Entergy

Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc.
Vermont Yankee
P.O. Box 0500
185 Old Ferry Road
Brattleboro, VT 05302-0500
Tel 802 257 5271

2nd & final SUBMITTAL

March 10, 2005
BVY 05-023
TDL 05-010

Regional Administrator, Region 1
ATTN: Mr. John Caruso
United States Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

References: (a) License No. DPR-28 (Docket No. 50-271)

Subject: **Senior Reactor Operator Licensing Examinations – Vermont Yankee, February 2005**

Enclosed, as an attachment, is the Written Exam Analysis, Rev. 1, for the written exam which was administered on February 3, 2004.

If you have any questions, please contact Mr. Michael Gosekamp, Superintendent, Operations Training, in our Brattleboro office at (802) 258-4161.

Sincerely,

VERMONT YANKEE NUCLEAR POWER STATION

Michael Desilets
Training Manager

Attachments:
- Written Exam Analysis, Rev 1
- Condition Report CR-VTY-2005-00423
- OT 3115, Rev 8, "Reactor Low Pressure"
- OT 3116 , Rev 8, Reactor High Pressure"

c: USNRC Resident Inspector
USNRC Project Manager
Document Control Desk
VT Department of Public Service

WRITTEN EXAM ANALYSIS (Rev 1)

An exam analysis was conducted IAW NUREG 1021, ES-403 Section D.3 with the following results:

- There were nine questions answered incorrectly by over 50% of the class. The question numbers and comments are covered under the section below titled "Validation of Incorrect Answers".

- All questions were determined to be valid, with some modification/re-grading required.

- No training program deficiencies were identified; however, one question indicated that enhancements to current training material would be appropriate. Training Evaluation Action Request (TEAR), VTY 2005-45, has been generated to track material revisions in support of this item.

- Two questions required exam wording modifications during the exam and were part of the clarifications given to the students. On question number 87, choice "B" read:

  > Direct Appendix I, Alternate SLC Initiation, fire 'A' squib and start 'A' pump from the control room.

  The wording of "from the control room" was meant to imply that the operator used the normal SLC initiation switch. An analysis of the stem of the question would indicate that this switch is broken and thus can not be used.

  The correct choice was "A" which read:

  > Direct Appendix I, Alternate SLC Initiation, bypassing the SLC Initiation Switch for "A" pump and "A" squib valve.

  The section of Appendix I, "Bypassing the SLC Initiation Switch" utilizes jumpers in the control room back-panels to both fire the squib valve and to run the pump. It was realized that a candidate could misconstrue the words in choice "B" "from the control room" to mean using the back-panel jumpers to run the pump. Thus a clarification was given that "from the control room" meant to run the pump using the SLC initiation switch.

  The second question that required a clarification was number 88. The stem of the question had a typo and read:

  > Red light for Hi Flow or Recirc Flow Converter "A" is lit.

  The word "or" was changed to "on".

- These wording problems were self identified and clarified during the exam (see attached "Questions and Answers during the Written Exam"). Exam bank versions of these two questions have been modified to correct these issues.

- Two questions, numbers 77 and 79, were identified as faulty. Question number 77 is now considered to have two correct answers. Answer 79 is now considered to have a different correct answer. Details regarding these questions are included in this submittal.

SRO Question 77:

Select the correct answer:

At approximately 20% power during startup and power ascension, Control Room annunciators alarmed, including the following:

6-D-1 INST AIR HDR PRESSURE LO
5-E-2 FW VLV LOCKUP SIGNAL/AIR FAIL

The power ascension was immediately halted, and the following conditions have been reported:

- Reactor level is slowly lowering
- Scram Air Header pressure is 70 psig and stable

Which of the following describes the required actions and the reason for those actions?

a. Override SA-PCV-1 closed after making an announcement over the Gai-tronics page. Service air supplies any respirators in use.
b. Scram the reactor and enter OT 3100. Control rods are expected to drift at this pressure.
c. Scram the reactor and enter OT 3100. The in-service FWRV has locked up.
d. Place the aux FWRV in service and restore reactor level. The in-service FWRV has locked up.

Submitted answer explanation:

	Justification
a.	Incorrect - SA-PCV-1 begins to automatically close at 85 psig and should be fully closed at 80 psig.
b.	Incorrect - If the Scram Air Header pressure drops to less than 55 psig, then scram the reactor and enter OT 3100.
c.	Correct Response - If level is unexpectedly decreasing and the FRVs are locked up then insert a scram.
d.	Incorrect - The aux FWRV will fail closed on loss of air; additionally, it is only 10% capacity, and there is no procedural direction for this action.

Revised answer explanation:

The original correct answer for this question is "C" and was justified as correct with the following statement: "If level is unexpectedly decreasing and the FRVs are locked up then insert a scram". The stem of the question has an alarm (6-D-1) which indicates low air pressure and an alarm (5-E-2) which indicates a lockup of the Feed Regulating Valves. With these conditions the plant would enter ON 3146, Low Instrument/Scram Air Header Pressure. Step 2 of this procedure provides the following direction:

2. *If RPV level is decreasing uncontrollably due to feed reg valve lockup, then perform the following:*

    a. *Scram the reactor and enter OT 3100, Scram Procedure.*

This question is written at the comprehension level. The candidate must realize that at 20% power operations, the Feed Regulating Valves are the valves used to control level. If they are locked up due to a loss of air and level is lowering then it is "decreasing uncontrollably". The actual rate of a level decrease, whether slowly or rapidly, doesn't affect the fact that it can not be controlled. After a reactor scram is inserted, other means of level control become available such as the Emergency Core Cooling Systems (ECCS).

The entry into ON 3146, Low Instrument/Scram Air Header Pressure, and the uncontrollable level decrease still make "C" a correct answer.

Choice "A" was initially justified as wrong with the statement: "SA-PCV-1 begins to automatically close at 85 psig and should be fully closed at 80 psig". The wording of choice "A" starts with "Override SA-PCV-1 closed" which was considered incorrect, the original assumption being that the valve is designed to automatically close on low pressure and that there was nothing in the stem to contradict that assumption. However, it was not originally recognized that the stem statement "Scram Air Header pressure is 70 psig and stable" could provide reason to believe that valve SA-PCV-1 had not closed completely. If an air leak was on the Service Air side and PCV-1 was closed, then Scram Air header air pressure would be expected to rise to near its original value, not stabilize at a lower pressure. With Service Air Header pressure at 70 psig and stable, in combination with other conditions described in the stem, it is credible to postulate that PCV-1 may not have closed completely. The previously provided justification did not take into account the fact that the value and trend of Scram Air Header pressure provided reasonable indications that SA-PCV-1 may not have closed as designed and, therefore, it may also be appropriate to attempt to mitigate the source of the air leak by using other, procedurally directed, steps prior to inserting a manual scram.

In ON-3146, Low Instrument/Scram Air Header Pressure, the Caution before Step 7 and Step 7 procedurally direct the operator to perform the action specified in answer "A".

CAUTION
Since service air supplies any air respirators in use, an announcement should be made over the gai-tronics page that the supply will be lost prior to SA-PCV-1 closing. If conditions permit, allow time for personnel response before closing the valve manually.

7. *If service air pressure decreases to less than 85 psig, verify air header pressure control valve SA-PCV-1 closes.*

   a. *If SA-PCV-1 fails to close when pressure decreases to less than 85 psig, manually override and close SA-PCV-1.*

As previously stated, using information regarding Scram Air Header pressure as an indication of the operation of SA-PCV-1, it would be appropriate to complete the actions specified in steps 7 and 7.a, thereby making answer "A" an alternate correct answer.

Conclusion: Answers **"A"** and **"C"** should be accepted as correct answers. In this case, both answers are correct since each is a credible, procedurally-directed action from the appropriate off normal procedure.

SRO question 79:

Select the correct answer:

During a Rx Startup at ≈ 60% power, a spurious MSIV closure (MSIV 86A) causes a high pressure condition.

The current plant conditions are:

- Rx pressure 990 psig
- Steam flow 4.7 x 10^6 lbs/hr

At this point:

a. Core Thermal Limits evaluations are valid and power may be held steady for an indefinite period of time.
b. Core Thermal Limits evaluations are valid and MSIV 86A must be reopened within 2 hours.
c. Core Thermal Limits are suspect and power must be reduced to < 25% before MSIV 86A can be reopened.
d. Core Thermal Limits are suspect & MSIV 86A should be reopened within 2 hours or power shall be reduced to < 25% in 8 hours.

Submitted answer explanation:

	Justification
a.	Correct Response - The old standard called for a power reduction or MSIVs must be reopened within 2 hours. A recent analysis at the end of 2004 allows us to maintain power.
b.	Incorrect - Thermal Limits are valid indefinitely if < 4.8 x 10E6 lbs/hr
c.	Incorrect - MSIVs may be reopened at current power level
d.	Incorrect - An old standard that no longer applies

Revised answer explanation:

The original correct answer for this question is "A" and was justified as correct by the following statement: "The old standard called for a power reduction or MSIVs must be reopened within 2 hours. A recent analysis at the end of 2004 allows us to maintain power". This analysis was captured in OT 3115, Reactor Pressure Transients (Rev 9), and was effective December 16, 2004. It was part of an effort to combine two procedures into one procedure: OT 3116, Reactor High Pressure, and OT 3115, Reactor Low Pressure. These were combined together into OT 3115 and re-titled "Reactor Pressure Transients". The change kept the immediate required actions for an MSIV closure as per the previous OT 3116, Reactor High Pressure. It did, however, delete the actions as required in choice "D" and replaced those actions with a note. The actions and note in OT 3115, Reactor Pressure Transients, pages 3 and 4, reads:

If pressure change was due to an MSIV closure, THEN:

a. Reduce reactor power at a rate not to exceed 10% RTP/min. until the following criteria are satisfied:

1) Reactor Pressure ≤ 1000psig.

AND

2) No. of Isolated Steam Lines	*Total Steam Flow*
1	*≤4.8 Mlbs/hr (<75% RTP)*
2	*<3.2 Mlbs/hr*

NOTE

Long term steady state operation with 1 MSIV isolated is permissible provided reactor power is limited to ≤75% of rated thermal power.
(GENE-L12-00-068)"

The stem of the question states that a "high pressure condition" occurred. This would require the plant to enter OT 3115, Reactor Pressure Transients. However, the stem of the question also states that the plant is in a startup. This would require the plant to be in OP 0105, Reactor Operations. The analysis was not captured in OP 0105, Reactor Operations, where a caution (page 76) states:

"If any of the following conditions exist when CTP >25% RTP, then consider core thermal limits (MCPR and APLHGR) evaluation suspect: (EDCR 97-422)

Less than 4 main steam lines passing steam (except surveillances).

MTS-2 tripped or any bypass valve inoperable.

Feed water heater string bypassed.

Then exit the condition within 2 hours or reduce CTP to less than 25% RTP within the next 8 hours."

This caution requires an action to be taken for the conditions as stated in the question stem. Choice "A" is incorrect since the "old standard" still applied in OP 0105, Reactor Operations.

Choice "D" was originally justified as incorrect with the statement: "An old standard that no longer applies". As stated above, the standard still applied as a caution in OP 0105, Reactor Operations. This makes choice "D" correct.

The plant would have entered OT 3115, Reactor Pressure Transients, when the high pressure condition occurred. The conditions in the stem require no further action per this procedure.

The plant would exit OT 3115, Reactor Pressure Transients, and return to OP 0105, Reactor Operations. This procedure would require the actions of choice "D".

If it is assumed both procedures are utilized at the same time then choice "D" is still the only correct answer. Choice "A" can be restated as "no further actions are necessary". Choice "D" is a procedurally directed action which thus makes choice "A" incorrect. With the industry emphasis on conservative decision making, the actions listed in choice "D" are the most conservative, procedurally directed actions.

Conclusion: Answer **"D"** should be accepted as the correct answer. In this case, two approved procedures, OP 0105, Reactor Operations (Rev 11), and OT 3115 (Rev 9), Reactor Pressure Transients, had conflicting guidance for the given condition. (A condition report, CR-VTY-2005-00423, was generated to resolve the conflict.) The procedural conflict was not identified during the examination validation process. Choice "D" is correct because it is still a procedurally-directed action from an approved procedure. Choice "A" is incorrect because it states that the plant may operate indefinitely and this is not allowed per OP 0105, Reactor Operations.

Validation of Incorrect Answers

There were nine questions where more than 50% of the candidates missed the correct answers. A review of these questions for validity follows:

#25 – The correct answer was "D". Two candidates selected "B" and one selected "A". The question is valid and had good distracters. Candidates that missed the question did not recall the length of the cycles on the SRVs since they are generally not required to be open for very long when used to control pressure.

#37 – The correct answer was "C" and all candidates selected "D". The question is valid. The stem conditions had symmetry of conditions where discharge pressure/inlet pressure and exhaust pressure/suction pressure had similar readings. Only suction pressure was out of its normal band but unless the stem was carefully analyzed, it could easily be assumed that all readings were normal.

#65 – The correct answer was "A". Two candidates selected "B" and one selected "C". The question is valid. It had good distracters that were all in a reasonable range of the required shutdown cooling level of 185".

#77 – The correct answer was "C". Two candidates selected "A" and one selected "B". The question is valid but it is believed there are two correct answers, "C" and "A". (as per the previous justification).

#79 – The correct answer was "A". All candidates selected "D". The question is valid but it is believed the correct answer should be changed to "D". (as per the previous justification).

#87 – The correct answer was "A". Three candidates selected "C". The question is valid and distracter "C" is very credible but wrong. With a loss of Bus 8, the normally open cleanup suction valve (CU-15) loses power. With a loss of power the valve loses valve open/close indication. Although the valve is actually open, the loss of indication causes RWCU pump logic to sense the valve as closed. The closed suction valve causes the RWCU pumps to trip and thus make them unavailable. Appendix J does not provide for defeating this trip.

