Drawing 09-500-76021 Sh 5 Panel Schematics
 2-58 Delaval Drawing 09-500-76021 Sh 6
 2-59 Delaval Drawing 09-500-76021 Sh 7
 2-60 Delaval Drawing 09-500-76021 Sh 8
 2-61 Delaval Drawing 09-695-72021 "Engine Pneumatic Schematic"
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1X3D-AA-F27A, Rev. 13
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 1X3 DG-020, Rev. 15
 2-63 10 Mile EPZ Map
 2-64 NOUE ED Checklist Of 3/23/90
 2-65 EOF Personnel For 3/20/90
 2-66 Security Emergency Response Organization for 3/20/90
 2-67 TSC Personnel 3/20/90
 2-68 CR Personnel 3/20/90
 2-69 OSC Personnel 3/20/90
 2-70 Training Records EOF
 2-71 Communicator Package Consisting Of:
 Course Completion & Attendance Records
 Training Student Handout Dated 6/27/89
 Lab/Performance Exercise Guides
 Lesson Plan RE LP 07001-02
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 Lesson Plan RE LP 07001-01
 2-72 Control Room Layouts
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 2-73 Previous Inspection Report:
 50-424,425 89-21 & 89-25 8/25-27/89 Exercise
 50-424/425 88-38 & 88-42 8/15-19/89 ERF Appraisal
 2-74 QA Open Item OAA-87-292
 2-75 Safety Standard Handbook
 2-76 Emergency Director Log
 2-77 TSC Log
 2-78 Emergency Notification Messages:
 #1
 #2
 #3
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 2-79 EOF Manager Log
 2-80 Met Info
 2-81 Dictated From GEMA To VEGP (FAX 3/22/90) Notification
 Information
 2-82 Assorted News Dispatcher & Newspaper Articles
 2-83 Procedures:
 91001-C, Rev. 7
 91002-C, Rev. 15
 91102-C, Rev. 6
 91401-C, Rev. 5
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 2-84 GET Training Student Handout

2-85 Handbook For General Employee Badge Training
 2-86 3/2/90 Test "Data Sheet 4" Of 91204-C & Data Sheet 7
 2-87 3/20/90 Notes "Emergency Response" - From Region II
 2-88 3/21/90 Notes 3 Pgs. Notes
 2-89 8 Hr Report Dated 3/20-90
 2-90 3/22 Results Sheet On Accountability & TSC Procedure
 Verification
 3/22 Restriction On Offsite Interaction - Phone Call
 3/22 BUENN Notes
 2-91 3/22 Interview - Herb Whitener RII
 2-92 3/23 Notes CR Procedure Verification
 2-93 RII Plant Note On Capt. I. Nash
 2-94 Interview Pauline Jenkins - Communication
 2-95 Interview Theresa Jones - Communication
 2-96 Interview Jimmy Cash - Operations Supt.
 2-97 Interview William Burmeister - Plant Duty Manager
 2-98 Results Of Selected Sampling Of Employee In Security Bldg.
 2-99 E Plan Section H-9 "Activities And Staffing Of Emergency
 Facility"
 2-100 Interview John Hopkins - Shift Supt. Unit 1 (Interview
 Incomplete)
 2-101 Interview Capt. William Johnson Accountability & Log Form
 2-102 Interview Lt. William Stewart Accountability
 2-103 Historical Classification Of Emergency & Phone Communication
 Notes - Bob Trojanowski - RII GAO
 2-104 E Plan. Section B. "Onsite Emergency Organization"
 2-105 Results Of CR Walkdown Of Procedure File As Found
 2-106 Backup ENN Description
 2-107 Met Bldg. Inspection Notes
 2-108 Listing Of Onshift People For Inspection
 2-109 Drug And Alcohol Screening Report On Donnie Willhite (Fuel Truck
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 2-110 Inventory Of Fuel Truck
 2-111 Procedure 00656-C. Traffic And Parking Control. Rev. 0
 2-112 Procedure 90015-C. Vehicle Access. Rev. 8
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 2-114 Procedure 70030-C. Traffic And Parking Control. Rev. 2
 2-115 Procedure 90015-C. Vehicle Access To The PA. Rev. 5
 2-116 Procedure 00260-C. Hazardous Substance And Waste Control. Rev. 5
 2-117 Procedure 00261-C. Fuel Oil Handling And Safety. Rev. 5
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 2-119 Figure 16-1 "Offsite AC" (FSAR)
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 2-121 GPC - VEGP - Unit 2 Control Log - pp 2601-03 (3/20/90)
 2-122 GPC - VEGP - Unit 1 SS Log - pp 5413-14 (3/20/90)
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 2-124 VEGP - Unit 2 Trip Report
 2-125 Proteous Alarm Printout - Unit 2 (3/20/90)
 2-126 Proteous Alarm Printout - Unit 1 (3/20/90)

2-127 DC 1-90-0097 (1A D/G Sequencer Prob) (3/20/90)
 2-128 Control Room Layouts
 2-129 Procedure 13145-1, Rev. 20 "Diesel Generators"
 2-130 Licensed Operator Training Materials For Loss Of Electrical
 Power

 2-131 Licensed Operator Training Materials For Loss Of Residual Heat
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 2-132 Licensed Operator Training Materials For Emergency Plan
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 2-133 Outside Operator Training Material For Diesel Generator
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 2-134 Procedure No. 12006-C Unit Cooldown to Cold Shutdown 3/8/90
 2-135 Procedure No. 13005-1 Reactor Coolant System Draining 2-23-90
 2-136 Procedure No. 13011-1 Residual Heat Removal System 3-26-90
 2-137 Procedure No. VEGP 00052-C Procedure No. 12007-C Refueling Entry
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 2-138 Procedure No. 12007-C Refueling Entry 3/8/90
 2-139 Procedure No. 12000-C Refueling Entry 3/8/90
 2-140 Procedure No. 18019-C Abnormal Operating Procedure Loss of
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 2-141 Procedure No. 19100-C Emergency Operating Procedure ECA-0.0 Loss
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 2-142 Procedure No. 23985-1 RCS Temporary Water Level System Emergency
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 2-147 1X4DB114 Rev. 25 P&I Diagram Reactor Coolant System No. 1208
 2-148 1X4DB115 Rev. 23 P&I Diagram Chemical & Valve No. 1208
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 2-150 1X4DB116-2 Rev. 16 P&I Diagram Chemical & Valve No. 1208
 2-151 1X4DB117 Rev. 19 P&I Diagram Chemical & Valve No. 1208
 2-152 1X4DB118 Rev. 20 P&I Diagram Chemical & Valve No. 1208
 2-153 1X4DB119 Rev. 21 P&I Diagram Safety Injection System No. 1204
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 2-156 1X4DB122 Rev. 27 P&I Diagram Residual Heat Removal System
 No. 1205
 2-157
 2-158 NLOD Training Materials
 2-159 Loss of All AC/4160 v IE Power Lesson Plan
 2-160 Loss of RHR Materials
 2-161 EPIP Training Materials that discuss Emerg. Classifications &
 Notification Req's.
 2-162 DC 1-90-0097

4. Evaluation of Potential Explosion in the Vogtle Switchyard
5. Entrance Presentation by Georgia Power Company 3/26/90
6. PNO-IIT-90-02 3/26/90 Subject: IIT arrive at Vogtle Site
7. Agreements signed by (3) industry representatives on Waiver of Compensation, Conflict of Interest and release of Investigation Information for industry participating in IIT.
8. Bulletin Board Notice
9. Letter to Document control desk, USNRC from W. G. Hairston III, Sr. V.P., Nuclear Operation, Georgia Power Co., dated 11/30/89. Subject Vogtle Electric Generating Plant Hardware Modifications pursuant to generic Letter 88-17.
10. Letter to document control desk, USNRC from W. G. Hairston III, CPC, dated 2/2/89. Subject: Plant Vogtle - Units 1 and 2, NRC docket 50-424, 50-425, Operating License NPF-68, Construction Permit CPPR-109 Response to Generic Letter 88-17.
11. Letter to document control desk, USNRC W. G. Hairston, III, GPC, Subject: same as #10.
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13. Letter to W. G. Hairston, III, GPC, from A. R. Herdt, NRC, dated 7/31/89. Subject: Notice of Violation (Inspection Report Nos. 50-424/89-19 and 50-425/89-23) w/NRC Inspection Manual Temporary Instruction 2515/101