#90 - The correct answer was "A". Two candidates selected "C" and one selected "B". The question is valid and has good distracters. The points of knowledge that were missed are the lack of a load shed feature on the cross tie breakers and the impact that has on the operability of both diesels.

#92 - The correct answer was "D". Three candidates selected "C". The question is valid and distracter "C" is the normal operation for the TIP system, if it had power, during a LOCA.

#93 - The correct answer was "C". Two candidates selected "B", one selected "D" and one selected "A". The question is valid and has good distracters. The distracters all occur during the quarterly schedule but forced the candidates to try and remember the sequence in which they occurred.

Entergy

Entergy Nuclear Northeast
Entergy Nuclear Operations, Inc
Vermont Yankee
P.O. Box 0500
185 Old Ferry Road
Brattleboro, VT 05302-0500
Tel 802 257 5271

1ST SUBMITTAL

February 14, 2005
BVY 05-016
TDL 05-007

Regional Administrator, Region 1
ATTN: Mr. John Caruso
United States Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

References: (a) License No. DPR-28 (Docket No. 50-271)

Subject: Senior Reactor Operator Licensing Examinations – Vermont Yankee, February 2005

The written exam was administered on February 3, 2005. The sample plan was developed in accordance with ES-401, "Preparing Initial Site Specific Written Examinations", Attachment 1. There was no duplication between any NRC exam material and the candidates' audit exam.

Enclosed are post exam materials as required by ES-501, "Initial Post-Examination Activities."

If you have any questions, please contact Mr. Michael Gosekamp, Superintendent, Operations Training, in our Brattleboro office at (802) 258-4161.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael Gosekamp
Superintendent, Operations Training

Entergy

BVY 05-016
TDL 05-007

Attachments:

- Ungraded Copy of Answer Sheets
- Graded Copy of Answer Sheets
- Applicants' Written Cover and Answer Sheets
- Questions and Answers During the Written Exam
- Seating Chart
- Form ES-403-1, "Written Examination Grading Quality Checklist"
- Written Exam Analysis
- Form ES-201-3, "Examination Security Agreement"
- Master Examination and Answer Key
- Examination
- Answer Key
- Selection of Written Exam Incorrect Answers

Attached References:

- ON 3146, "Low Instrument/Scram Air Header Pressure"
- DP 0166, "Operations Department Standards"
- OT 3115, "Reactor Pressure Transients"
- OP 0105, "Reactor Operations"
- Alarm Response Sheet 6-D-1
- Alarm Response Sheet 5-E-2

c: USNRC Resident Inspector
USNRC Project Manager
Document Control Desk
VT Department of Public Service

WRITTEN EXAM ANALYSIS

An exam analysis was conducted IAW NUREG 1021, ES-403 Section D.3 with the following results:

- There were 9 questions answered incorrectly by over 50% of the class. The question numbers and comments are covered under the section below titled "Validation of Incorrect Answers".

- All questions were determined to be valid, with some modification/ re-grading required.

- No training program deficiencies were identified, however one question indicated that enhancements to current training material would be appropriate. Training Evaluation Action Request (TEAR), VTY 2005-45, has been generated to track materiel revisions in support of this item.

- Two questions require stem wording modifications. Student questions during exam administration indicated that these questions required some clarification. The wording problems were self identified and clarified during the exam (see attached "Questions and Answers during the Written Exam"). Exam bank versions of these two questions have been modified to correct these issues.

- Two questions were identified as faulty and require post exam re-grading/ modification, details regarding these questions are included in this submittal.
    - One question, Question number 77, has two correct answers.
    - Question number 79 should be modified to change the correct answer from "A" to "D".

SRO QUESTION NUMBER 79

Original Question (Number 79)

During a Rx Startup at ≈ 60% power, a spurious MSIV closure (MSIV 86A) causes a high pressure condition.

The current plant conditions are:

- Rx pressure 990 psig
- Steam flow 4.7 x 10^6 lbs/hr

At this point:

a. Core Thermal Limits evaluations are valid and power may be held steady for an indefinite period of time.
b. Core Thermal Limits evaluations are valid and MSIV 86A must be reopened within 2 hours.
c. Core Thermal Limits are suspect and power must be reduced to < 25% before MSIV 86A can be reopened.
d. Core Thermal Limits are suspect & MSIV 86A should be reopened within 2 hours or power shall be reduced to < 25% in 8 hours.

Original Answer (Number 79) – "A"

New Correct Answer (Number 79) – "D"

JUSTIFICATION FOR CHANGE

The question stem has the plant performing a startup. The governing station procedure for Reactor Startup activities, OP-0105 Reactor Operations, contains the following caution:

> *"If any of the following conditions exist when CTP >25% RTP, then consider core thermal limits (MCPR and APLHGR) evaluation suspect: (EDCR 97-422)*
>
> > *Less than 4 main steam lines passing steam (except surveillances).*
> >
> > *MTS-2 tripped or any bypass valve inoperable.*
> >
> > *Feed water heater string bypassed.*
>
> *Then exit the condition within 2 hours or reduce CTP to less than 25% RTP within the next 8 hours."*

The question also states that a high pressure condition occurred which would cause the plant to enter OT 3115 "Reactor Pressure Transients". The question was originally based on a K&A related to High Reactor Pressure steps in OT 3115 which state:

"If pressure change was due to an MSIV closure, THEN:

a. Reduce reactor power at a rate not to exceed 10% RTP/min. until the following criteria are satisfied:

1) Reactor Pressure ≤ 1000psig.

AND

2) No. of Isolated Steam Lines	*Total Steam Flow*
1	*≤4.8 Mlbs/hr (<75% RTP)*
2	*<3.2 Mlbs/hr*

NOTE

Long term steady state operation with 1 MSIV isolated is permissible provided reactor power is limited to ≤75% of rated thermal power. (GENE-L12-00-068)"

The original choice of "A" was selected as a correct answer based on the guidance in OT 3115. However, the plant is in a startup and after the actions of OT 3115 are addressed the controlling document is OP 0105. The actions listed in choice "D" are the more conservative, procedurally directed actions for this condition given the guidance contained in OP 0105. All candidates selected "D", OP-0105 guidance, as the correct answer. (see attached OP 0105, page 76 of 146).

The station contends, given the conflict in procedural direction and industry emphasis on Conservative Decision Making, that the exam question should be modified such that answer "D" is the only correct answer.

SRO QUESTION NUMBER 77

Original Question (Number 77)

At approximately 20% power during startup and power ascension, Control Room annunciators alarmed, including the following:

6-D-1 INST AIR HDR PRESSURE LO
5-E-2 FW VLV LOCKUP SIGNAL/AIR FAIL

The power ascension was immediately halted, and the following conditions have been reported:

- Reactor level is slowly lowering
- Scram Air Header pressure is 70 psig and stable

Which of the following describes the required actions and the reason for those actions?

a. Override SA-PCV-1 closed after making an announcement over the Gai-tronics page. Service air supplies any respirators in use.
b. Scram the reactor and enter OT 3100. Control rods are expected to drift at this pressure.
c. Scram the reactor and enter OT 3100. The in-service FWRV has locked up.
d. Place the aux FWRV in service and restore reactor level. The in-service FWRV has locked up.

Original Answer (Number 77) – "C"

Alternate Correct Answer (Number 77) – "A"

JUSTIFICATION FOR CHANGE

Answers "A" and "C" should be accepted as correct answers. In this case, neither answer is *incorrect* since each is a credible, procedurally-directed action from the appropriate Off Normal procedure.

The wording in choice "A" is "Override SA-PCV-1 closed..."

ON 3146, "LOW INSTRUMENT/SCRAM AIR HEADER PRESSURE", states that the valve "should be fully closed at ~80 psig" (attached ON 3146, Automatic Action step 2).

If the candidate assumes the valve is open then it is appropriate to complete the automatic

action. If the candidate assumes the valve is closed then it is appropriate to confirm the automatic action. (see attached DP 0166, step h, page 14 of 61). The second part of choice "A", making the Gai-tronics announcement, is also procedurally correct. It is necessary to insure the safety of personnel who might be on breathing air (see attached ON 3146, Operator Actions step 4.a).

Choice "C" remains a correct choice and is contained in the same procedure, ON 3146. The stem of the question states that alarm 5-E-2 is in alarm. This indicates a Feed Reg. Valve lockup. The stem also states that level is decreasing. This meets the conditions in the procedure which direct that "If RPV level is decreasing uncontrollably due to feed reg valve lockup" then "scram the reactor and enter OT 3100 (See ON 3146, Operator Actions, step 2.a).

The question conflict arises from the fact that the stem of the question states that "level is slowly lowering" and the procedure directs a reactor scram if level is "decreasing uncontrollably". Information in the stem of the question is not specific enough to support the conclusion that level is "decreasing uncontrollably" therefore, some students felt it was appropriate to address the potential personnel safety issue, confirming PCV-1A was closed and announce the condition via Gaitronics before taking actions to initiate a Reactor Scram.

Given the station and industry emphasis of personnel safety it is appropriate to recognize that the question allowed some judgment on the part of the candidate and they may determine that "level lowering slowly" did not meet the criterion for "decreasing uncontrollably". Therefore, depending upon the individual's interpretation of the rate and severity of the level decrease, it would be correct to recognize either answer "A" or "C" as correct.

Two candidates selected choice "C" and two selected choice "A". The final candidate selected a different distracter.

Validation of Incorrect Answers

There were 9 questions where more than 50% of the candidates missed the correct answers. A review of these questions for validity follows:

#25 – The correct answer was "D". Two candidates selected "B" and one selected "A". The question is valid and had good distracters. Candidates that missed the question did not recall the length of the cycles on the SRVs since they are generally not required to be open for very long when used to control pressure.

#37 – The correct answer was "C" and all candidates selected "D". The question is valid. The stem conditions had symmetry of conditions where discharge pressure/inlet pressure and exhaust pressure/suction pressure had similar readings. Only suction pressure was out of its normal band but unless the stem was carefully analyzed, it could easily be assumed that all readings were normal.

#65 – The correct answer was "A". Two candidates selected "B" and one selected "C". The question is valid. It had good distracters that were all in a reasonable range of the required shutdown cooling level of 185".

#77 – The correct answer was "C". Two candidates selected "A" and one selected "B". The question is valid but it is believed there are two correct answers, "C" and "A". (as per the previous justification).

#79 – The correct answer was "A". All candidates selected "D". The question is valid but it is believed the correct answer should be changed to "D". (as per the previous justification).

#87 – The correct answer was "A". Three candidates selected "C". The question is valid and distracter "C" is very credible but wrong. With a loss of Bus 8, the normally open cleanup suction valve (CU-15) loses power. With a loss of power the valve loses valve open/close indication. Although the valve is actually open, the loss of indication causes RWCU pump logic to sense the valve as closed. The closed suction valve causes the RWCU pumps to trip and thus make them unavailable. Appendix J does not provide for defeating this trip.

#90 - The correct answer was "A". Two candidates selected "C" and one selected "B". The question is valid and has good distracters. The points of knowledge that were missed are the lack of a load shed feature on the cross tie breakers and the impact that has on the operability of both diesels.

#92 - The correct answer was "D". Three candidates selected "C". The question is valid and distracter "C" is the normal operation for the TIP system, if it had power, during a LOCA.

#93 - The correct answer was "C". Two candidates selected "B", one selected "D" and one selected "A". The question is valid and has good distracters. The distracters all occur during the quarterly schedule but forced the candidates to try and remember the sequence in which they occurred.

QUESTION #77 REFERENCE

INSTRUMENT AIR SYSTEM		6-D-1 Page 1 of 1
INST AIR RECEIVER HDR PRESS LO		[redacted]
Causes: 1. Insufficient number of compressors operating. 2. High air system demand or system leakage. 3. Control system malfunction. 4. Instr. air separator, prefilter, dryer or afterfilter plugged.	Setpoints: 90 psig	Actuating Devices: PAL-105-16A/B References: CWD-582 ON 3146 G-191160 sh. 1

Confirmation:

1. Air receiver pressure indication on CRP 9-6.
2. Local air receiver pressure indication.

Automatic Actions:

None

Operator Actions:

NOTES

- This annunciator may alarm if performing a backwash on a condensate demineralizer.
- When one dryer train is out of service spurious alarms can be expected in times of increased load on service or instrument air, and/or times when the desiccant is near the end of it's PM life.

---

1. Verify all air compressors are running.
2. IF the LAG air compressors have failed to start/load, THEN:
   a. Verify or place the LOAD/UNLOAD toggle switches in the LOAD position.
   b. Place control switches on control panel CP-1 to the LEAD position.
   c. Verify or place all LEAD/LAG pressure switches at test panel TP-1 are in NORM position.
3. IF not an expected annunciation, secure or throttle back high air system demands.
4. Isolate obvious leakage.
5. Secure Service Air Demands.
6. Refer to ON 3146, Low Instrument/Scram Air Header Pressure.

ALARM RESPONSE SHEET Question # 77 Reference

FEED REG. VALVES		5-E-2 Page 1 of 1
FW VLV LOCKUP SIGNAL/AIR FAIL		Rev. 4 Issued 01/31/01
Causes: 1. Loss of air or control signal to one or both feedwater reg. valves. 2. Rupture of the air piping. 3. Feedwater control MAN/AUTO STA A or B in manual and manual signal adjusted below zero.	Setpoints: N/A	Actuating Devices: N/A References: CWD 507 OT 3113 OT 3114

Confirmation:

1. FW Reg valve(s) reset pushbutton light energized.

Automatic Actions:

1. FW Reg. valves lock-up as is.

Operator Actions:

1. Attempt to reset the lock-up by depressing the valve A/B reset pushbuttons.
2. If the valve(s) cannot be reset, check the air supply and re-establish as quickly as possible.
3. If only one valve is affected, the other valve should be able to control level.
4. Refer to OT 3114, Reactor High Level, if reactor level is trending up.
5. Refer to OT 3113, Reactor Low Level, if reactor level is trending down.

Question #77
Reference

VERMONT YANKEE NUCLEAR POWER STATION

ABNORMAL PROCEDURE

ON 3146

REVISION 15

LOW INSTRUMENT/SCRAM AIR HEADER PRESSURE

USE CLASSIFICATION: **REFERENCE**

LPC No.	Effective Date	Affected Pages
1	09/04/01	App. A Pgs 2 & 3 of 5; App. B Pgs 2 & 4 of 6
2	03/24/03	App D Pg 1 & **ADDED 1A & 1B** of 1

Implementation Statement: N/A

Issue Date: 01/26/01

SYMPTOMS

1. Annunciators:

   a. INST AIR RECEIVER HDR PRESS LO alarm (CRP 6-D-1)

   b. SCRAM PILOT AIR HDR PRESS HI/LO alarm (CRP 5-C-8)

   c. FW VLV LOCKUP SIGNAL/AIR FAIL alarm (CRP 5-E-2)

2. Misoperation of air operated equipment, including:

   a. CRD flow control valves (fails closed)

   b. Feedwater control valves (FCV-12A, 12B fails as is, FCV-13 fails closed)

   c. Outboard MSIVs (fails closed)

   d. Control rods drifting in at less than 55 psig

AUTOMATIC ACTIONS

1. LAG compressors start (at 95 psig decreasing).

2. SA-PCV-1, air header pressure control valve, starts to close at 85 psig and should be fully closed at ~80 psig.

OPERATOR ACTIONS

1. If control rods begin drifting in or the Scram Air Header pressure drops to less than 55 psig, scram the reactor and enter OT 3100, Scram Procedure.

2. If RPV level is decreasing uncontrollably due to feed reg valve lockup, then perform the following:

   a. Scram the reactor and enter OT 3100, Scram Procedure.

   b. Allow RPV level to recover to the normal range following post-scram shrink.

   c. Trip all feed pumps and place control switches in pull-to-lock.

   d. Close FDW-6A, HP HTR A INLET, and FDW-6B, HP HTR B INLET.

   e. Start one feed pump and throttle FDW-5, HP HTR BYPASS, as necessary to maintain RPV level.

3. Restore the Scram Air Header pressure to normal by performing the following, as appropriate:

   a. Adjust the Scram Air Header pressure control valve to restore header pressure to 70-75 psig (PI-3-230).

   b. Place the off-service Scram Air Header pressure control valve in service if not already in service.

4. Determine the cause of the low instrument air header pressure and restore pressure as soon as possible.

   a. If loss of service air is eminent, make an announcement over the gai-tronics that the breathing air supply for respirators will be lost.

   b. If necessary, notify Maintenance Department to replace or repair a failed component or ruptured air line.

5. Place standby equipment in service as necessary to restore pressure.

6. If necessary:

   a. Bypass an instrument air dryer per OP 2190, Service and Instrument Air

   or

   b. If necessary, cross-connect service air to instrument air per OP 2190.

CAUTION
Since service air supplies any air respirators in use, an announcement should be made over the gai-tronics page that the supply will be lost prior to SA-PCV-1 closing. If conditions permit, allow time for personnel response before closing the valve manually.

7. If service air pressure decreases to less than 85 psig, verify air header pressure control valve SA-PCV-1 closes.

   a. If SA-PCV-1 fails to close when pressure decreases to less than 85 psig, manually override and close SA-PCV-1.

8. If instrument air header pressure cannot be immediately restored, ensure the containment instrument air system is supplied by the containment makeup system (OP 2119) or the containment air compressor (OP 2191).

9. Monitor hotwell level for erratic operation.

10. Consult Appendix A for the expected system responses upon a loss of air, and perform valve position verification per Appendix B.

11. Monitor components cooled by TCVs and perform the following if necessary:

    a. Start additional service water pumps.

    b. Manually control TCV positions as necessary to control component temperatures within normally specified operating ranges.

12. Investigate components which did not fail in the intended position when instrument air was lost.

    a. Initiate further operator action dependent on system and plant conditions.

13. For components which failed in the wrong position, consult Appendix C to prepare for the consequences.

14. Establish Control Room ventilation as follows:

NOTE
I/C assistance must be requested promptly to restore ventilation within 3 hours.

    a. Secure SAC-1A and SAC-1B.

    b. Place the Control Room HVAC recirc mode select switch to EMER.

    c. Request I/C to perform the following steps for SAC-1A(B):

NOTE
SAC-1A only has an outlet damper. SAC-1B has an inlet and outlet damper.

        1) Disconnect the SAC-1A(B) damper actuator piston(s) from the damper linkage.

        2) Chain open the SAC-1A(B) damper(s) with the installed chain(s).

        3) Verify damper(s) for SAC-1B(A) closed.

d. Start SAC-1A(B).

e. Throttle HS-129A, steam supply valve, and SCW-45A, chilled water valve, as necessary to obtain desired Control Room temperature (normal 72-78°F).

15. Consider requesting the Maintenance Department to install a temporary (e.g., diesel driven) air compressor.

16. If the reactor building is inaccessible, request Maintenance to install compressed air bottles to the external connections (to supply reactor building air lock door seals) within 48 hours. (PDCR 90-01)

17. When normal IA/Scram Air Header pressure is restored, refer to Appendix D for restoration instructions. (UND96073)

ATTACHMENTS

1. Appendix A Expected System Response Upon Loss of Air
2. Appendix B Critical Air-Operated Component List
3. Appendix C Critical Air-Operated Component Consequences of Wrong Failure Position Upon Loss of Air
4. Appendix D Restoration From Low IA/Scram Air Pressure

REFERENCES

1. SOER8801OP1, Provide Procedures to Assist Operators in the Identification, Control, and Recovery from Partial or Total Loss of Instrument Air
2. GENLTR8814OP1, Revise Procedures to Assist Operators Concerning "Loss of Air" Events
3. UND96073, Develop Procedural Guidance for Restoration Actions after IA Pressure is Restored.
4. OP 0109, Plant Restoration
5. OP 2119, Nitrogen Supply System
6. OP 2190, Service and Instrument Air
7. OP 2191, Containment Air Compressor System
8. OT 3100, Scram Procedure

APPENDIX A

EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR

SYSTEM - NUCLEAR BOILER

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
RV-17 RV-18	Reactor Head Vent Valves to Drywell Sump. Capacity to vent the reactor would be lost due to valves failing closed.
RV-39 RV-40	Recirc Loop Sample Isolation Valves. Capacity to obtain a sample would be lost due to the valves failing closed.
MS-86A MS-86B MS-86C MS-86D	MSIVs outside containment will close resulting in a reactor scram.
MS-80A MS-80B MS-80C MS-80D	MSIVs inside containment will close resulting in a reactor scram if the instrument air system was cross-connected to the inboard MSIVs prior to the nitrogen system being placed in service.

SYSTEM - CONTROL ROD DRIVE

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
CRD-32A CRD-32B	Reactor control rod scram discharge volume (SDV) vent and drain valves close upon a loss of air. Remote vent and drain operation of the SDVs would be lost upon loss of air pressure. Local manual valve operation would be required.
CRD-33A CRD-33B CRD-33C CRD-33D	
CRD-126 CRD-127	Upon a loss of air, these valves (89 each) open to allow control rod drive water to discharge to the scram discharge volumes. This results in a reactor scram.
CRD-19A CRD-19B	Fail closed which results in increased charging water flow and pressure. Drive and cooling water flow, and drive Δp go to zero.

SYSTEM - RESIDUAL HEAT REMOVAL

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
RHR-160	RHR system process sampling. Capacity to obtain a sample would be lost due to the valve failing closed.

SYSTEM - RCIC

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
RCIC-12, 13	RCIC condensate pump discharge to equipment drain. Loss of auto level control of the condenser would be lost due to the valves failing closed. Local manual valve operation will be required.
RCIC-23	RCIC system cooling water to RCIC lube oil cooler and barometric condenser. If there was a demand for RCIC system operation, the pressure control of fluid discharge to the RCIC lube oil cooler and barometric condenser would be lost due to the pressure control valve failing open.
RCIC-32 LPC 1 RCIC-34 RCIC-35	RCIC steam drain trap bypass and blowdown. If the valve was being utilized to drain water, this capability would be lost due to the valve failing closed.

SYSTEM - STANDBY GAS TREATMENT

COMPONENT	EXPECTED RESPONSE UPON LOSS OF AIR
	Upon a loss of instrument air, the SGT valves will lineup for automatic SGT initiation, and will initiate as designed if an initiation condition occurred.

SYSTEM - REACTOR BUILDING VENTILATION

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
HVAC-9 HVAC-10 HVAC-11 HVAC-12	These valves will close resulting in a loss of normal reactor building air vent supply from RSF-1A/1B and reactor building air ventilation exhaust to REF-1A/1B.

SYSTEM - PRIMARY CONTAINMENT ATMOSPHERIC CONTROL

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
AC-11A AC-11B	Primary/secondary torus vacuum breaker. These valves fail open. This would open the vacuum relief line from the reactor building to the torus and could affect torus pressure.

SYSTEM - RADWASTE

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
LRW-82 LRW-83 LRW-94 LRW-95	Drywell floor drain isolation and drywell equipment drain isolation. Upon a loss of air, the discharge path for pumping the drywell drains to the radwaste building would become isolated. Drain pumps (if operating) would trip.

SYSTEM - HPCI

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
HPCI-39, 40	HPCI condensate pump discharge to equipment drain. Auto level control of the HPCI gland seal condenser would be lost due to the valves failing closed. Local manual valve operation will be required.
HPCI-50A	HPCI flow to gland seal condenser and lube oil cooler will open after a three minute time delay upon HPCI initiation. The valve fails open and could potentially blow the heat exchanger gasket on system startup.
HPCI-53 LPC 1 HPCI-42 HPCI-43	HPCI steam trap bypass. Capability to drain the HPCI condensate drain pot would be lost due to the valve failing closed.
HPCI-54	HPCI exhaust line. Capability to drain the HPCI exhaust drain pot would be lost due to the valve failing closed.

SYSTEM - SERVICE WATER

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
SW-3A SW-3B	Service water strainer backwash to river. Upon loss of air the strainer would remain dirty. System ΔP would increase and flow would decrease. A local switch at the strainers can be manipulated to give continuous backwash or modulated backwash off of strainer delta P.
SW-28A,B	Cooling water valves fail conservatively open to provide cooling water to emergency diesel coolers.

SYSTEM - CONTAINMENT AIR ISOLATION

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR

NOTE

CA-38A and CA-38B have manual gags to either open or close the valves as required.

CA-38A CA-38B	Containment compressor supply from drywell isolation. These valves fail closed upon a loss of air. These valves are normally open and are required to close following an accident to maintain containment integrity.

SYSTEM - HEATING VENTILATION AND AIR CONDITIONING

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
Diesel Generator A and B Room Inlet Louvers	Upon a loss of air, these dampers will open (the exhaust fans will not start at this point). Fresh air will be provided to the DG rooms.

SYSTEM - FEEDWATER

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
FDW-12A,B FDW-13	Since feedwater flow should not change upon a loss of air, there should be no effect on the feedwater system from these valves maintaining their operating position. If the lockup feature fails, these valves will tend to drift open. The aux feed reg valve will close on loss of air.

SYSTEM - SECONDARY CONTAINMENT

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
Inflatable Door Seals for RB Inner and Outer Equipment Access Doors	Door seals are required to be inflated when closed in order to maintain secondary containment integrity. The door seal, with its bottled air backup system, is adequate to provide secondary containment given a loss of instrument air and will remain functional during a seismic event.

SYSTEM - REACTOR CLEANUP

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
RCU Dump Flow Regulator	Valve fails closed on loss of air. Use of cleanup system to lower or control Rx water level will not be available.

SYSTEM - CR HVAC

COMPONENT	EXPECTED SYSTEM RESPONSE UPON LOSS OF AIR
SCW-46A, TCV-HS-129A SAC-1A Discharge SAC-1B Supply & Discharge	System isolation occurs due to failure position of HVAC dampers which places the Control Room ventilation in emergency recirc mode. Chilled water fails to maximum cooling, steam heating fails to maximum heating, SAC-1A discharge damper fails closed, SAC-1B supply and discharge dampers fail closed. Automatic temperature and humidity control is lost. Operator action is required to maintain Control Room temperature within the normal range (72-78°F).

VERMONT YANKEE NUCLEAR POWER STATION

OPERATIONAL TRANSIENT PROCEDURE

V 1/ referred QUESTION #77

OT 3113

REVISION 13

REACTOR LOW LEVEL

USE CLASSIFICATION: **REFERENCE**

RESPONSIBLE PROCEDURE OWNER: **Manager, Operations**

REQUIRED REVIEWS		Yes/No
E-Plan	10CFR50.54(q)	No
Security	10CFR50.54(p)	No
Probable Risk Analysis (PRA)		Yes
Reactivity Management		Yes

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Issue Date: 04/22/04

ENTRY CONDITIONS

An unexpected or unexplained decrease in Reactor water level.

IMMEDIATE OPERATOR ACTIONS

NOTE

Steps may be performed in any order, as directed by SM/CRS.