14. Local newspaper coverage - March 27, 1990
15. Interoffice Memo from G. Pockhold, Jr., Plant Manager, to Vogtle Site Personnel dated 3/27/90. Subject: Vehicles in Perimeter Area
16. Entrance Meeting with Licensee and Personnel Statements
 - 16-1 Entrance Meeting Notes
 - 16-2 J. Hopkins - SS
 - 16-3 E. B. Snyder - SS
 - 16-4 P. Vannier - RO
 - 16-5 K. Jones - CRO
17. Order to quarantine
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20. Training Lesson Plans:
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 - 20-C Emergency Diesel Generator General Overview No. NL-LP-11201-00-C
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23. Loss of Class 1E Electrical System, AO Procedure No. 18031-C, Revision 6
24. Boron Injection Flow Path Verification - Shutdown, Procedure No. 14406-1, Revision 3.
25. Generator and Engine Control Panel Functional Test Procedure No. 27563-C, Revision 2
26. T-ENG-90-11, Rev. 1, "A-TRAIN UNDERVOLTAGE TEST" Expiration Data: 4/8/90
27. Temporary Procedure No. T-ENG-90-12, B-Train Undervoltage Test

28. Temporary Procedure No. T-ENG-90-13. Sequencer Operability Check
29. Temporary Procedure No. T-ENG-90-14. Unit One Train B DCP 88-VIN0070 Sequencer Functional Test
30. T-ENG-90-15. Unit One Train A. DCP 88-VIN0070 Sequencer Functional Test
31. Maintenance Work Order (MWO) 19001576. 3/28/90 (Diesel Generator 1A)
32. Proteus Alarm Printout (U1)
33. Proteus Alarm Printout (U2)
34. List of Quarantined Equipment (Revised 3/29/90 Rev. 2)
35. Personnel Interviews
 - 35-1 K. Pope - SS
 - 35-2 W. Burmeister - Unit Superintendent
 - 35-3 N. Dewbre, P. Jenkins, T. Jones - Shift Clerks
 - 35-4 F. Thompson - EGS; R. Move - ESS
 - 35-5 G. Bockhold - PM
 - 35-6 D. Vineyard - SS
 - 35-7 W. F. Kitchens - Ass't. PM
 - 35-8 D. Hines, D. Daughhetee, E. Pickett, J. Stanley
 - 35-9 J. P. Cash - OS
 - 35-10 T. C. Eckert - Oper. Dept.
36. List of quarantined equipment (Revised 3/29/90 Rev. 3)
37. Personnel interviews
 - 37-1 W. Johnson, W. Stewart - Security
 - 37-2 M. Lackey - Outage Planning Mgr.
 - 37-3 M. Lackey, R. Barlow, J. D'Amico - Scheduling
 - 37-4 J. Roberts - EP
 - 37-5 H. Handfinger - Maintenance Mgr.
 - 37-6 G. Brenenborg, I. Kochery
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39. Training Lesson Plan No. NL-11204-OOC Emergency Diesel Generator-Engine Control and Protection 5/11/89
40. Procedure No. 13415-1.Rev.6. Reserve Auxiliary Transformers. 6/30/89
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44. Training Lesson Plan No. LO-LP-11102-05-C
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Start System, 12/8/89
45. Training Lesson Plan No. LO-LP-11001-06-C,
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Overview, 12/11/89
46. Personnel Interviews
 - 46-1 E. Dannemiller, D. Huyck - Security
 - 46-2 J. D. Jiles - Safety Specialist
 - 46-3 R. Berry - Security
 - 46-4 S. Chestnut - Training
 - 46-5 K. Stokes - Sr. Plant Eng.
47. Procedure No. 13426-C, 4160V AC Common
Non IE Electrical Distribution System, 1/26/90
48. Training Lesson Plan No. LO-LP-11103-06-C
Emergency Diesel Generator Auxiliaries:
Combustion air and exhaust, 2/28/90
49. Training Lesson Plan No. LO-LP-11104-C,
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and Crank Case Ventilation, 12/8/89
50. Training Lesson Plan No. LO-LP-11105-08-C,
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water cooling system, 12/8/89
51. Training Lesson Plan No. LO-LP-11101-07-C
Diesel Generator Auxiliaries Fuel Oil System
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52. Letter to J. P. Kane, GPC, from W.C. Ramsey
(unsigned and undated). Subject: Response to REA
VG-9010, Loss of decay heat removal
53. Emergency Response Facilities Input
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6. Memorandum for A. Chaffee from S. Ebnetter,
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59. Vehicle Access Request. 3/26/90
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Rev. 5. 10/23/89 w/record of training dates for D. Willhite
63. Event Report No. 1-90-003. Additional Support Items
64. SPDS Checklist
65. Items on Fuel Truck 3/2=30/90
66. Photographs
 - 66-1 Roll 1 - to be listed
 - 66-2 Roll 2 - to be listed
 - 66-3 Roll 3 - to be listed
67. Personnel Interview of G. Lee, J. Aufdenkampe, W. F. Kitchen,
W. Burmeister & D. West
68. Diesel Generator Failure Analysis
69. Personnel Interview: D. DeLoach, J. Jackson, and S. Whitman
70. Photographs
 - 70-1 Roll 4
 - 70-2 Roll 5

71. Meeting Attendance Record

71-1 IIT Entrance (3/26/90)
71-2 Diesel Generator (3/28/90)
71-3 Diesel Generator (3/30/90)

2. Access Record History. 3/20/90

73. badge Record - 3/30/90

74. Evaluations of Initial Plant Conditions - J. D'Amico

75. Procedure No. PTDB-1 Tab 8.0, Rev. 2 - Pictorial Aids: RCS Elevations and Mid Loop Level Instrumentation (3/2/90)

76. 18015-C, Rev. 5, Loss of Instrument Air

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82. Bechtel Drawings

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83. MWO 18906587, SG#4, Unit 1, 12/23/89

84. Procedure No. 25270-C, REV.6, SG Nozzle Dam Checkout, Installation and Removal 12/16/88

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89. Procedure No. 18034-1.Rev. 1. Loss of Class 1E 125V DC Power, 9/12/89
90. (AOP) Procedure No. 18028-C. Rev. 7. Loss of Instrument Air, 3/16/90
91. (AOP) Procedure No. 18038-1. Rev. 10. Operation from Remote Shutdown Panels, 8/29/89
92. Radiation Monitors Status
93. Relief Request 7 and 11(with accompanying documents) Safety Injection System No. 1204
94. Procedure No. 00350-C. Rev.19. Work Request Program (12/27/89)
- 95-1. MWO #18807746 3/31/90
- 95-2. MWO #19001339 3/31/90
96. Section 6.0. Administrative Controls (Vogtle 1 & 2)
97. Information on Critical Safety Function Status Frees on SPDS (on EXF computer)
98. Training Records: A. L. Blalock, F. Redivannz, W. Hennessy, J. D. Williams, W. P. Stephens, W. M. Watkins, D. Haile, J. W. Covington, R. LeGrand, G. J. Durrence
99. Information on Maintenance Personnel Training on Mid-Loop Ops
100. Procedure No. 00400-C. Rev. 11. Plant Design Control, 2/24/90
101. Request for Engineering Review (Procedure No. 00400-C) of System 500 kv
102. Relaying Data Sheet - Gen. No. 2 Main Bk. Primary
103. Sequence of Events w/source of information
104. 2.0 Hardware Configuration
105. Vendor Document Status Sheet-Manual Change No. 76021-9, 9/9/86
106. Security Department Report No. 3941-90
107. Joint News Release - 3/20/90
108. MWO (continued) No. 19001576