1. **IF Total Steam Flow is ≥7.2 x 10^6 lbm/hr AND any running Condensate Pump or Feed Pump trips, THEN verify that both Reactor Recirc Pumps run back to ~60% Core Flow (runback may take up to 30 seconds to go to completion).**

2. **IF Total Steam Flow is <7.2 x 10^6 lbm/hr AND both running Feed Pumps trip AND the standby Feed Pump fails to auto-start, THEN insert a manual Reactor Scram.**

3. **IF Total Steam Flow is <7.2 x 10^6 lbm/hr AND either running Feed Pump trips, THEN verify that the standby Feed Pump auto-starts.**

   a. **IF the standby pump did not auto start THEN:**

      1) **Manually start the standby pump.**

      2) **IF necessary, shift RX VESSEL MASTER CONTROLLER (FC-6-83) to MAN, THEN restore level to the normal band.**

      3) **WHEN level has been returned to the normal band, return the RX VESSEL MASTER CONTROLLER (F6-6-83) to automatic per OP 2172, Feedwater System.**

4. **IF the level decrease was caused by a feedwater control malfunction THEN:**

   a. **Shift RX VESSEL MASTER CONTROLLER (FC-6-83) to manual by depressing the A/M pushbutton.**

   b. **IF not successful, THEN shift FEEDWATER REG VLV FDW-12A(B) CONTROLLERS to manual by depressing the A/M pushbutton.**

5. **IF unable to regain reactor water level control while performing this procedure, THEN scram the reactor and implement OT 3100, Scram Procedure.**

FOLLOW-UP ACTIONS

1. IF level control difficulties are encountered when using RX VESSEL MASTER CONTROLLER (FC-6-83) in the manual mode, THEN proceed as follows:

   a. Shift FEEDWATER REG VLV FDW-12A(B) CONTROLLER to manual by depressing the A/M pushbutton.

   b. Control reactor level using RX VESSEL MASTER CONTROLLER (FC-6-83) OR FEEDWATER REG VLV FDW-12A(B) CONTROLLER OR both as plant conditions warrant.

2. IF a lockup of the Feedwater Reg Valves has occurred (loss of air or control signal) THEN:

   a. Attempt to reset using pushbuttons on CRP 9-5.

   b. IF the valve(s) fail(s) to reset, THEN perform the following actions:

      1) Observe INST AIR RECEIVER HDR PRESS LOW annunciator (6-D-1) and, IF alarmed, THEN dispatch an operator to correct the situation.

      2) IF level is slowly trending downward, THEN attempt to control level by opening the AUX FEED REG VLV FDW-13.

3. IF power reduction to reduce inventory loss is necessary, THEN reduce Core flow to 27.5-29 Mlbm/hr at a rate ≤10% RTP/min. (NVY94084_03, UND97039_01 and SA97_ON/OT_01)

4. IF Recirc Pump auto runback occurs from a loss of feed water flow THEN:

   a. Reduce RECIRC PUMP A/B SPEED CONTROLS (2-184-16A/B) to minimum.

   b. If required, shift RECIRC PUMP A/B SPEED CONTROLS to MAN.

   c. Determine if an entry condition for OT 3117, "Reactor Instability," exists.

5. IF the level decrease was caused by a Feed Pump or Condensate Pump trip, THEN perform the following:

   a. If desired, place the tripped Feed Pump control switch in PULL-TO-LOCK.

   b. WHEN re-starting Feed Pump(s), verify that no more than one pump is placed in standby.

   c. Determine the cause of the trip and restart the pump if possible.

   d. IF no cause is determined, THEN contact Maintenance prior to restart.

6. Determine cause of Feedwater Control malfunction by observing the following:

   a. LI 6-94A/B, REACTOR LEVEL A/B, A side - B side vs. Rosemont level indications

   b. Feed Flow/Steam Flow mismatch

7. IF low level is due to LI 6-94A/B, REACTOR LEVEL A/B, A side or B side level control failure THEN;

   a. Place VESSEL LEVEL CHANNEL SEL switch to the opposite channel.

   b. Re-establish auto level control per OP 2172, Feedwater System.

8. IF low level is due to Steam Flow/Feed Flow mismatch THEN;

   a. Place VESSEL LEVEL CONTROL MODE switch to the 1 ELEM position.

   b. Re-establish auto level control per OP 2172, Feedwater System.

NOTE

- FDW-FCV-12A or 12B lock in the AS IS position. If the lockup feature fails, these valves will tend to drift open.
- The FW REG BYPASS VLV (FDW-FCV-13) fails closed on loss of air.

9. IF Feedwater Reg Valves will not reset, THEN take local manual control per OP 2172, Feedwater System.

10. IF a third Condensate Pump or Feed Pump is not available THEN:

    a. Decrease Reactor Power to ≤80% power.

    b. IF Feed Pump suction pressure is <280 psig, THEN decrease Reactor Power as required to raise feed pump suction pressure to ≥280 psig.

11. Check Steam Leak Detection Touchscreen Monitor in CRP 9-21 (Reference Legs Screen) for abnormal readings on reference leg temperatures.

12. Verify plant operations is below the MELLLA boundary on the power to flow map per Fig. 2.4-1.

13. IF plant operation is above the MELLLA boundary on the power to flow map per Figure 2.4-1 of the Core Operating Limits Report, THEN proceed as follows:

a. Stop reducing core flow.

b. Insert control rods using one or both of the following sub-steps (SIL 653):

NOTES

- "Continuous Insert" is the desired method of control rod movement. Control rod movement must be monitored closely to prevetn a control rod mispositioning (OT 3166).
- Insert or withdraw errors may initially exist on the Rod Worth Minimizer initially until the first few rod groups are inserted.

CAUTION

Whichever sequence (Rapid Shutdown or Reverse of Withdrawal Sequence) is utilized to reduce power, continue using that sequence until the reactor has exited the regiion. DO NOT switch from one sequence to another.

1) IF the Rapid Shutdown Sequence is available THEN proceed as follows, otherwise insert rods per step b) below:

a) Obtain the Rapid Shutdown Sequence kept in the Control Room.

b) Starting with the last rod in the last group of the sequence, insert control rods in reverse order until operation is below the MELLLA boundary.

2) IF Rapid Shutdown Sequence is not available THEN proceed as follows:

a) Insert rods either per Reactor Engineering recommendation OR in reverse order of the withdrawal sequence starting with the highest rod group withdrawn until operation is below the MELLLA boundary.

b) Prior to going below 30% RTP, latch the appropriate sequence (A1, A2, B1 or B2) on the rod worth minimizer, per OP 2450, Rod Worth Minimizer.

c) IF any insert or withdraw errors exists when below less than 30% RTP, THEN check fro any mispositioned rods and notify Reactor or Computer Engineering.

c. If plant conditions warrant, continue core flow reduction.

d. Notify Reactor Engineering.

VERIFICATION OF AUTOMATIC ACTIONS

	ACTIONS	SETPOINTS
1.	Recirc MG A/B Runback (4-D-1)	Total Steam Flow ≥7.2 Mlbm/hr AND any Condensate or Feed Pump breaker OPEN.
2.	Recirc runback to low speed setting	Total feedwater flow less than 20%
3.	Reactor "Hi-Lo Level" alarm	Low Level - 155" High Level - 165"
4.	Scram and PCIS Standby Gas Treatment System initiation Reactor Building Ventilation trip Groups 2, 3, 4 and 5 isolations	≥127" (Tech Spec)
5.	Reactor Lo-Lo Level Alarm and ECCS initiation	≥82.5" (Tech Spec)
6.	FW Control System Trouble (5-E-6)	Level deviation between actual level and level setpoint >3 inches for 1 second.

Question # 77 Reference

VERMONT YANKEE NUCLEAR POWER STATION

DEPARTMENT PROCEDURE

DP 0166

REVISION 8

OPERATIONS DEPARTMENT STANDARDS

USE CLASSIFICATION: **INFORMATION**

RESPONSIBLE PROCEDURE OWNER: **Manager, Operations**

REQUIRED REVIEWS		Yes/No
E-Plan	10CFR50.54(q)	No
Security	10CFR50.54(p)	No
Probable Risk Analysis (PRA)		No
Reactivity Management		No

LPC No.	Effective Date	Affected Pages

Implementation Statement: Due to the extent of changes in this revision, track changes were not used.

Effective Date: 12/30/04

TABLE OF CONTENTS

PURPOSE 4

DISCUSSION 4

ATTACHMENTS 4

QA REQUIREMENTS CROSS REFERENCE 4

REFERENCES AND COMMITMENTS 5

PRECAUTIONS/LIMITATIONS 5

DEFINITIONS 6

PROCEDURE 6

A. Procedure Use and Adherence 6

B. Response to Off-Normal Conditions 7

C. Command and Control 11

D. Professionalism 15

E. Annunciator Response 20

F. Conservative Decision Making 22

G. Operator Watchstanding/Equipment Monitoring/Operator at the Controls (OATC) 23

H. Reactivity Management 28

I. Self Checking/Peer Checking 31

J. Control Board Monitoring 35

K. Crew Updates and Briefs 36

L. Communications 40

M. Phonetic Alphabet 42

N. Training 42

O. Control of Workarounds and Burdens (SOER 94-01) 45

P. Switchyard Access Control 46

Q. Equipment Manipulation and Status Control 48

R. Procedure Place Keeping 51

S. Two-Handed Operation 54

T. Skill of the Craft 54

U. Housekeeping 57

V. Logkeeping 58

W. Shift Turnover 59

X. Robust Barrier 60

FINAL CONDITIONS 61

PURPOSE

This Operations Department Standards procedure provides the bases for the Operations Department to continuously strengthen our leadership role in activities which impact safe, reliable, and efficient plant operations at Vermont Yankee.

This procedure is critical to developing and maintaining excellence in the Operations Department.

DISCUSSION

For the Operations Department to accomplish this purpose, these standards must be aggressively enforced. The Operations Department must continually challenge current expectations with the intention of raising our standards and visibly displaying ownership of the physical plant and plant activities. In addition we must ensure that plant priorities and initiatives are properly focused on safe plant operation.

This procedure of Operations Standards has been developed to represent the attributes of operators who strive for excellence and effectively operate and supervise the station. These standards augment the technical knowledge requirements. The combination of technical expertise and fundamental operating practices lay the ground work for an effective and error free operating environment.

These standards are the foundation for safe and efficient plant operation, and it is **each** operator's responsibility to know, understand, and implement these standards on a routine basis. Operating crews are responsible for continually reinforcing, coaching, and critiquing the implementation of these standards by both Operations personnel and personnel outside the department. Operations is responsible for consistent application of the standards across the shifts and ensuring other departments are aware of our commitment to these standards.

Complying with and enforcing these standards should be considered part of the normal job duties for all Operations personnel.

These standards are not meant to substitute for operators taking ownership of their watch stations in a professional manner. Taking ownership of a watch station means more than taking a good look for one shift cycle. Good operating habits, communication of problems encountered, documentation of deficiencies, and thorough turnovers help each Operating Crew help the next Operating Crew.

ATTACHMENTS

1.	Figure 1	Operator at the Controls & Limited Time Access Area
2.	Appendix A	Deleted

QA REQUIREMENTS CROSS REFERENCE

1. None

REFERENCES AND COMMITMENTS

1. Technical Specifications and Site Documents

   a. None

2. Codes, Standards, and Regulations

   a. None

3. Commitments

   a. SER-9903_04, Revise DP 0166 As Recommended in the Attached SA Report

4. Supplemental References

   a. "Crew Operating Practices Standardization Guideline" dated 10/5/93
   b. Memo, R.J. Wanczyk to J.T. Herron, "On-Shift Training Guidance", dated 2/25/92
   c. Memo, L.E. Doane to distribution, "EOP Usage", dated 6/24/93
   d. Memo, DAR to GAM, Re: Shift Supervisors Command Duties and Responsibilities, Date: June 2, 1997.
   e. Post Trip Report 97-01
   f. SOER 96-01, Control Room Supervisor, Operation for Decision Making and Teamwork
   g. SOER 96-02, Design and Operating Considerations for Reactor Cores
   h. SEN 156, Recurring Event, Unrecognized Reactivity Mismanagement while Performing a Reactor Shutdown
   i. AP 6100, Infrequently Performed Tests or Evolutions

PRECAUTIONS/LIMITATIONS

1. Procedure steps may be performed in any order as appropriate for plant conditions.

DEFINITIONS

1. Caution Tags >90 Days: Non-outage related caution tags which exist for over 90 days.

2. Control Room Alarm: Any disabled or unplanned illuminated alarms that cause the Control Room's annunciators to deviate from a "black board" appearance.

3. Control Room Deficiency: Any deficiency that results in Control Room displayed information or status of equipment differing from actual Plant conditions, or requires operation of Control Room equipment other than per design (i.e., local versus remote operation). This includes controls/switches, status lights, displays, and meters.

4. Operator Burden: Any Plant condition (equipment or other) that would require compensatory operator actions in the execution of normal operating procedures during normal conditions.

5. Operator Workaround: Any Plant condition (equipment or other) that would require compensatory operator actions in the execution of normal operating procedures, abnormal operating procedures, emergency operating procedures, or annunciator response procedures during off-normal conditions. (SER 9903_04)

6. Tagouts >90 Days: Non-outage related tagouts which exist for over 90 days.

7. Valve and Component Deviations >90 Days: Non-outage related valve and component deviations which exist for over 90 days.

PROCEDURE

A. Procedure Use and Adherence

1. Expectation(s)

   a. Operate in accordance with applicable procedure.

2. Standard(s)

   a. Review and understand procedure steps, including precautions and limitations, prior to performing an activity.

   b. Resolve procedure problems prior to the commencement of a task.

   c. Stop an activity and place the equipment in a safe condition if the procedure is found to be inadequate or unclear. Seek resolution prior to proceeding.

   d. Procedure level of use will be defined for each procedure.

e. Use human performance tools, such as STAR, Peer Checking, Place Keeping, etc.

f. Review Place Keeping marks to ensure completion of a procedure section.

g. Procedure steps not to be performed are clearly marked N/A and reviewed/approved by licensed shift management. (Typically for retest or clearance performance.)

h. Identify procedure deficiencies and enhancements per AP 0096 or AP 0097.