- 109. T-ENG-90-11. Rev. 1. A-Train undervoltage Test w/related MWO's
- 110. 1A Diesel Generator Reference Material
- 111. 3/20/90 Logs: Unit 1 & 2 Shift Supervisor: 1 & 2 Control
- 112. Memo to G. Bockhold from G. R. I. Brick, dated 9/27/89. Subject: VEGP-1 and 2 QA Audit finding Report 35
- 113. Release #1 and # 2 3/20/90
- 114. OSC Log
- 115. MWO 18906328. 3/27/90
- 116. Attendance Roster - Diesel Generator Mtg. (3/31/90)
- 117. Personnel Interviews:
 - 117-1 K. Exly
 - 117-2 P. Humphrey
 - 117-3 J. Williams, D. Gustafson, G. McCarlev
- 118. Operational Journals. 3/20. w/Situation Chart
- 119. MWO No. 19001684. (3/31/90) Diesel Generator - To Verify Timing of Two Trips During LOSP
- 120. Personnel Interviews:
 - 120-1 G. Schnieder (EP) and S. Threatt (BRH-EPC)
 - 120-2 R. Dorman - Training
 - 120-3 M. Cagle - Maintenance
 - 120-4 S. Driver - Training
 - 120-5 D. Willhite - Truck Driver
 - 120-6 E. J. Kozinsky - SS
 - 120-7 S. Young - PFS
- 121. Design Change Request No. 88-VIN0070 w/Design Change Package Closure - Train A & B Sequencer Panels
- 122. Operation and Maintenance Instructions (SFSS) w/drawings
- 123. Vogtle Operating Records - VPO401GP
- 124. MWO 19001684 - 3/31/90
MWO 19001576 - 3/31/90
MWO 28900466 - 3/31/90

125. PROPRIETARY DOCUMENTS: W FIELD SERVICE PROCEDURES

- 125-1 MRS 2.2.2 GPC-1. Post Activity Sign-Off for Area Cleanliness
- 125-2 MRS 2.2.2 GPC-21 Rev. 0. Nozzle Dam Hydrotest
- 125-3 MRS 2.2.2 GPC-22 Rev. 0. Nozzle Dam
- 125-4 MRS 2.2.2 GPC-23 Rev. 0. Nozzle Dam Manual
- 125-5 MRS 2.2.2 GPC-24 Rev. 0. Nozzle Dame. Leak Detection Manual

- 126. Procedure No. 29536-C. Outage Management Program (3/4/88)
- 127. Procedure No. 27505-C. Rev. 2. Opening and Closing Containment Equipment Hatch (7/18/88)
- 128. Procedure No. 10013-C. Rev. 6. Writing EOPs from the Westinghouse Emergency Response Guidelines (9/22/88)
- 129. Procedure No. 29537-C. Rev. 1. Outage Scheduling (4/11/89)
- 130. Procedure No. 01000-C. Rev. 1. Management of Outages (6/9/89)
- 131. Procedure No. 10011-C. Rev. 13. Operations Procedure Preparation and Review Guidelines (7/5/89)
- 132. Procedure No. 10018-C. Rev. 11. Annunciator Control (9/26/89)
- 133. Procedure No. 10000-C. Rev. 16. Conduct of Operations (3/23/90)
- 134. Procedure No. 11011-1. Rev. 7. RHR Removal System Alignment (4/18/89)
- 135. Temporary Change to Procedure Form (TCP) No. 13001-1-12-90-1. RCS Filling and Venting (Expiration Date: 4/6/90)
- 136. Procedure No. 14230-1. Rev. 4. AC Source Verification (7/27/88)
- 137. Procedure No. 91403-C. Rev. 4. Site Evacuation (12/6/88)
- 138. (EOP) Procedure No. 19101-C. Rev. 8. ECA-0.1 Loss of All AC Power Recovery Without SI Required (7/26/89)
- 139. Procedure No. 19111-C. Rev. 8. ECA-1.1 Loss of Emergency Coolant Recirculation (7/26/89)
- 140. Procedure No. 13001-1. Rev. 12. Reactor Coolant System Filling and Venting (10/10/89)
- 141. System Block Diagrams - SFSS
- 142. Bechtel Drawings:

-11. Rev. 1. A-Train undervoltage Test w/related MWO's

1 Generator Reference Material

Logs: Unit 1 & 2 Shift Supervisor: 1 & 2 Control

G. Bockhold from G. R. Fredrick, dated 9/27/89. Subject: VEGP-1
Audit finding Report 350

#1 and # 2 3/20/90

06328, 3/27/90

nce Roster - Diesel Generator Mtg. (3/31/90)

el Interviews:

K. Exly
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R. Dorman - Training
M. Cagle - Maintenance
S. Driver - Training
D. Willhite - Truck Driver
E. J. Kozinsky - SS
S. Young - PFS

Change Request No. 88-VIN0070 w/Design Change Package Closure -
A & B Sequencer Panels

ion and Maintenance Instructions (SFSS) w/drawings

Operating Records - VP0401GP

001684 - 3/31/90
001576 - 3/31/90
000466 - 3/31/90

4/2/90

IIT D/G Operability Meeting
IIT + GPC et al

** - Get a CY of SUN Notes 17/0 (5ea) **

1st & 2nd Traps "IA" D/G

80 sec Run - 1st - UNK (JW Pn a Temp) - specific annunciators not captured
70 sec Run - 2nd - Jacket Water (Hi Temp - Lo Pn) TurboLO (Lo Pn)

Time ~ 71 Sec

Testing → 2 JW Temp Trip Signals → The trip
+ the other annunciators (due
to pneumatic line not fully
pressurizing)

1 Test w/ JW Press Tripped

→ 80 Sec to Trip

but → JW Hi Temp Annunciator.

VENDOR says the Δ in run times is
significant enough to indicate
a Δ trip causes.

Lo JW Temp is an Emerg Trip - Lucky that
the JW Temp didn't come in then.

Emerg Reset is done after an Emerg Start.

OPER's need to know this

4/2/90

CALCON SWITCHES

HISTORY/RELIABILITY

Problems evident during initial shakedown times
Consistently good performance b/t run periods

SURVEILLANCE PROCEDURE

If they had gotten an Annunciation
a DC would have been prepared

6B Handling of the probe could possibly
affect the CAL

U2 - Diff Proc to CAL

used JW Temp due to HX Concerns
SPECIAL TEST was RUN

Ran Engine / Trapped

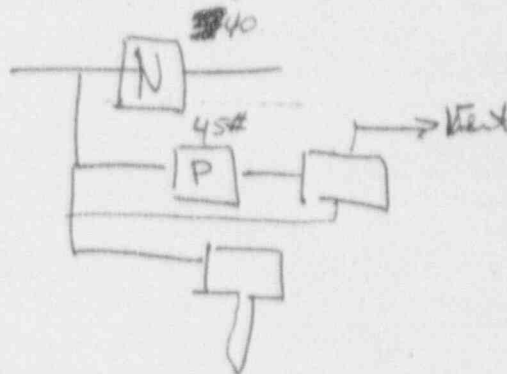
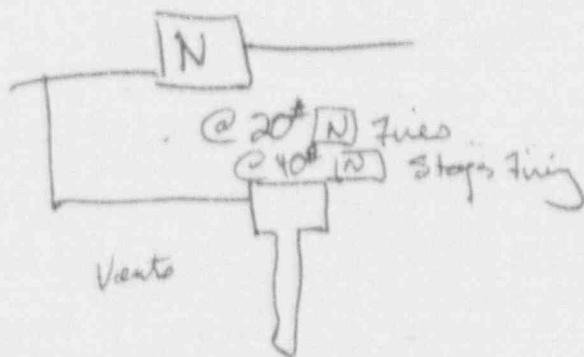
Pulled Sw's - Relat'd - Ran fine

Used diff Air Press

U1 - 20[#]

U2 - 40[#]

} Utility unsure
of significance



6B - D/B's OPER
SW'S CAPABLE TO PERF F1

GPC needs to ID what the SW PRBM is! 2 Switch Failure Prob is very remote.

- (1) Analyze Cal Proc
 - (2) Calcon Tolerances
 - (3) Q List?
 - Source Inze's on vendor?
 - (4) Part 21 on CALCON - (Safety Related?)
 - (5) Specifics on 20/40 & 45th (P3)
-

N12 Successful Starts since JW Temp switches changed out

Checked, tightened, recal'd, many re-runs
Seems good & good. Why test more?

(~~Nothing~~ Nothing to do.)

Pneumatic Lines not filled is a
possible reason for 15th Try

} These needs
Analysis

EXIT

Kudos to Herb

Re thrust in DC to Genenc, Implic's

POC is Herb. Emphasis on Timeliness

REGION picks up Regulatory clauses - emphasis on 4/6 area
Per IIT - Trbl sh'ty is done!!

"Q" LIST - 2/6 COMPONENTS Sound suggest (Sensors) ⁴⁻⁵

RGN Person to Monitor Testing

AL to get a contracted Wizard for IIT Data Collection

****EAL CLASSIF data to LAZARUS Diff Plants****

CURRENT REGULATORY FRAMEWORK IMPLIES
request utility P/B if they ID
any such issues (vulnerability, etc)

CONFIRMS UTIL ADMIT TO CERTAIN 1A TRIP CAUSE

Parts of Fact

(1) EPIP NOTIFS
EPIP Equip (MET TWR; ERF ^{Control} ^{Configuration} ^{Problems})
ACCTY Problems

(2) MANY LESSONS of GL SS-17 applied

(3) D/G RELIABILITY

- Training (first out/emerg reset/...)
- CALCON SW's

POTENTIAL EXISTS THAT D/G COULD GO DOWN FOR EXTEN TIME

(4) DEFLAGRATION STUDY → Pot. Loss ALL AC

→ STUDY TO ID & Assess ALT AK Power Caps

•• POT TO LOSE AC FOR EXT. TIME EXISTS •••

(5) IF this happens

- Procedures don't help
- GL SS-17 Lessons were applied (RC5/Equip Hacks/etc)

NEED FOR GENERIC GUIDANCE

Tony has concentrated on getting RWR back

NOT what to do if you can't

They say SIMUL can Model This! - I am suggest.

(6) Precursor Plant Configurations
- Economic impacts on differing electrical allowances

IMPRESSION OF IIT THAT IT IS POSSIBLE
TO HAVE LESS SDC FOR MANY HOURS
TRAINING

ELECTRICAL CONFIGURATION IMPLICATIONS

George - Thank you for input

ALL DONE!!!

DRP MORNING REPORT - REGION II

DATE: April 13, 1990

Licensee/Facility:
Georgia Power Company
Vogtle Unit 1

Notification: Region II
Subject: Vogtle Unit 1 Restart

Docket Nos.: 50-424

Facility Type: W - PWR

Reportable Event Number: N/A

Discussion:

NRC management has approved the restart of Vogtle Unit 1. The unit was the subject of a Confirmation of Action Letter as a result of the dispatching of an Incident Investigation Team on March 23, 1990. Criticality is scheduled to be achieved on April 15, 1990. Unit 2 continues to operate at 100% power.

Regional Action:

The Resident Inspectors will be observing the restart.

Contact: K. Brockman FTS: 841-6299



FROM VOOBLE
USNRC RESIDENT
INSPECTOR

404 554-9901

DELIVER TO:

KEN Brockman / DAP

DE:

--- 1B
--- WITHIN 2 HRS.
☒ IMMEDIATELY
--- NOT FOR PRINCIPAL STAFF

SUBJECT:

VOOBLE D/E 1B

TRANSMITTAL • 5 PAGES

A/31

DG 18 TROUBLESHOOTING PLAN

Vent JW temperature switches prior to each start.
Monitor P-3 operation for each start.
Snoop each JW temperature switch during start.
Monitor JW temperature during each run and record.
Any problems stop and have meeting.

1. Perform 3 local emergency starts with "old" switches installed

~~2. Calibrate new P-3 to lower setpoint (in I & C Shop)~~

3. Perform 1 (⁺² ~~one~~ more) normal starts with existing P-3

~~4. Install new P-3 with lower setpoint~~

~~5. Perform 2 normal starts with new P-3~~

6. Perform Operations surveillance

TB. L. L. L.

C935 CDT 5/24/90

DRAFT

TIME LINE SEQUENCE OF EVENTS

TIME	EVENT
12-18 hours before installation	I&C used new calibration procedure to calibrate temperature switches for the cooling water jacket high temp alarm. This was the first engine tested under this cal procedure.
5-23-90 1202 CDT	I&C installed the 3 switches, the little air switch was cleaned and the engine was put in "remote".
1226	First start, normal start
1228	Engine tripped after 60-90 seconds run. Alarms: 1) Lo Turbo Oil Pressure 2) Hi Jacket Water Temp 3) Lo Jacket Water pressure
	NOTE: First alarm not clear due to error by operator. Reset "Test button" accidentally instead of "Silence Alarm button"
	Engine declared INOP action statements & LCO's initiated
1310	All parameters reset for second restart (Normal restart) Engine Restarted
1312	Engine tripped after 60-90 seconds run. Alarms a) Lo pressure turbo lube oil b) Lo jacket water pressure
	NOTE: I&C Personnel at each switch with leak detection (snoop) soap to check for venting - No switches venting.
1412	All parameters reset for third restart (Emergency Start) engine restarted
	NOTE: No trips or malfunction annunciators lit
1425	Engine stopped after 13 minute run.
1445	All parameters reset for Fourth restart (Normal Start) Engine restarted (NOTE: No abnormal indicators)
1449	Engine stopped after 4 minute run.

UNIT ONE "B" DIESEL GENERATOR SEQUENCE OF EVENTS

- 1925 Trouble shooting urgent MWO 19002711 for 1-2403
G4-002 approved for work by USS Steve Chestnut
- Pre fabricated pressure gauges and fittings in I&C shop. Also blew lines to try to assure no moisture or trash gets into lines when these 4 gauges are installed. 2-60 pound & 2 100 pound gauges - all M&TE calibrated VP numbers are on MWO.
I&C - Bob Neal, Wayne Helwig, Bill Whaley, Mark Briney
- 1958 Ops personnel Sam Hart, Greg Moxley, Mark Jackson and Bill Dunn preparing D/G for start per procedure 13145-1
- 2012 I&C installed 1/4" fittings on gauges and blew out 1/4" tygon tubing.
- 2035 I&C began running tubing and hooking up all 4 gauges.
- NOTE: When first air line to first temp switch (A) was disconnected a puff of air was detected. The second air line (B) disconnected with a definite puff of air. The third line (C) disconnected with a definite puff of air. Also all fittings were swagelok and no goop was used on those fittings.
- 2105 I&C assured gauges are zeroed with no pressure and completed connections
- 2108 I&C informed Operations ready to run D/G (Mark Briney, Sam Hart)
- 2110 Control Room and PEO's set up communications. PEO Jackson opened the turbo lube oil bypass valve. (TLOBV)
- 2113 Start button pushed (operational) for first trouble shooting test
- 2114 Jackson went to close TLOBV.
- 2115 Control Room announces "Start 1B D/G stand clear"
- 2118 D/G started 55 seconds later - tripped
- 2119 3 alarms - 1. Turbo Lube Oil Lo Pressure
2. Hi Temp Jacket Water
3. Low Pressure Jacket Water

P3 gauge read - 43 (NOTE: Should have gone above 52.5)

117 A switch read 1.5 2.0 3.5
118 B switch read 2.4 2.5 3.
118 C switch read 2.4 3.8 6.4

- 2134 Preparation for second test began. Marc Jackson opens TLOBV.
- 2135 D/G 1B starting announcement from Control Room
- 2136 D/G 1B started. Marc Jackson closed TLOBV.
- 2137 D/G 1B tripped after 60 second run. Same three alarms.