B. Response to Off-Normal Conditions

1. Expectation(s)

a. Ensure that crew response and awareness to off-normal conditions is consistent across crews.

2. Standard(s)

a. Upon entering the Emergency Operating Procedures and/or OT 3100 Scram Procedure:

1) IF the reactor should have scrammed, but did not, the RO shall initiate a manual scram by depressing the manual scram push buttons.

a) IF following insertion of the manual scram, reactor power is greater than 2%, the RO shall initiate ARI/RPT and then trip the Recirc Drive Motors. This does not require direction from the CRS.

2) Reactor water level band shall be 127 inches to 177 inches unless otherwise directed.

3) Reactor pressure band shall be 800 psig to 1000 psig unless otherwise directed.

4) The following activities may be initiated when required without reference to operating procedures. However, operating procedures should be referenced as time permits to verify proper operation. (Procedures may be utilized at any time if desired).

- Manual Scram
- SRV operation
- Main Turbine Bypass Jack operation
- Overriding ECCS/RCIC
- Condensate/Feedwater operation - Post Scram Recovery
- Opening MS-6 when required
- Initiation of AR/RPT
- SLC operation
- SW PP operation
- DW RRU Ops
- Brg lift PP operation
- Aux oil pump operation
- NI operation
- Taking a FRV out of conditional auto

5) Communications will continue to be conducted in accordance with the communications section of this procedure. Completion of an activity is normally communicated back to the individual who originally directed the activity. IF the CRS is occupied, the message can be communicated to the Shift Manager who can inform the CRS when appropriate.

6) Deviation from the EOPs shall be made in accordance with 10CFR50.54x.

b. During reactor de-pressurization transients, with level below 82.5 on the narrow range instruments, the shroud level indicators will be the more accurate level instruments below ~350 psig and should be used until water level is restored above 82.5 inches on the narrow range.

c. 4KV Pumps on de-energized busses should be placed in Pull-to-Lock (If available) to facilitate recognition of their unavailability.

d. When responding to a reactor scram or ATWS, the preferred method of level control response is:

1) On RX VESSEL LEVEL MASTER CONTROLLER depress the PB1 pushbutton to insert a 133 inch level setpoint,

2) After verifying level is recovering, reduce the number of running feed pumps to one (ensuring only one feed pump is lined up for standby and the second is in PTL),

3) Recover water level 127 - 177, unless otherwise directed.

4) Consider closing blocking valves if level continues to trend upward.

e. When backing up a PCIS isolation, all valves should be placed in their ISOLATED condition, or in their running condition, as is the case for SGTS valves and fans.

f. When operating HPCI or RCIC for level control, the operator should first use the automatic setpoint tape, then take the controller to manual if required. He should keep the SM and/or CRS informed of his actions.

g. When the operator is given orders to maintain a level and/or pressure band with a given system he has the authority to manipulate that system up to an including tripping pumps/systems in order to stay within his band. He should keep the SM and/or CRS informed of his actions.

h. The control board operators maintain the authority to reduce reactor power, shutdown the reactor, or inject SLC when he determines that the safety of the reactor is in jeopardy or when operating parameters exceed reactor protection setpoints and automatic shutdown does not occur.

i. Licensed operators have the authority and the responsibility to perform immediate actions as directed by the Operational Transient procedures without supervisor direction. Concurrent with taking the action, the operator should attempt to communicate his actions to the CRS and/or SM (i.e., I'm scramming the plant).

j. During normal or off-normal conditions, use of three part communication should drive the speed of operator actions and any direction given to them. There is enough time for orders to be given, repeated back, and acknowledged.

k. The preferred method of establishing level control with feed and condensate, following a terminate and prevent order, is to restore feed and condensate per the restoration section of OE 3107, Appendix GG.

l. Upon the announcement of a reactor scram, plant transient, or when directed by the Control Room, all available operators (AOs, ACROs CROs, CRSs, SM, STAs) will report to the Operations Control Center (or to the Control Room at the discretion of the SM) for the duration of the event. When the tagging desk is manned, the Tagging Desk Coordinator will be the point of contact between the Control Room and these operators. When the tagging desk is not manned, these operators should report to the Control Room.

m. Auxiliary Operator actions on a reactor scram or plant transient include, but are not limited to, the following:

- The Turbine Building AO shall, **when directed by the Control Room**, monitor the operating Emergency Diesel Generators (per VYOPF 2126.01), Reactor Feed Pumps, Condemins, Feed Water Heater start-up vents and FCV-4.

- The Reactor Building AO shall, **when directed by the Control Room**, monitor the Recirc MG lube oil temperatures and the Reactor Cleanup System, including the Cleanup Demineralizers.

- The Outside AO will be directed by the Control Room as conditions dictate.

C. Command and Control

NOTE

This procedure defines the major responsibilities of Control Room personnel that aid in effective command and control during accident or transient situations. The responsibilities and authorities defined in the Procedure section of AP 0151 are applicable during all phases of plant operations, including off normal situations.

1. Expectation(s)

   a. A consistent command and control process is used to ensure that operating crew resources are properly directed towards the safe and efficient operation of the Vermont Yankee facility during all modes of operation.

2. Standard(s)

   a. Specific duties pertaining to command and control during accident or transient conditions are as follows:

      1) Shift Manager (SM)

         a) Shall maintain the broadest perspective of operational conditions and ensure the safe operation of the facility.

         b) When activities are being directed from the EOPs, the Shift Manager will perform oversight for these activities and provide concurrence prior to the commencement of a major evolution (e.g., RPV-ED, DW Spray, Terminate and Prevent, etc.).

         c) Crew activities should be directed through the CRS. Shift Manager direct involvement should only occur when concurrent actions must be performed to mitigate the transient or to prevent violating an operating procedure.

         d) Order the initiation of the Emergency Plan as required and act as the Plant Emergency Director (PED).

         e) Ensure timely and proper notification is made to plant management, federal, state and local authorities.

f) Request support personnel as may be required to assist in addressing an issue and/or correct abnormalities. This may include Shift Technical Advisor, communicator, additional operators, Maintenance/I&C personnel, Radiation Protection, etc.

g) Confer with the Shift Technical Advisor, Control Room Supervisor and board operators in identifying and evaluating potential problems and off normal conditions and as needed to maintain and enhance a technical understanding of the status of the overall plant, systems, or components.

h) The Shift Manager may conduct phone communications provided it does not distract him from maintaining the broadest perspective of operational conditions.

i) During accident or transient situations, remain in the control room at all times (except for OP 3126).

2) Control Room Supervisor (CRS)

a) The CRS is the primary user of the EOP flowcharts.

b) The CRS directs crew actions in accordance with the instructions provided by the flowcharts. He engages in command/control functions such as confirming that crew actions were completed, requesting plant system and equipment status, confirming status, and acknowledging crew reports.

c) Ensure the operating crew is cognizant of events in progress or forthcoming to ensure that task requirements are well defined and role relationships are clear and appropriate. This should be accomplished by periodic crew updates of plant status and the announcing of emergency procedure critical steps, entries and exits.

d) The CRS marks the flowcharts to show crew positions in the flowpaths and may record system parameters, equipment being used, and other notations needed to show the status of the plant.

e) The CRS verifies crew members understand EOP flowchart decisions and actions by receiving acknowledgment.

f) The CRS shall direct the operating crews activities via the applicable plant procedures.

g) The CRS shall supervise the activities of the Control Room Operator, Alternate Control Room Operator(s) and Auxiliary Operators during transient situations.

h) The CRS shall ensure the Shift Manager is kept informed of events and operating crew activities to allow him to maintain the broadest perspective of operational conditions.

i) When directed by the Shift Manager (e.g., when the SM is consulting AP 3125 or Technical Specifications), the CRS shall maintain the broadest perspective of operational conditions.

3) Licensed Operator (CRO/ACRO)

a) The CRO/ACRO implements actions directed by the CRS and monitors plant systems and equipment for which he is responsible. He reports to the CRS as requested by the CRS and as appropriate to changing plant conditions.

b) Shall monitor and evaluate plant and equipment operating parameters to ensure proper operation.

c) Provide plant parameter data to the CRS without being prompted. The CRO/ACRO shall ensure that this information is received and understood by the CRS. This is accomplished by utilizing 3-part communication.

d) The CRO and ACRO should not speak to the CRS at the same time but must interrupt the CRS when crucial information needs to be conveyed (e.g., scram is imminent, EOP flowchart entry condition exists, etc.).

e) The CRO/ACRO shall challenge instructions or orders that he either does not understand or believes could lead to plant degradation.

f) Communicate to the CRS any indications that appear to be incorrect or do not make sense.

g) Shall ensure the CRS and Shift Manager are kept informed of events, operating conditions and critical parameters (e.g., power, level, pressure, EOP entry parameters) and trend information to allow them to maintain the broadest perspective of operational conditions.

h) The CRO/ACRO may take the required actions at any time (without permission) as necessary to, reduce power, scram the reactor, trip the turbine, or initiate protective actions, to ensure reactor safety. He may also complete automatic actions and confirm that they have occurred. Upon taking an action, immediate notification must occur to alert other crew members of this situation and to initiate follow-up responsibilities.

4) Shift Technical Advisor (STA)

a) Shall provide independent technical assessment during plant transients by assisting in evaluating plant events as they relate to procedures, Technical Specifications and plant safety.

b) Shall maintain a broad perspective of operational conditions and inform the CRS and Shift Manager of adverse trends or indications. In addition to installed instrumentation he shall monitor SPDS/ERFIS as required.

c) Shall assist in Emergency Plan EAL classification as directed by the Shift Manager.

d) Shall assist evaluating NRC notification requirements per AP 0156 as directed by the Shift Manager.

e) The Shift Technical Advisor or Alternate Control Room Communicator shall fill out the required forms for AP 3125 classification.

f) Assists the SM in maintaining the "big picture."

5) Communicator

a) Shall assist in notification of plant personnel and federal, state and local authorities required by the plant Emergency Plan as directed by the Shift Manager.

b) Perform additional tasks as directed by the Shift Manager.

3. Command/Control and Teamwork Attributes

a. Leadership

- Leadership includes the supervisor's ability to both manage the situation and forecast possible events, and make effective use of all resources to diagnose and address required actions. A strong leader expects a high level of job performance, promotes teamwork concepts, motivates and develops personnel and is decisive in providing direction.

b. Teamwork/Collaboration

- Consists of the team's ability to effectively work together to achieve a common goal. Positive teamwork is demonstrated by maintaining an awareness of the needs, feelings, tasks, duties and capabilities of the team members. When appropriate the need to provide assistance or information is recognized and provided. Assertiveness of team members in asking questions, stating opinions or concerns, obtaining information, discussing alternatives and resolving conflicts are key elements.

- During instances (normal operation) when an individual assigned to the Control Room is absent (plant tour, etc.) the Control Room crew responsibilities can be adjusted to compensate for the absence.

D. Professionalism

1. Expectation(s)

a. Operations activities are performed in a professional manner that contributes to safe and reliable plant operations.

2. Standard(s)

a. Control Room Access

1) Control Room atmosphere shall be maintained at the highest levels of professionalism.

2) Control Room access will be limited, and distractions to the operating crew will not be allowed.

3) The SM/CRS will limit access to those personnel necessary for business purposes.

4) Operators who are not on-shift will not loiter in the Control Room.

5) During startup, shutdown or plant transients, access to the Control Room is limited to those individuals responsible for the direct operation of the plant (operations crew personnel), NRC, Operations management and personnel requested for support by the SM. All other personnel should remain clear of the Control Room.

6) Access to the "Dark Floor" requires permission from one of the on shift licensed operators.

7) No hard hats are allowed to be worn in the Control Room. Visitors to the Control Room shall leave their hard hats outside in the designated area.

8) The SM should ensure personnel exit the Control Room promptly at the end of the Shift Brief.

b. Control Room Environment

1) Personnel assigned to the Control Room are to maintain a focus on safe plant operations, and distraction is to be minimized or prevented.

2) Potentially distracting activities such as TV, games, horseplay, hobbies, and non-work related reading material are not permitted in operations work areas. Potentially distracting material is not brought into the Control Room.

3) Necessary plant related business will be conducted in a location and in such a manner that Control Room operator attentiveness nor the professional atmosphere will be compromised.

4) Activities, such as maintenance, testing, and modifications, that cannot be performed at locations away from the control panels shall be conducted in such a manner as to provide the least distraction to the operators.

5) Operations personnel maintain a focused, business-like approach to assigned duties. Discussions are kept to a minimum to reduce interference with the conduct of shift activities and monitoring of plant parameters.

6) Operations shift personnel maintain a neat personal appearance at all times while standing Control Room watches, or during training:

- Control Room personnel will wear slacks and shirts with collars.
- As applicable, Company-issued clothes are worn.
- During weekends (18:00 Friday to 06:00 Monday or holidays) dungarees may be worn.
- It is expected that each individual will maintain their attire neat and in good repair.

7) In addition to the corporate Internet policy, the Internet will only be used in the Control Room for work-related activities (e.g., INPO, NRC and weather).

8) A complete walkdown of the Control Room front panels will be performed at least once per hour. A walkdown of the Control Room back panels will be conducted by the BOP operator in conjunction with hourly meter readings.

9) Personnel not assigned to a watch will not acknowledge alarms, nor manipulate controls unless they have been properly briefed by the duty SM or CRS.