A	B	C
117	119	118
1.5	2	3.5
2	2.5	5.5

P3 read 41.5 psi
3 temp switch gauges maximum reading at approx. 5.5 psi

- 2140 Snooped tygon connections. No leaks detected.
- 2148 In preparation for third test. Three temp switches connected to air supply with pressure gauges and tygon tubing were removed.
- 2153 Control Room announced, "Ready to Start D/G"
- 2154 Operational button pushed. TLOBV opened by Jackson.
- 2158 D/G started. (Third test) TLOBV closed.
- P3 gauge read - 47 psi
A & C temp switches observed venting at a noticeable rate. B venting also but not nearly as much.
- 2157 DG tripped after 60 second run. Alarms Lo pressure turbo oil and Lo pressure jacket water.
- 2205 D/G restarted (fourth test)
P3 gauge read - 81.5 psi - running good.
- 2210 DG manually stopped.
- 2239 Preparation for fifth test (Emergency start) bled air off all 3 temp switches. All 3 switches had puff of air released when air line was disconnected. Reconnected air lines.

- 2240 "Ready for Emergency Start" control room announcement. TLOBV opened.
- 2254 Emergency start. TLOBV closed. P3 gauge went up to 60.5 then dipped to 55 at trip then backup to 61.5.
- 2256 Tripped Hi temp jacket water alarm
NOTE: Actual temp of jacket water = 155 F
but trip setpoint = 200 F
- 2310 Cracked the 3 temp switches to bleed off air A had puff of air B had no air C had no air
- 2336 Sixth Test. Emergency D/G start - 1 minute 10 seconds then tripped. Snoop testing all 3 temp switches to see if venting during run A partial venting, B venting, C venting
- 2337 Tripped after 1 minute 10 seconds run. Same alarms as fifth trip.
- 5/2/90
010 Replacing all three (3) jacket water switches with original switches removed earlier with testing to resume on day shift.
- A had puff of air when line was removed.
B did not have air pressure when line was removed.
C did not have air pressure when line was removed.
- QC inspector J. C. Harvey witnessed the removal and reinstalled of switches.
- 0200 Switches have been replaced and those removed have been bagged and tagged and placed in cabinet C-8 in I&C Shop Class "B" storage.

~~PRE-CECISTONAL~~ *PS 9/30/92*

VOGTLE 117

NUREG-1410 GENERAL FINDINGS

- o Conclusions and findings can be grouped into seven areas:
 - Plant configuration during outages
 - Switchyard controls
 - Safety bus inter-connections
 - EDG issues
 - Loss of RHP guidance
 - Emergency classification and response
 - Technical specification concerns

H/33

PLANT CONFIGURATION DURING OUTAGES

- o Vogtle complied w/TS
- o GPC did not consider qualitative risk in outage planning
- o No requirements to consider risk
- o Plant configuration unnecessarily compromised plant safety
 - Allowed reduced power sources during mid-loop operations
 - Could have been avoided
- o Risk management would address
 - Minimize time in mid-loop
 - Maximize pathways for water to RCS
 - Maximize support systems
 - Minimize time to secure containment
 - Remove fuel from reactor (offload to spent fuel pit)

SWITCHYARD CONTROLS

- c No vehicle access controls prior to event
 - Subsequently implemented

- c No specific restrictions on combustibles
 - Ignition of combustibles could have increased event severity

- c No current NRC requirements

SAFETY BUS INTER-CONNECTIONS

- o Vogtle complied w/TS for electrical sources
- o Vogtle has no procedure to cross-tie buses
- c Vogtle "Missing Breaker" design is not flexible
 - Prevents inadvertent connection of safety buses/separation IE buses
 - Prevents live transfer between reserve aux. transformers
 - Limits operator flexibility to supply safety related loads
 - Requires additional EDG starts
- u Alternatives
 - Key lock switches
 - Two circuit breakers in series
 - Provide same protection w/greater flexibility

EDG ISSUES

- o EDG Trip Sensor Problems
 - Foreign material
 - Calibration method
 - Set point drift

- o EDG Trip Design
 - Normal (UV) start all protective trips active
 - Emergency start only essential trips active (gen. diff., engine overspeed, jacket water temp., lube oil press.)
 - Vogtle modified EDGs to bypass all non-essential trips for all auto starts
 - Vogtle modified EDGs to manually bypass jacket water temp.
 - Complies w/Regulatory Guide

- o EDG Panel Design
 - First out feature not useful in determining root cause trip
 - Nuisance alarms contribute to operator confusion

- o Interaction Between Sequencer and EDG
 - EDG locked-out following trips
 - Could not be started by normal means
 - EDG circuitry/sequence circuitry/auto start signal interact following EDG shutdown
 - Was not well understood by operating staff

LOSS OF RHR GUIDANCE

- o Vogtle had not fully implemented GL 88-17
 - Incomplete training and procedures
 - Containment closure took longer than analysis (loss of all power would have further lengthened closure time)

- o GL 88-17 did not fully address several loss of RHR issues
 - Gravity feed
 - Reflux boiling
 - Recovery of RCPB following loss of RHR (w/vent)
 - Maintaining core cooling w/o AC power

- o Industry has not explicitly addressed the loss of AC power/loss of RHR event
 - SBO rule does not address

- o Loss of Temporary Thimble Tube Seals
 - Was not a concern for Vogtle event
 - Could lose RCPB integrity following overpressurization
 - Break/leak would be bottom of vessel

- o Industry feedback on related events
 - Comprehensive or specific events
 - Did not globally view the loss of RHR/loss of power scenario

EMERGENCY CLASSIFICATION AND RESPONSE

- o NUREG-0654 does not address loss of power plus loss of RHR at cold shutdown
- c NUREG-0654 is ambiguous for loss of power events
- o Inconsistent implementation at 12 sites sampled
- o Vogtle made a correct/conservative classification - Site Area Emergency
- o Confusion with site evacuation
- o Consideration should be given to outage situations (large numbers of people)
 - Need to respond to event (ex. close containment, require RCPB)
 - Need to evacuate non-essential personnel
- o Vogtle did not meet 15 min. notification goal
 - EHM lost due to loss of 1B safety bus
 - Backup EHM to SC (did not include Georgia)

TECHNICAL SPECIFICATION CONCERNS

- o Vogtle was in compliance w/TS

- o Lower modes not adequately addressed
Re: Safety analyses, equipment availability, worst single failures
 - Assumed to be bounded by higher modes
 - Assumed to be less severe
 - Assumed to have time to respond and mitigate

- o Vulnerabilities/Interrelationships in lower modes not well addressed in TS
 - Containment integrity
 - Alternate water sources
 - Alternate power sources

- o Additional TS Requirements may not be advisable
 - Need to perform maint., inspections, surveillance tests
 - Requires open containment
 - Requires equipment out-of-service
 - Can reduce vulnerabilities and minimize risk

B.11
Layman

COLLECTED MISCELLANEOUS INFORMATION

1. Prints
1X3D-AA-A01A, Rev. 10
1X3D-AA-F27A, Rev. 13
1X3D-AA-F28A, Rev. 14
1X3 DG-020, Rev. 15
2. 10 Mile EPZ Map
3. NOUE ED Checklist Of 3/23/90
4. EDF Personnel For 3/20/90
5. Security Emergency Response Organization for 3/20/90
6. TSC Personnel 3/20/90
7. CR Personnel 3/20/90
8. OSC Personnel 3/20/90
9. Training Records EDF
10. Communicator Package Consisting Of:
Course Completion & Attendance Records
Training Student Handout Dated 8/27/89
Lab/Performance Exercise Guides
Lesson Plan #2 LP 87001-02
Training Student Handout Dated 4/13/88
Lesson Plan #1 LP 87001-01
11. Control Room Layouts
Procedure 10003-C
12. Previous Emergency Response
50-424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 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2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507

Bill
Layman

COLLECTED MATERIAL

Emergency Services: 911

THE LEADS

Energy.gov

524

0025

44-38861-1

1995

45

1999

12

1

1998

ED Manager Log

1982-1983

Dictated / Pm. 08/21/98 (FAX 3/22/98) Notification: Enforcement

~~CONFIDENTIAL~~

Bill
Lazarus

COLLECTED MATERIAL

1. Procedures:
 - 91801-C, Rev. 7
 - 91802-C, Rev. 15
 - 91182-C, Rev. 6
 - 91481-C, Rev. 5
 - 91784-C, Rev. 8
2. DET Training Student Handout
3. Handbook For General Employee ~~Badge Training~~
4. 3/2/98 T&E "Data Sheet 4" Of 91284-C & Data Sheet 7
5. 3/28/98 Notes "Emergency Response" - From Region II
6. 3/21/98 Notes 3 Pgs. NOTES
7. 8 Hr Report Dated 3/28-98
8. 3/22 Results Sheet On Accountability & ISC Procedure Verification
9. 3/22 Restriction On OFFICE Interaction - Phone Call
10. 3/22 INTERVIEW NOTES
11. 3/22 Interview - Herb Whitener - RII
12. 3/23 Notes CR Procedure Verification
13. RII PRNT Note On Capt. ~~W. Jones~~
14. Interview Pauline Jenkins - ~~Communication~~
15. Interview Theresa Jones - ~~Communication~~
16. Interview Jimmy Cash - ~~Operations Dept.~~
17. Interview ~~WITNESS~~ ~~Operations~~ ~~PILOT Duty Manager~~
18. Results Of Selection ~~Selection Of Employees To Security Bldg.~~
19. EPLAN Section R - ~~Activities And Planning Of Emergency Response~~
20. Interview John Hopkins - ~~Shift Lead, Dept. of Emergency Response~~
21. Interview Capt. William ~~Operations~~
22. Interview Lt. ~~WITNESS~~ ~~Accountability~~
23. Historical Classification Of Emergency & ~~Phone Communication~~ ~~Notes~~ - Bob Trojanowski - RII ~~END~~
24. EPLAN, Section R, ~~Emergency Response Organization~~
25. Results Of CR ~~Procedure~~
26. Backup EMM Description
27. Met Bldg. Inspection
28. Listing Of ~~CR~~ ~~Procedure~~ ~~Information~~

DOCUMENTS RECEIVED

1. Inventory Of Fuel Truck
2. Procedure 88656-C, Traffic And Parking Control, Rev. 8
3. Procedure 98815-C, Vehicle Access, Rev. 8
4. Procedure 88653-C, Protected Area Entry/Exit Control, Rev. 8
5. Procedure 78838-C, Traffic And Parking Control, Rev. 2
6. Procedure 98815-C, Vehicle Access To The PA, Rev. 5
7. Procedure 88268-C, Hazardous Substance And Waste Control, Rev. 5
8. Procedure 88261-C, Fuel Oil Handling And Safety , Rev. 5
9. The Alvin W. Vogtle Electric Generating Plant: Safety Standards

PERSONS INTERVIEWED

<u>Name</u>	<u>Title</u>
Richard Berry	Nuclear Security Office
David Jiles	Health And Safety Advisor
Glenn G. McCarley	ISEG Supervisor
Ted Dannemiller	Head Of Security
Doug Huyck	Nuclear Security Operations Superintendent
Donnie Willhite	Fuel Truck Driver
Slim Whitener	Plant Equipment Operator
D. Diloach	Plant Equipment Operator
John Hopkins	Shift Superintendent

DOCUMENTS

1. Figure 16-1 "Offsite AC" (FSAR)
2. GPC - VEGP - Unit 1 Control Log - pp 5283-84 (3/28/98)
3. GPC - VEGP - Unit 2 Control Log - pp 2601-03 (3/28/98)
4. GPC - VEGP - Unit 1 SS Log - pp 5413-14 (3/28/98)
5. GPC - VEGP - Unit 2 SS Log - pp 2875-77 (3/28/98)
6. VEGP - Unit 2 Trip Report
7. Proteous Alarm Printout - Unit 2 (3/28/98)
8. Proteous Alarm Printout - Unit 1 (3/28/98)
9. DC 1-98-0097 (1A D/G Sequencer Prob) (3/28/98)
10. **Control Room Keyouts**
11. Procedure 13145-1, Rev. 20 "Diesel Generators"
12. ~~Licensed Operator Training Materials For Loss Of Electrical Power~~
13. ~~Licensed Operator Training Materials For Loss Of Residual Heat Removal~~
14. ~~Licensed Operator Training Materials For Emergency Plan Implementation~~
15. ~~Outside Operator Training Material For Diesel Generator Operation~~

ATT DOCUMENTS RECEIVED

Instruction Manual For S & C Circuit Switches (Outdoor 230kv)
 Instruction Manual For Westinghouse Type Co Overcurrent Relays
 Instruction Manual For ASEA Type RADSE Transformer Differential Protective
 Relays
 Instruction Manual For Brown Boveri Type AOT, AOK & AOS High Voltage Current
 Transformer
 Instruction Manual For General Electric Type PVD Differential Voltage Relay
 Nuclear Plant Maintenance Work Order No. 28900466
 Bechtel Drawings 1X3D-AA-A01A (Main One Line - Unit 1)
 Bechtel Drawings 2X3D-AA-A01A (Main One Line - Unit 2)
 Bechtel Drawings AX3D-AA-A01A (Main One Line - Common Units 1 & 2)
 Bechtel Drawings AX3DL060 (Switchyard General Arrangement)
 Bechtel Drawings 1X3DH7A1 (Low Voltage Switchyard Plan)
 Bechtel Drawings 1X3DH7A3 (Low Voltage Switchyard Details - Sheet 2)
 Bechtel Drawings 2X3D-BB-BOIL (Elementary Diagram - Electrical System Generator
 Tripping)
 Southern Company Services/GPC Drawing AX3D-BA-L57D (500kv PCB No. 161520 Close
 & Trip No. 1)
 Southern Company Services/GPC Drawing AX9D-AA-L50T (500kv PCBs No.
 161520/161620/161660 Single Line)
 Southern Company Services/GPC Drawing AX3D-BA-L55A (230kv Offsite Source No. 1
 C.T. & F.T. Connecting - Sheet 1)
 Southern Company Services/GPC Drawing AX3D-BA-L55B (230kv Offsite Source No. 1
 C.T. & F.T. Connecting - Sheet 1)
 Southern Company Services/GPC Drawing AX3D-BA-L55C (230 Offsite Source No. 1
 Diff. & Backup Relaying)
 Southern Company Services/GPC Drawing AX3D-AA-L50B (230kv Single Line For PCBs
 161760/161860/161960)
 Bechtel Drawings 2X3D-AA-B04A (Three Line Diagram - Unit 2 AC Generator)
 Bechtel Drawings 2X3D-AA-B02A (One Line - Relays & Meters For RATs)
 Bechtel Drawings 2X3D-AA-B01A (Relays & Meters - Generator, Main, & UAT)
 Bechtel Drawings 1X3D-BA-B55B (Res. Aux. XFMR INXR8 CRT Switcher)
 Southern Company Services/GPC Drawing AX3D-AAL50A (500kv & 230kv Substation
 Single Line Index Drawing)
 Nuclear Plant Maintenance Work Order No. 18986364
 Southern Company Services/GPC Drawing AX3D-BA-L52R
 Southern Company Services/GPC Drawing AX3D-BA-L52N Elementary Diagrams
 Southern Company Services/GPC Drawing AX3D-BA-L52P For 230kv
 Southern Company Services/GPC Drawing AX3D-BA-L520 PCB No. 161860
 Southern Company Services/GPC Drawing AX3D-BA-L52S
 Southern Company Services/GPC Drawing AX3D-BA-L52H
 Southern Company Services/GPC Drawing AX3D-CA-L72K
 Bechtel Drawing 1X3D-AA-D03B (4160 V Switchgear 1BA03)
 Bechtel Drawing 1X3D-AA-D03A (4160 V Switchgear)
 Bechtel Drawing 1X3D-AA-D02B (4160 V Switchgear 1AA02)
 Bechtel Drawing 1X3D-AA-D02A (4160 V Switchgear 1BA03)
 Bechtel Drawing 1X3D-AA-D01A (4160 V Switchgear 1NA01)