10) Visitors on a Control Room tour will normally be restricted to the area behind the SM Desk. The exception to this is that employees of the NRC may approach the front panels with SM or CRS approval. All other visitors will need the Shift Manager's approval to enter the area in front of the SM Desk or to approach the front panels.

c. Communications

1) Plant communications within operations and with other departments will be in accordance with the communications section of this procedure.

2) Communication concerning plant business between Operations personnel and other departments, as well as operator to operator, is open and courteous. Personality conflicts are not allowed to interfere with performance.

3) Communications will be performed in a professional manner at all times. When communicating with external agencies (i.e.: NRC, INPO), ensure we assist them in achieving the information needed.

   a) Follow up to ensure any questions have been answered.

   b) Verify any discrepancies are documented and followed up as appropriate (WRs, CRs, operability assessments, etc.).

4) Keeping personnel informed of plant conditions is an important aspect of Control Room duties. Gaitronics announcements keep plant personnel aware of changing plant conditions. The following list is not intended to be all inclusive, but gives examples of events or evolutions that should receive Gaitronics announcements:

   - Commencing a reactor startup
   - Reactor criticality
   - Commencing a reactor shutdown
   - Reactor shutdown, all rods in
   - Reactor temp <212°F
   - Starting/stopping 4KV loads
   - Emergency Diesel surveillance
   - Cycling SRVs for surveillance
   - HPCI/RCIC/RHR/CS surveillance
   - Nitrogen loading

   Additionally, plant transients should be announced. Examples are:

   - Reactor scram
   - Loss of normal power
   - Fires
   - Radiation alarms
   - Gp. III, SBGT auto starts

d. Miscellaneous

1) Initiations of 1/2 scrams or 1/2 isolations from the Control Room require a level of involvement necessary to ensure the correct channel is to be tripped. Verification that peer checking is occurring will meet this expectation.

2) Initiations of 1/2 scrams or 1/2 isolations from outside the Control Room will require licensed operator approval prior to the initiation of a signal.

3) Observe personnel performance in the field on a routine basis. Focus on reinforcement of valued behaviors by providing immediate feedback and coaching. Ensure department expectations are understood and are being met.

4) Near misses need to be documented per AP 0009 because these are often precursors to events. Performance problems must be corrected when they are observed. Encourage people to report mistakes so we can avoid them. Ensure personnel are using the right tools for the job; i.e., procedures, communications, pre-job briefs, peer checking, STAR, etc.

5) Control Room personnel will have any required respirator glasses readily available while standing watch. (INF97066_01)

6) Control Room personnel will maintain their respirator qualifications current to support taking the watch any time assigned.

7) All personnel will contribute to the implementation and maintenance of good housekeeping activities in the Control Room. The Control Room shall be kept clean and orderly.

8) Operations personnel shall clean the kitchen and other work areas as they are used. Verify that areas are clean at the end of each shift.

9) Only Control Room staff are allowed to eat in the Control Room. Food and drink are kept away from the control panels. Eating in the Control Room will not impact plant monitoring. Crew meals may occur if authorized by the Operations Manager/or his designee.

10) No food will be left out on desks or tables. Donuts, bagels, etc. will be placed in the kitchen or coffee mess area.

11) Operations personnel ensure, when conditions allow, Control Room is vacuumed and swept. Licensed operators will clean Control Room panels to prevent dust accumulation.

E. Annunciator Response

1. Expectation(s)

a. The operating crew is aware of Control Room annunciator status.

b. The operating crew anticipates annunciators that alarm due to testing or as a result of normal plant operating condition or work activities.

c. The operating crew responds to annunciators per applicable alarm response sheets.

2. Standard(s)

a. Three-part communication with the CRS is required for annunciator response.

b. Annunciators are grouped into the following categories:

1) Expected annunciator due to planned activities under Control Room direction.

a) Expected annunciators are marked, briefed, or communicated to the operating crew prior to alarming by the individual performing the activity. IF marked, the individual marking the annunciator is responsible for removing the marking device after work is complete.

b) The operator responding to expected annunciator(s) announces that the alarm is expected and states the reason for the annunciator(s). Subsequent alarms associated with expected annunciators do not require announcement.

c) Although the alarm response procedures are not normally referenced for expected alarms, the Control Room team may at times determine that the alarm response actions are appropriate.

2) Unexpected annunciator (not expected as part of planned activities).

a) Announce the alarm and reference the alarm response procedure.

3) Repeat annunciator (not due to testing or a planned evolution)

a) Announce the alarm for each occurrence and reference the alarm response procedure the first time that the alarm comes in on each shift.

b) Nuisance and transitory alarms are identified and handled per OP 3140, Alarm Response.

4) Nuisance annunciator-previously identified not functioning properly.

a) Nuisance and inoperable annunciators are identified and handled per OP 3140, Alarm Response. Maintenance work request and compensatory actions are initiated as required.

c. Auxiliary Operator Rounds

1) AOs will contact the Control Room Operator and inform them prior to performing local alarm panel checks. (Example: "A" D/G local alarm panel test.)

2) The Control Room Operator will inform the CRS (or SM) of the pending alarm tests, and acknowledge/reset the alarm following the test.

d. Annunciators Received During Surveillance

1) The CRS (or SM) may give permission to personnel performing surveillance to acknowledge and reset annunciators caused and expected by the surveillance being performed, as limited below.

2) The only annunciators allowed to be acknowledged and reset are those caused and expected by the surveillance. All others will be reported to the control room immediately.

3) Permission only extends to the AOG panel and alarm panels in the plant. No one but shift operators are to acknowledge and reset front panel alarms in the control room.

e. Following any operation that unlatches panalarms, ensure the panalarm latches are fully closed so as to maintain panel seismic integrity.

F. Conservative Decision Making

1. Expectation(s)

   a. Safe operation of the facility takes precedence over all other considerations, including economic and competitive pressures. Nuclear and industrial safety is maintained at the forefront of all decisions.

2. Standard(s)

   a. Avoid hasty decisions. There are few time critical actions (automatic scram is required and the unit has not scrammed, BWR thermal hydraulic instability, etc.) which require immediate response.

   b. Do not hesitate to reduce power or trip the reactor when reactor safety is uncertain.

   c. Manage risk by understanding and controlling plant status to ensure operating margin is maintained.

   d. The crew recognizes time critical decisions based on a degrading trend in operating margin.

   e. When the Control Room team is faced with time critical decisions, the team:

      - Shall not allow production and cost to override safety.
      - Does not challenge the safe operating envelope.
      - Questions, verifies and validates available information.
      - Uses all available resources, including people off site if necessary.
      - Does not proceed in the face of uncertainty.
      - Develops and implements a plan that includes contingencies and compensatory measures.

   f. Implementation plans are based on operating procedures, rate of degrading trend, uncertainty in indication and capability of current resources.

   g. The crew assigns roles, sets limits and continuously evaluates the plan for changing conditions.

h. Team work tools (advocacy, peer/cross-checking, oversight, questioning attitude, etc.) are utilized and traps (pilot/copilot, group think, etc.) are avoided when reaching operating decisions.

- Training will ensure that management's philosophy on Conservative Decision Making is included in classroom training and simulator scenarios. Training materials include industry events relating to Conservative Decision Making.

- Special attention should be included in pre-job briefs on Conservative Decisions for infrequently performed evolutions as determined in AP 6100.

- Management will discuss Conservative Decision Making during department meetings and always demonstrate by example a conservative approach to operations safety.

- All operators shall apply a questioning attitude and understand the consequences of their actions.

G. Operator Watchstanding/Equipment Monitoring/Operator at the Controls (OATC)

1. Expectation(s)

a. The Watchstander is the owner of the equipment and area associated with their watchstation.

2. Standard(s)

a. Review several consecutive readings of suspect parameters to facilitate short-term trending and early identification of system degradation.

b. Immediately notify the CRS of any new out of spec indications and denote any out of spec indications.

c. Verify that operating and standby equipment is within normal parameters.

d. Use all applicable senses (touch the pump, etc.) while on tour to identify abnormal conditions.

e. Tour all accessible areas of their watchstation (ALARA considerations will impact scope of tour). When in an area, the operator will:

1) Perform minor maintenance for which they are qualified.

2) Identify malfunctioning equipment which requires maintenance action.

3) Identify unusual or unexpected situations or conditions which warrant additional attention or corrective actions.

4) Diverse indications shall be used to monitor equipment/plant performance.

5) Maintain awareness of the status of activities in progress.

6) Identify, report and resolve any of the following:

a) Safety hazards.

b) Evidence of tampering or malicious mischief.

c) Fire hazards, radiological problems, or infractions as a result of:

(1) Normally closed doors being ajar and/or not capable of being properly closed (Fire, HELB, secondary containment).

(2) Radiological barriers.

(3) Personnel not in compliance with security, safety, and radiological requirements.

f. Clean up any housekeeping issues (hoses, ladders, trash, oil, etc.). IF beyond the watchstander's resources, report to the Control Room for other department involvement. IF radioactivity or contamination is involved, notify RP. Notify the Control Room prior to entering areas where communication is impaired.

g. Notify the Control Room prior to causing any Control Room alarms.

h. Replace burned out indicating lamps with the proper bulb. IF unable to replace or determine correct bulb, submit a Maintenance Work Request.

i. Ensure chart recorders are operating properly and stamped appropriately.

j. While on tour, have communication equipment, flashlight and personnel protective equipment.

3. Vermont Yankee Specific:

a. The monitoring of Control Room panels, equipment and plant status is the primary responsibility of the OATC.

4. Standard(s)

a. OATC Responsibilities

1) An operator will be designated the OATC watch each shift. He will remain in the OATC/limited time access area (see attached Figure 1) until properly relieved by another licensed operator. His primary watchstation is the OATC area, and time spent by the OATC in the limited time access area will be of short duration.

2) The OATC watch will perform frequent monitoring of his panels, and will be attentive to abnormal responses and trends. He will inform shift supervision of any problems noted, and take actions as directed by shift supervision and station operating procedures.

3) These monitoring expectations apply to plant startup, shutdown and normal power operation. Monitoring requirements during cold shutdown will be established by the SM based upon the activities planned or in progress.

4) OATC will have no concurrent duties that will detract from parameter monitoring for other than brief periods of time, typically less than 3 minutes (e.g., reviewing proposed procedure changes, TM, MM review, etc.).

5) Review of email, Intranet, or Internet information will not be performed at the OATC workstation. Face to face or phone conversations, both job related and non job related, should be of a short duration, typically less than 3 minutes.

6) The OATC's involvement in surveillances will normally be limited to activities of short duration, such as reset of ½ scrams or ½ isolations, acknowledgement and reset of alarms, repositioning of switches or other controls as necessary to support surveillance. The OATC will not normally be assigned to perform any of the longer duration surveillances, e.g., RHR, Core Spray or HPCI surveillances, unless plant monitoring is assumed by another member of the crew.

7) The OATC may perform peer checks at the front panels provided that he is not involved in an activity that lasts longer than 3 minutes. IF the activity will last longer than 3 minutes, THEN parameter monitoring responsibilities will be assigned to another crew member.

8) IF it is necessary for the OATC to become involved in an activity that would impact his parameter monitoring responsibilities, THEN another member of the crew should be assigned to monitor the plant. The duty SM or CRS will determine when a task will impact the OATC's parameter monitoring duties. The duty STA may assume parameter monitoring responsibilities for 20 minutes or less.

9) During plant startup, shutdown, or large power changes, additional operators will normally be assigned to support these evolutions. The responsibility for plant monitoring will be assigned as directed by the Shift Manager.

10) Eating at the CRO workstation will be restricted to snacks only. The OATC will be relieved during their meal breaks. Meals may be consumed at any of the other Control Room workstations.

11) The OATC response to an ON, OT, or EOP will be as required to perform the actions of the procedure. Peer checking is desirable, but is not a requirement when these procedures are being performed.

12) The OATC will participate in crew briefings as required but is expected to maintain panel monitoring responsibility. This means that the OATC may have his back to the individual giving the briefing in order to maintain panel awareness.

13) The OATC will respond in a timely manner to alarms on his panels, and will follow alarm response or abnormal operating procedures for correction. He will ensure other members of the crew and shift supervision are aware of the alarms received on his panels according to the standard for alarm response.

14) The OATC will inform shift supervision if administrative duties prevent him from performing his primary responsibility of monitoring the panels. Reading company/business related material (ex: required reading) or performing a long/complex surveillance are examples that may prevent frequent monitoring of his panels. IF required, the OATC will request a relief until these duties/assignments are completed.

15) The OATC will inform shift supervision if any other distractions occur that may prevent him from performing his primary responsibilities.

16) One operator will be assigned to perform the log taking responsibilities for the shift. IF this operator is the OATC, he will perform a turnover of the OATC duties prior to performing the back panel log taking, and will re-assume the OATC when the logs are complete.

17) During normal operations, the second licensed operator on shift will be responsible for the back panel alarms. This will minimize the number of turnovers the OATC operator would have to perform.

b. OATC Turnover

1) Prior to leaving the OATC/limited time access area, the OATC operator will perform a turnover to another licensed operator on watch. This turnover shall be in accordance with OP 0150 and AP 0152.

2) The operator receiving the turnover will assume the watch in the OATC designated area, and will minimize his time in the limited time access area until relieved by the operator re-assuming his OATC watch.

c. Supervisory Responsibilities

1) The CRS and the Shift Manager will monitor Control Room activities to prevent assigned tasks or distractions from preventing the OATC performing his primary responsibility. They will reassign/reschedule work as necessary, or arrange a relief for the OATC to ensure Control Room panel monitoring is being performed.

H. Reactivity Management

1. Expectation(s)

   a. Reactivity manipulations are made in a deliberate, carefully controlled manner while the reactor is monitored to ensure the desired response is attained.