Bechtel Drawing 1X3D-AA-D04A (4160 V Switchgear 1NA04)
 Bechtel Drawing 1X3D-AA-D02A (4160 V Switchgear ANA02)
 Bechtel Drawing 1X3D-AA-D03A (4160 V Switchgear ANA03)
 Bechtel Drawing AX3D-BA-D02C (4160 V Breaker ANA0203)
 Bechtel Drawing AX3D-BA-D03C (4160 V Breaker ANA0303)
 Bechtel Drawing AX3D-BA-D03B (4160 V Breaker ANA0301)
 Bechtel Drawing 1X3D-BA-D01J (4160 V Breaker 1NA0111)
 Bechtel Drawing 1X3D-BA-D04D (4160 V Breaker 1NA0412)
 Bechtel Drawing 1X3D-BA-D02C (4160 V Swgr 1A02 INCM Brkr 1NXRB)
 Bechtel Drawing 1X3D-BA-D02B (4160 V Swgr 1A02 INCM Brkr 1NXRA)
 Bechtel Drawing 1X3D-BA-D02D (4160 INCM Brkr 152-1A0219 EDG)
 Bechtel Drawing 1X3D-BA-D01C (4160 Swgr 1NA01 INCM Brkr 1NXRA)
 GPC Procedure No. 13145-1 "Diesel Generators"
 GPC Procedure No. 24614-1 "Train B Sequencer ACD1 & CAL"
 GPC Procedure No. 27563-C "Generator And Engine Control Panel Functional Test"
 Delaval Drawing 09-500-76021 Sh 1
 Delaval Drawing 09-500-76021 Sh 2
 Delaval Drawing 09-500-76021 Sh 3 Diesel Generator
 Delaval Drawing 09-500-76021 Sh 4 Engine Control
 Delaval Drawing 09-500-76021 Sh 5 Panel Schematics
 Delaval Drawing 09-500-76021 Sh 6
 Delaval Drawing 09-500-76021 Sh 7
 Delaval Drawing 09-500-76021 Sh 8
 Delaval Drawing 09-695-72021 "Engine Pneumatic Schematic"



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

APR 03 1990

MEMORANDUM FOR: J. Philip Stohr, Director
Division of Radiation Safety and Safeguards

THRU: *DMC* Douglas M. Collins, Chief
Emergency Preparedness and
Radiological Protection Branch

William H. Rankin, Chief *WR*
Emergency Preparedness Section

FROM: Anne T. Boland, Emergency Response Coordinator
Emergency Preparedness Section

SUBJECT: CRITIQUE OF REGION II'S RESPONSE TO THE VOGTLE INCIDENT

On March 28, 1990, I conducted a critique of Region II's response to the Vogtle emergency of March 20, 1990, and all response personnel were invited to attend. The critique was based on "direct observations" of the participants many of which had been documented and provided to me prior to the meeting. A summary of the critique items identified and the proposed corrective actions are included in the Enclosure; however, the improvement items can be categorized into several areas: training, communications, assessment tools, procedural adherence, program maintenance, and organizational/operational enhancements.

Although numerous items were identified where the Region can improve its emergency operations, the overall response effort was judged successful and the agency's response goals were met as discussed below. The Region mobilized quickly and responded effectively with good communications exhibited with both the licensee and Headquarters personnel.

Related to the overall mission of the NRC/Region in responding to an emergency we have several primary objectives: (1) monitor the licensee's actions to ensure that appropriate actions are taken to mitigate the incident consequences; (2) inform other response organizations (State, local, Federal) of NRC response and plant status; (3) keep the media informed of response activities; (4) advise and support the licensee technically; (5) ensure appropriate protective actions are recommended to offsite authorities; and (6) direct the licensee's actions as necessary to protect the public's health and safety. Due to the sequence of events at Vogtle many of the above actions were not required (i.e., Offsite Protective Actions, NRC Orders), however, the other objectives were met as described following:

- ° Good communications were exhibited between the Region and the licensee over the ENS and HPN. Although some telephone bridge problems were evident, they did not impede the Region's ability to gather information. In addition, when information on the ENS and HPN was untimely or incomplete licensee management was contacted to obtain the information necessary for NRC assessments.

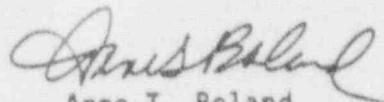
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- ° Plant information and NRC response status was also transmitted to the appropriate State and Federal agencies in a timely manner. Initial notifications were made promptly and communications were continued throughout the event until termination.
- ° Press releases were issued by the Region regarding the event and were coordinated with the licensee's releases prior to issuance. Region II Public Affairs participated in the press conferences held by the licensee at both the Corporate Office and the site. Senior Regional management participated in the site press conference the day of the emergency.
- ° The appropriate technical expertise was available in the Incident Response Center to assess plant conditions (Reactor Safety and Health Physics). Evaluations of the plant and on-going actions continued throughout the event.
- ° Due to the initial conditions of the event, immediate preparations were made to dispatch a team to the site. The team was dispatched and enroute to the site within one hour with the appropriate response equipment. The team included: the DRP Division Director, the DRP Section Chief, an HP/EP Inspector, Public Affairs, a Project Engineer, and two Resident Inspectors. One Region-based inspector was onsite throughout the event.
- ° Federal agencies and other NRC offices, including Headquarters, were kept informed throughout the event by the Status Summary. Four Status Summaries were issued during the three hours the IRC was activated (goal one per hour). To date over 100 acknowledgements have been received.

In addition to the overall response, exceptional individual performances were also noted. These included the Status Board Plotter, the administrative staff, and the resource management/travel staff.

A completion schedule for the items identified in the Enclosure will be provided to you for concurrence in the near future.


Anne T. Boland

Enclosure:
Status Summary

VOGTLE CRITIQUE ITEMSFAVORABLE ASPECTS OF RESPONSE

Excellent effort by all personnel responding.
 Good communications were exhibited by Team members.
 DRMA/travel support was commendable. Team was dispatched quickly with orders, money, etc... Other resources were also on stand-by.
 Performance of Status Board plotter was excellent considering not a planned response.

ITEMS FOR IMPROVEMENTComment

Declaration of Response modes should be better communicated to staff members.

Should announce Fireside immediately upon receipt of notification.

Did not have message centers for phones.

Headquarters had problems with bridges. (Including Licensee)

Reduce noise in BTM room and other support rooms.

New headset for ENS Communicator.

ERC should reduce number people in center early on.

Post listing primaries and alternates outside IRC so people know whether they should enter.

Resolution

ERC will announce over IRC paging system.

Any individual receiving an Alert or above notification should call Fireside. Regional management will evaluate appropriate response after going to IRC.

Ordered - Received/sent back for different model 3/29/90.

Followup with a HQ Memo stating observed problems.

Address in training. Consider cone of silence for communicators. Will address in reconfiguration of center.

Have ordered two-ear noise reduction set, 3/22/90, with mute capability. Mute attachments also ordered for HPN, PMCL and RSCL Communicators.

Agree. Some was done but not enough. Include in training.

Primaries should know who they are; however, will put bulletin board outside IRC with this information.

Comment

IR vehicle not in ready condition
(gas, cleanliness, operability)

Prior to departure of Site Team
must have all vehicle information
for access.

Regional staff and Resident offices
not involved in the event should be
updated periodically.

Step-by-step instructions for console
usage.

Add soluble markers to location of
boards.

Need turnover briefing for replacement
personnel.

Need better availability of licensee
telephone numbers directly to TSC, EOF,
etc...

More telephone training (Established
HPN and RSCL on wrong lines).

PMM phone should have ENS.

Have A/C in IRC evaluated for
adequacy.

Make sure times used are consistent
EST or CST.

IRC "busy" calls and console problems.

Resolution

DRMA to track and maintain.
Removing lights and park
in garage.

Add to Resource Manager
briefing for Team prior to
dispatch, coordinate with SGM.

Will post status summaries
outside IRC, on bulletin
board; but, Residents will
have to wait. If Residents to
be informed, projects can do.

Simplified Merlin instructions
are easy and better than any
secondary written instructions.

Being done with Velcro plastic
bags.

Agree. Address in training.

Agree. Instruct staff not to
remove numbers out of site
books during response. Post
in IRC and incorporate into
Plan. Vogtle numbers obtained.

Will conduct hands-on training
(not lecture) over the next few
weeks. Communicator training in
progress.

Phones to remain as they are.

Agree. DRMA to follow-up on.

ERM will announce over PA, and
all clocks will be reset to
event time including a wall
posting. Will use licensee
time. In correspondence
spell-out time zone the first
time.

Rollovers were incorrect resulting
in false busy. Resolved 3/23
with phone company - Fixed.

Comment

Brief onsite inspectors on role during emergency.

Why was licensee Emergency Director in CR?

Additional space/organization needed for PMT/bulletin boards

Need copies of data sheets for PMT out of PM Manual.

Typing support for Public Affairs

Periodically verify status of IRC computers.

A small inventory of toiletry items should be added to Site Team kits.

Fireside announcement not audible throughout office.

Fed/State telephone listing should be updated. (EPA, GEMA numbers incorrect)

Georgia did not receive initial notification from licensee in timely manner.

2 Fax machines (one incoming and one outgoing)

ENS information was not current. Most current data was obtained through licensee management.

Need Reactor Safety "Think Tank" to address long-term and what-if determinations.

Reactor Safety Team should be better organized to include a Team leader supported by technical specialists.

Resolution

Emphasize in Rad-Con Training and provide ROI on guidance for inspectors.

OK, by Vogtle procedures, can be either place.

Agree. Working on during review of IRC configuration.

Will do.

See later comment on IRC support.

We do; however had not yet relocated floppy PC and replaced with Compaq - completed 3/21/90.

Agree. Will order.

DRMA having all PA boxes checked. In progress.

Just updated 11/89. Old listings. Were available for use. Will verify numbers are correct.

IIT concern.

Will evaluate. Consider new light-weight FAX for site team and transfer site team fax to IRC.

Conduct meeting with licensee's to discuss NRC requirements for response (resources, data, personnel, space)

Will implement. To be located outside the IRC with speaker-phone.

Will do. Requires update of emergency roster in progress.

CommentResolution

Keep Reactor Safety Status Board up-to-date. Data related to power was current by other system status was not posted (ECCS)

Fill out boards completely. Will incorporate into training.

Add a permanent position of status board plotter.

Will be added.

Declaration of Standby delayed

Regional Management decision based upon briefing by licensee. (transformer operability)

Methodology for assessing consequences from accidents at shutdown (open) units

Write Headquarters for support.

Methods for assessing consequences beyond 24-hours-source term.

Write Headquarters for support.

Reactor Safety Team did not use communications forms for questions to be addressed on the ENS.

Increase training.

Need full time operator for telephone.

Yes. Will incorporate.

Need increased training on E-mail use.

Monthly training recently initiated. If needed, more will be provided. Needs management support to ensure attendance. Will also provide annual training to status summary writers.

Need more Incident Response Support personnel (typing, support to technical teams, telephones, etc...).

Adding two more EPAs and another ERC.

Need telephone instructions for key function (i.e., mute) at each phone station.

Agree. Will add these when new message centers arrive.

Develop training/working group for Reactor Safety Team to ensure team members understand concept of operations.

Will form task group prior to conduct of training in May 1990.

Alternate route for access to VEGP.

None.

Add Duty Roster to equipment for site team.

Will implement immediately.



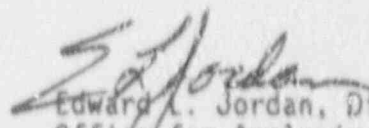
UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
August 8, 1990

MEMORANDUM FOR: Stewart D. Ebnetter, Regional Administrator, RII

FROM: Edward L. Jordan, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: CLOSEOUT OF STAFF ACTION 4.b (2) IN RESPONSE TO VOGTLE III
FINDINGS (NUREG-1410)

An investigation was conducted to determine the cause of the communication problems experienced during the incident at the Vogtle plant on March 20, 1990. The problems identified and the subsequent corrective actions are detailed in the enclosure. A complete system test was conducted on July 26, 1990, and the system is operating normally. This completes the plant specific action in Item 4.b (2).


Edward L. Jordan, Director
Office for Analysis and Evaluation
of Operational Data

Enclosure:
As stated

cc w/encl:
J. Taylor, EDO
T. Kellam, IKM
R. Freeman, AEGD
K. Brockman, RII

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 27 1990

MEMORANDUM FOR: Eric W. Weiss, Acting Chief
Incident Response Branch
Division of Operational Assessment
Office for Analysis and Evaluation
of Operational Data

FROM: Thomas B. Kellam, Chief
Telecommunications Branch
Division of Computer and Telecommunications
Services
Office of Information Resources Management

SUBJECT: TELECOMMUNICATIONS PROBLEMS DURING VOGTLE EVENT

In reply to your memorandum of July 12, 1990, subject as above, the commercial portion of the problem was due to the power source for the telephone system being damaged. The solution for that problem is to have the telephone system placed on an uninterruptable power supply. It appears that the decision to do that would be the utilities, not the NRCs. The ENS portion of the problem was caused partly by operator error (thinking that the system was out of service) and partly because of the hardware problems that have been identified in the last few days. Three problems were discovered. (1) The Control Room telephone was disabled each time the Emergency Operating Facility telephone was placed off-hook. That would account for the numerous occasions of interrupted service. (2) The TSC phone had been physically disconnected by the licensee telecommunications contractor. (3) A component of the system in Bethesda was intermittent.

Item (1) was corrected by AT&T replacing a component on the EOF portion of the Main Control Card. Item (2) was corrected by AT&T installing a new cable to the TSC phone. Item (3) was corrected during the troubleshooting procedures in Bethesda. The AT&T technician swapped circuit boards in the Wescom equipment, rewired the Wescom connections and reseated the circuit boards in the Wescom and Dimension 400 switch. These actions cleared the problem. However, it is unsure which one was actually creating the intermittent outage.

Testing has occurred through ^{JULY}~~JUNE~~ 26 and the system is operating normally.

We have been advised by AT&T that other locations having the Tellabs equipment are subject to the same disconnect problem as outlined in (1) above. We have issued orders to AT&T to repair all the known Tellabs sites. These sites are Fort St. Vrain, Diablo Canyon, Summer, Kewanee, WNP2, Browns Ferry, and TMI, besides Vogtle. After the repairs have been effected at each location, we will advise you and request that a test be conducted where the EOF goes off hook while the HQOC and Control Room are connected. We have recommended to the Incident Response Branch that this test also be conducted at least once at all other locations to ensure that all equipment is operating properly.

9008100157 XA

If you have questions or require additional information, please contact Tom Baldesi at ext. 27121.

A handwritten signature in black ink, appearing to read 'Tom Kellam', with a long, sweeping underline.

Thomas B. Kellam, Chief
Telecommunications Branch
Division of Computer and
Telecommunications Services
Office of Information
Resources Management

cc: Patricia Norry
Pamela Kruzic



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

MEMORANDUM FOR: Alfred J. Chaffee, Team Leader, Incident Investigative
Team - Vogtle

FROM: Stewart D. Ebner, Regional Administrator

SUBJECT: DESIGNATED REGIONAL POINT OF CONTACT

NUREG-1303, "Incident Investigation Manual," paragraph 2.5 provides for the establishment of a single point of contact in the Region, to coordinate the effort between the IIT and the Region. The following individual is so designated:

Kenneth E. Brockman, Chief, Reactor Projects Section 3B

Office Phone - 404/331-6299
Home Phone -
Beeper -

Please make all assistance requests through him.

If you have any difficulties beyond Ken's capability to handle, please contact myself, or Jim Milhoan.

Stewart D. Ebner
Stewart D. Ebner

cc: K. Brockman

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 6
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