2. Standard(s)

   a. Conservative operating practices are followed. The safety and integrity of the core take precedence over power production.

   b. Reactivity manipulations are only performed by qualified individuals and directed by approved plant procedures. Non-licensed operators currently enrolled in a license training program may perform reactivity manipulations under the direct supervision of a licensed operator in accordance with specific plant procedures.

   c. Shift supervisory personnel reinforce station expectations for reactor maneuvering and core reactivity changes.

   d. The SM approves reactivity plans provided by Reactor Engineering.

   e. Reactor Engineering should be notified and a written reactivity plan developed for major planned power changes.

   f. Planned reactor power changes are only performed with Shift Manager permission. The CRS directs reactivity changes to achieve desired power level. A SRO directly supervises the evolution.

   g. Reactivity changes to *maintain* desired power level require prior knowledge and concurrence of the SM/CRS.

   h. During transient conditions, licensed operators take immediate operator actions to protect core integrity per approved procedures (immediate operator actions).

   i. Operators who perform reactivity manipulations are dedicated to that task, with no concurrent activities that could cause distraction.

   j. During power changes other than to maintain rated power, Control Room distractions (phone calls, access, etc.) shall be minimized.

   k. All planned reactivity manipulations are verified/peer checked by a qualified individual.

l. Use redundant instrumentation when making reactivity manipulations.

m. Positive reactivity additions are performed using one method at a time.

n. Reactivity information is included in the shift brief.

o. Perform a brief for planned evolutions that have the potential to affect core reactivity.

p. Communicate the authorities and divisions of responsibilities between Operations and Reactor Engineering personnel.

q. Direction that affects reactivity always comes through the CRS to the operators.

r. A Reactor Engineer will be actively engaged in plant startup, planned shutdown, approach to criticality, and any special test with a potential to affect reactivity.

s. Operations management and Reactor Engineering shall be notified if abnormal reactivity changes occur.

t. Adding positive reactivity seldom mitigates unstable plant conditions.

3. Vermont Yankee Specific

a. All errors or abnormal responses during reactivity changes will be communicated to the Shift Manager (or CRS) immediately.

b. **Unless** directed by Immediate Operator Actions in the OTs no corrective actions for rod mispositions are to be taken without direction from the Shift Manager or the CRS.

c. A second person backup **is not** required during response to transient conditions (ON, OT, or EOPs). The Shift Manager, CRS or the Shift Technical Advisor will perform backup/oversight as time permits during the transient.

d. When the reactor is found to be in the region of thermal hydraulic instability, the Shift Manager shall place a high priority on recirc flow adjustments or control rod moves to exit the region immediately as directed by operating procedures.

e. All reactivity manipulations performed by a license trainee require the permission of the Shift Manager and will be performed under the direct supervision of a licensed operator. This satisfies the requirement for a peer check.

f. The removal and return to service of nuclear instrumentation requires Shift Manager (or CRS) permission. During routine surveillance, Shift Manager permission is granted when he approves performance of that surveillance.

1) The removal and return to service must be done with careful, deliberate actions using STAR (Stop, Think, Act, Review) techniques at all times. Misoperation while removing or returning nuclear instrumentation to service has the potential to cause a scram (Post Trip Report 97-01).

g. IF a T.S. LCO shutdown statement is entered to bring the reactor to Hot or Cold Shutdown and preparations have commenced, THEN operators are expected to focus on bringing the reactor to the specified mode in a careful and controlled manner. Actions intended for the economic benefit of Vermont Yankee (such as escalating power) are not prudent nor consistent with our philosophy of conservative operations.

1) This does not include maintaining power at a specified point to support an orderly shutdown or other factors (Example: Xenon) which may cause minor perturbations in reactor power while performing the shutdown. SM permission is required to stop at an intermediate power not in accordance with shutdown procedures, or to increase power for any reason.

2) Operations management is informed of entering shutdown statements, and will be directly involved in making a decision to terminate a shutdown statement by either:

a) completing the reactor shutdown to hot or cold conditions as required by the T.S. LCO, or

b) correcting the condition causing the LCO and exiting the shutdown requirement as allowed by T.S. (SEN 156_02)

h. IF the Plant Process Computer is out of service or is to be removed from service and the Core Thermal Power calculation is invalid, perform the following as determined by the Shift Manager.

- Verify Core Thermal Power less than 1593 MWT. **[EPU - 1912 MWT]**
- Consider reducing Reactor Power with Recirc flow approximately 2-5 MWT.
- Monitor APRMs.
- Verify no operations ongoing which could add positive reactivity.

I. Self Checking/Peer Checking

1. Expectation(s)

a. Self checking is used by all operators performing a task. STAR is used for every component manipulation.

b. Peer checking is used as a tool to augment STAR using team Peers to ensure proper plant operations and prevent errors. Peer checking never relieves an operator of the responsibility of self check.

2. Standard(s)

a. Self Checking (STAR):

1) STOP: Pause and think before beginning, eliminate distractions, be organized, focus concentration, and enhance attention to the details of the task at hand.

2) THINK: Locate the correct components, procedures, tools and people. Verify instructions, equipment, locations and time limits. Anticipate the expected responses when the task is performed. Understand before you manipulate. Use all your senses. Consider unexpected responses. Decide what actions to take should the expected response not occur.

3) ACT: Confirm the correct unit, train, and component; then perform the task safely and carefully. Physically touch the component. Physically perform the intended action, maintaining hand contact established previously.

4) REVIEW: Observe and verify that the task was performed correctly, that the actual response was as expected, and that the component/system is in the desired configuration to support the intended plant operation. If not, take action as previously determined.

b. Peer checking is a tool to help operators avoid errors. This is accomplished through interaction with another member of the crew. The main role of the Peer Checker is to protect the operator performing the manipulation from making an error. Peer checks are performed by a second member of a crew using these guidelines.

1) A Peer Check is the process of using a second individual to confirm that the selected component and the intended manipulation by the operator are correct based upon the current plant conditions before the operator performs the component manipulation.

2) Peer checking never relieves an operator performing the intended manipulation from the responsibility to perform the STAR process.

3) Peer checking an action requires that the manipulations be observable and methodical with distinct pauses to allow the peer checker time to correct any errors before the manipulation occurs.

4) It is the responsibility of every operator to request a peer check when performing tasks outside of operator rounds or skill of the craft.

5) Peer checking is performed using available crew members (including personnel from other departments), but does not prevent operators from performing manipulations without a peer check as directed by alarm response, abnormal, or emergency procedures.

6) Peer checkers are competent to perform the peer check. The CRS/SM resolves any questions regarding the competency of the peer checker.

7) The Control Room Supervisor or Shift Manager will resolve any questions regarding the use of peer checking. Consideration for the need of a peer check includes the following:

- The complexity of the task.
- The frequency of the task being performed.
- First time evolution for the performer.
- Tasks which may change core reactivity.
- Activities that can result in personnel injury or equipment damage.
- The potential adverse consequence of the task (critical task).
- The evolutions in progress that could affect the outcome of the task.
- The irreversibility of the intended actions/steps.
- Tasks on systems or components which have the potential to initiate a plant transient (e.g., electrical switching or bus transfers, feed pump manipulations, stator cooling, etc.).
- Specifically requested by the performer.
- The peer check utilizes STAR principles in parallel with the performer as time and plant conditions permit. A peer check shall consist of a verification of the proper switch and the intended direction as a minimum.

8) Except as exempted below, all Control Room manipulations should be peer checked.

9) Peer checking may be exempted for:

- Actions which only bring in annunciation.
- Routine operator tour tasks.
- Annunciator silencing, acknowledging, or resetting.
- Actions taken as directed by Emergency or Abnormal Operating Procedures.
- Skill of the craft activities. (Section T)

10) Peer checking should be discussed during pre-evolution briefs to assign responsible individuals and minimize delays associated with waiting on a peer check.

11) Peer checking should be discussed during briefings for tagouts, surveillances, and plant evolutions.

12) The Control Room Supervisor may perform a peer check while maintaining supervisory oversight of the Control Room.

13) The OATC may peer check activities which are not expected to affect power, pressure, or level, but if determined by the CRS to divert the OATCs attention away from the CRP 9-5 for too long (conditionally dependent), another individual shall be used to perform the peer check.

14) The following tasks performed outside the Control Room require a peer check:

- Tagging in the 345 switchyard.

J. Control Board Monitoring

1. Expectation(s)

   a. Operators monitor control board indications closely to detect problem situations early. Board walk downs are performed to ensure that components are in their required positions and to mitigate the consequences in the event a component is found out of position.

2. Standard(s)

   a. Control Room reactor operators walk down the main Control Room boards each shift. Board walk downs shall ensure that safety related components are in their required configuration.

   b. Once per shift, the SM should perform an end-of-shift main Control Room board walk down. The walk down is not a component by component walk down but should concentrate on Safety Related controls manipulated during the shift.

   c. Control Room operators maintain awareness of the status of their area of responsibility and keep others apprised of changes. Shift management eliminates distractions that hamper the operators' ability to monitor their area. The "operator at the controls" should not become involved in any activity that hampers his ability to monitor the plant.

   d. When equipment/plant status is changing, all applicable indications shall be monitored until the equipment/plant stabilizes.

   e. Diverse indications shall be used to monitor equipment/plant performance.

   f. Use computer generated graphics to provide maximum trending and monitoring by the Control Room. This use is balanced with monitoring of installed main control board meters and charts.

K. Crew Updates and Briefs

1. Expectation(s)

   a. Perform routine shift briefs, pre-job briefs and updates, and briefs during plant transients/emergency conditions to ensure that all participants have the knowledge and information necessary to perform successfully.

2. Standard(s)

   a. All briefs consist of the following:

      - A clear beginning with all participants ready.
      - A main body during which information is passed and questions are answered/noted; at the end of the main body a final call is made for questions and comments.
      - A clear end, all participants understand that the brief is over.

   b. Briefs do not interfere with annunciator response or response to plant/equipment changes. Suspend briefs as required.

   c. Avoid giving directions during a brief. All directions require 3-part communications. Do not give directions during a transient brief.

   d. Involve all individuals participating in the evolution in the brief.

   e. IF it is known that shift activities will not permit time for shift briefings, at the discretion of the Shift Manager, the briefings/critiques can be altered or cancelled. Shift activities may not facilitate 100% crew attendance.

   f. Infrequently Performed Test or Evolution (IPTE) briefs are covered by AP 6100.

   g. Shift briefs are conducted at the beginning and end of each shift. The Control Room Supervisor directs the brief. Personnel participation is required.

   h. Updates are performed to impart information to the crew. Each crew member should be attentive during the brief. The update brief should have a clear beginning and ending. Questions are not solicited during an update. Procedure entries and changes in plant status are examples where updates can be used.

i. Transient briefs are used to ensure the crew is on the same playing field, anticipate the direction to take, and get feedback from the crew on decisions and planned actions. Topics may include:

- The initiating cause of the current condition.
- Current plant condition/challenges/contingencies.
- Critical parameters and owners.
- Equipment status/availablity.
- Procedures being used to mitigate the transient/emergency condition and owners.
- Desired plant condition.
- Questions and comments from operators.

j. Perform pre-evolution briefs for tasks or evolutions outside normal operator rounds. The detail of the briefing is dependent on the degree of complexity, logistics, or number of people involved.

- IF the evolution extends beyond one shift, discuss the items in the brief with the on-coming shift prior to turning over the duties.

k. Perform post-evolution briefs for tasks or evolutions that required a formal pre-job brief. The detail of the briefing is dependent on the degree of complexity, logistics, or number of people involved. Post-evolution briefs are a plus/delta for an evolution, similar to, but prior to an end of shift critique.

3. Vermont Yankee Specifics

a. It is primarily the CRS's responsibility to provide periodic crew briefs of plant status especially prior to a planned major evolution (e.g., Terminate and Prevent, RPV-ED, changes in mitigation strategy, plant shutdown, etc.).

1) The brief may include a recap of events that transpired, present plant conditions, anticipated actions and expected results, or a review of a procedure prior to its performance. Status of ECCS, PCIS and electrical busses should also be considered for inclusion in a crew update.

2) An attention-getter such as "Listen Up", "Crew", etc., should precede the update.

3) Crew members shall signify readiness for the brief by raising their hand.

4) The crew should not interrupt the CRS while he is conducting the brief unless changing conditions warrant immediate action.

5) At the end of the brief the CRS should solicit input from the crew (e.g., "Any thing to add?") and positive acknowledgement that the update is understood by all crew members is required.

6) The Shift Manager may perform crew briefs or updates at his discretion.

b. Triggers:

- Change in plant status
- Quiet/opportune time during or post transient
- EOP entry or re-entry

c. Method:

1) Request the attention of the crew

a) Review plant status:

(1) Power

- Rods in/ATWS/SLC

(2) Level Control & Band

- Band: Feed/Cond/HPCI/RCIC/Terminated & Prevented

(3) Pressure Control & Band

- Band: BPV/SRV/HPCI/RCIC/Cooldown

(4) Containment

- >2.5# D/W Spray/Torus Cooling/Torus Spray/PCIS

(5) Electrical Buses

- 4KV/Bus 8/9/SU Transformer/EDG/DC Buses

(6) Procedures

- ON/OT/OP/RADS/E-Plan

(7) Actions to Mitigate/Prioritize/Focus

(8) SM Input

2) Ask crew if they have any questions or anything to add.

3) Close the briefs (i.e., "End of brief") and request acknowledgement that the crew has heard and understands the brief.

d. Do not:

- Allow separate conversations during the brief.
- Give orders during the brief.
- Exclude anyone from the brief, unless you specifically want them to be.
- Require some one to face you if they are monitoring or controlling a key parameter.
- Allow interruptions, unless it is an emergency.

L. Communications

1. Expectation(s)

a. Communication is clear, concise, timely and accurate.

2. Standard(s)

a. Use three-part communication for plant equipment operation, procedure performance, and plant/equipment parameter information.

b. The person initiating three-part communication ensures that repeat-back and confirmation are performed. (Repeat backs may be paraphrased.)

c. Use specific terminology and avoid like-sounding words/numbers.

d. Requests for information/confirmation will be answered with yes/no, parameter value, units and trend, as appropriate.

e. Use equipment noun names when practical and the phonetic alphabet when communicating component, train, channel, or procedure step designators.

f. Initiate a communication using the person's name or watchstation.

g. Avoid giving multiple directions in a single exchange. (If possible, multiple directions are written down or a procedure is referred to. Multiple actions which are part of a trained and expected sequence may be given in a single exchange.)

h. Report completion of directed actions in a timely manner.

3. Control Room Communicator

- The control room communicator position is activated when the Shift Manager determines, or anticipates, that the communicator will be needed to augment the normal Control Room complement. The individual assigned to this position is responsible for transmitting information authorized by the shift supervisor to the designated receiver and for receiving information being sent to the control room and providing this information to the on-duty Shift Manager.

- This normally does not include communicating with individuals working under the direction of the Shift Manager.

4. Specific Communication Links

a. Load Dispatcher System

The load dispatcher communication system is an automatic ringing system and provides a rapid means of communication with the load dispatcher. Contact with the load dispatcher over the dedicated line is limited to Operations Department supervisors and control room operators. All communications with the load dispatcher should be written in a log. All verbal messages with the load dispatcher require verbatim repeat back of the instructions.

b. Direct Lines to Emergency Response Facilities

Direct telephone communication lines are provided between the control room and the emergency response facilities to improve emergency response to accidents. The facilities include the on-site operational support center (OSC), on-site technical support center (TSC), and near-site emergency operations facility (EOF). These communication links should be used only during a declared emergency event, during authorized testing, or when authorized by the Shift Manager. Specific guidance for the use of these communication links is in the site emergency plan and implementing procedures.

M. Phonetic Alphabet (suggested-alternatives are acceptable)

A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliette	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

The phonetic alphabet shall be used only in verbal communications. Components in different loops, trains or divisions normally have the same noun name and equipment number differentiated only by an identifying letter suffix. For these instances, the phonetic alphabet is used to ensure that the specified letter suffix is understood when spoken. It is not necessary to use the phonetic alphabet when speaking letters in other situations such as acronyms abbreviations, or when the letter designation describes the type of equipment (i.e., the "T" in Transformer 3T1 stands for "transformer" and does not serve to differentiate the component from another transformer).

N. Training

1. Expectation(s)

   a. Training and qualification programs continuously improve operator performance, knowledge and skills.

   b. Operations owns on-shift, and classroom/simulator training and qualification programs.

2. Standard(s)

   a. All operators adhere to corporate training department standards and expectations. These include Fundamentals training, Classroom Conduct, Feedback, Ownership and Accountability, Testing and Simultor.

   b. Shift management monitors crew and individual performance by:

      - Effectively identifying areas for improvement.
      - Utilizing training to improve operator performance.
      - Facilitating simulator critique.

c. Shift management routinely monitors classroom and cross-crew simulator training, including non-licensed and initial programs (frequency based on site criteria).

d. Shift Management reinforces Operations training standards, and ensures that classroom/simulator training is conducted in a professional manner.

e. Operations management monitors the performance of operations and training personnel to identify ways of enhancing the effectiveness and content of training programs, and provides feedback based on observations.

f. Conduct simulator just-in-time training for expected plant conditions such as start-ups, shutdowns, special tests, and complex evolutions.

g. Operations personnel use crew simulator notebooks to document strengths and improve performance. The notebook should be referred to on-shift and during simulator training to ensure the crew understands areas for improvement.

3. Vermont Yankee Specific

a. To ensure that on-shift training activities do not compromise the ability to remain attentive to the status of the plant, the following guidelines are established:

- Permission to conduct formal on-shift training must be provided by the Operations Manager, or Assistant Operations Manager. "Formal" training is defined as any training that uses a Training Department-developed Instructor Guide.

- On shift, instructor-provided training shall be limited to less than 30 consecutive minutes. Should additional time be necessary, a break in training shall be provided to allow the operators to conduct panel walkdowns or otherwise re-familiarize themselves with the status of the plant. An additional 30 minutes of training can then be conducted. In no cases should training exceed one hour per 8 or per 12 hour shift.

- Training shall be stopped to allow operators to acknowledge alarms and take necessary corrective action. Training shall not resume until the SM or CRS is satisfied that the plant is in a stable situation.

- To the extent possible, the instructor should situate himself/herself such that the operators can maintain cognizance of the Control Room instrumentation.

- In all cases, the Shift Manager has the responsibility and authority to terminate any activity in the Control Room that he feels is disruptive to the operators primary function of safely operating the plant.

O. Control of Workarounds and Burdens (SOER 94-01)

1. Expectation(s)

a. Provide the Operations Department personnel with the details necessary to minimize the effects of workarounds.

b. Workarounds that can impair an operator's ability to control plant parameters, especially during transient conditions, must be resolved promptly. A systematic method will be employed to identify workarounds, to determine the cumulative effect of all identified workarounds, and to prioritize repair/modification efforts to minimize the effect of workarounds. Operations Department is responsible for performance of this assessment, with assistance from Engineering, I&C, and Maintenance Departments as necessary.

2. Standard(s)

a. Responsibilities

1) Operations Personnel

a) All Operations personnel are tasked with identifying workarounds. All identified workarounds shall be sent to Operations Management to be included in the workaround list.

2) Operations Management

a) Operations management shall perform a review of the workaround list to assess the cumulative or aggregate effects of workarounds on operator ability to respond effectively to plant transients or which causes operators to take extraordinary compensatory actions and adjust priorities as necessary. The evaluation shall consider the following when reviewing effects of the workarounds:

- safe plant shutdown capability
- impact of EOPs, ONs and OTs
- overall impact on nuclear safety
- overall impact on personnel safety
- total number of workarounds impacting a given workstation
- additional resources required to accomplish task

b) Provide direction to the Maintenance or Engineering Department to prioritize repair efforts based upon the above review.

c) Maintain the workaround list and track the progress of repair/modification effects to minimize the affect of the workarounds.

3) Operations Manager

a) Place a high priority on equipment problems that require operator compensatory actions (workarounds).

b) Clearly communicate any required interim compensatory actions to operators, using appropriate discussions, training and procedures.

c) Provide direction to the engineering and repair department Managers for identified workarounds that require plant modifications to resolve or to minimize their effects.

d) Request the Operations Training Supervisor to provide training to Operations personnel to minimize the effect of workarounds until they can be resolved.

e) Review and approve additions and deletions to the workaround list.

P. Switchyard Access Control

1. Expectation(s)

a. Provide guidance for allowing access to the 345KV Switchyard, 115KV Switchyard, Relay House and the 345KV Switchyard Gas Bottle Shed.

2. Standard(s)

a. Responsibilities

1) The Operations Manager has the overall responsibility for the administration and implementation of this standard.

2) The Security Manager/Security Shift personnel are responsible for controlling keys and obtaining **on shift** Operations Shift Manager or Control Room Supervisor permission to enter the affected areas.

3) The Operations Shift Manager is responsible for verifying the work activity is approved for the present plant conditions.

4) The person being given access is responsible for control of the access key and for controlling access to the affected area. He is also responsible for maintaining a **Locked Area**, allowing gates and doors to be **opened only for access or egress** and preventing unauthorized personnel entry.

b. Access Policy

1) Employees, contractors, vendors and technical representatives are responsible for control of access to the prescribed areas when they have been granted access. They are responsible for keeping the Control Room personnel informed of all activities and work scope. They must comply with all Vermont Yankee procedures and the Safety Manual. They are responsible for maintaining the **Locked Area** and ensuring that vehicles and personnel allowed access are authorized by the Control Room. At the completion of the work (or work period) they shall ensure the area is clear and locked, then return the access key to Gate 2. Security personnel are responsible for maintaining control of keys for access to the areas.

2) On-shift Operations personnel are granted access to the switchyard in order to perform their shift duties.

3) Switchyard access control per this standard may be relaxed at the discretion of the Operations Manager during outage periods.

c. When the need arises for someone to enter one of the affected areas, the following steps will be taken:

1) Personnel will contact Security at Gate 2 and request permission to enter the area desired.

2) Security personnel will contact the control Room for permission.

3) The SM or CRS will evaluate the need for access to the areas.

4) The SM or CRS will determine if:

a) an AO or other designated person will be assigned as an escort, or

b) the person will be granted access and assigned a key.

5) The person being granted access or the escort assigned will be responsible for maintaining the **Locked Area** and preventing access by unauthorized personnel.

6) Security personnel will, when given permission by the Control Room, issue a key to the individual.

7) When the person has completed their activities in the area, they will ensure that the area is clear of people and gates and doors that were used are locked.

8) Personnel will return the key to Gate 2 Security personnel and notify the Control Room that they are clear of the area.

Q. Equipment Manipulation and Status Control

1. Expectation(s)

a. Operational activities are conducted in a manner that results in safe and reliable operation. All equipment manipulations are performed by qualified personnel in accordance with procedures and/or approved by shift supervision. The status of plant equipment is known at all times.

b. The purpose of this procedure is to state Operations Department's expectations for personnel performing activities involving equipment manipulations in order to maintain proper operational configuration of plant systems. These expectations are intended to prevent the misalignment of components resulting from an inappropriate action, or inaction, which ultimately results in the placement of a device in a configuration other than that intended.

2. Standard(s)

a. The control of plant equipment status is governed by procedures, work order or tagging. These processes contain specific direction relative to status control.

b. For situations where no procedure exists and a component is required to be placed in a position differing from its normal alignment, the realignment must be performed in accordance with approved plant specific processes. Component status should be tracked prior to manipulation unless time does not permit logging the component prior to operation.

c. When manipulating equipment consider:

- What are we trying to accomplish?
- What are we using to perform the task?
- How are we going to document the activity?
- How are we going to ensure the component is returned to normal?

d. Do not manipulate plant equipment using two-handed operation for convenience or unnecessary haste.

e. The on-watch SM/CRS should not operate plant equipment except in emergency situations.

f. To minimize the risk of component misoperation, Operations personnel shall ensure the component is labeled properly. Improperly labeled components should not be operated without first verifying proper component and installing a temporary label.

g. Notify the Operations Department prior to changing equipment status.

h. Make plant announcements before starting all major equipment.

3. Vermont Yankee Specifics

a. Terms and Definitions

Operational Configuration is the physical arrangement and alignment of systems, components, and structures established and controlled by approved station implementing procedures that accurately reflect design bases and licensing requirements. Station implementing procedures include, but are not limited to, the following types of procedures:

- Operating Procedures (Operations, Chemistry, Radiation Protection, etc.)
- Surveillance Procedures
- ON/OT Procedures
- Emergency Operating Procedures

b. Responsibilities

1) It is the responsibility of all personnel to:

a) Ensure changes in plant equipment are performed in a carefully planned and controlled manner.

(1) Status control of equipment is required to:

- Ensure the safety of personnel and equipment,
- Ensure that systems will perform as required, and
- Ensure that adverse operational events do not occur.

(2) For these reasons, all personnel must strictly adhere to the approved procedures that have been developed to ensure control of equipment status.

b) Immediately notify the Control Room in the event:

- An unanticipated situation is encountered where a question exists concerning an existing equipment configuration.
- A question exists on what position a component should be left in during performance of work activities.
- It is believed a component may have inadvertently been mispositioned.

2) The Operations Manager is responsible for ensuring the requirements of this standard are implemented and enforced.

3) Operations Department is responsible for, and has ultimate operational authority over, the configuration of plant equipment. Specifically, the Shift Manager, as the focal point of shift operations, is responsible for maintaining proper configuration and ensuring completion of configuration control requirements.

c. General Usage Equipment Having No Effect On Plant Equipment

1) General usage equipment having no effect on the operation of the plant are exempt from these responsibilities.

2) Specific examples include, but are not limited to:

- Office Space Thermostats
- Elevator operation
- Operation of Maintenance and Test Equipment
- Shop Equipment, including electrical breakers for the equipment in the Maintenance Shop
- Security Lighting Panel Breakers operated to control site security lights
- Maintenance Shop Service Air and Water connections
- Governor Hunt House and Plant Support Building equipment

d. In order to ensure the requirements of this standard are maintained, the Operations Manager will convene a Human Performance Review Committee as defined in Appendix A.

R. Procedure Place Keeping

1. Expectation(s)

a. Procedure place keeping techniques are used for "continuous use/in hand" procedures to delineate completed, in-progress, and steps not applicable.

2. Standard(s)

a. Use the following place keeping techniques for procedures without incorporated place keeping aids (circle/slash method):

- Circle the step number to be performed.
- Read and understand the step in its entirety.
- Perform the step as written.
- Mark the step as completed by placing a slash through the circled step number.

b. Use incorporated place keeping aids (such as sign-off spaces). Utilize your initial/signature as the physical method of marking the step as complete for place keeping instead of using the circle/slash method. It is critical when using this method to not sign the step off until completed.

c. Conditional steps not performed are marked "N/A."

d. Protective Tags or Caution Tags generated per Protective and Caution Tagging, EN-OP-102, shall be considered "continuous use/in hand" procedures.

3. Vermont Yankee Specific

a. Place keeping will always be used for continuous use procedures or in hand and as directed by the Shift Manager.

b. During transients, procedure place keeping is not required in order to perform immediate operator actions or actions to place the plant in a stable condition. When the plant is stable, review the procedures used to verify compliance.

c. Steps in a procedure that are performed repetitively do not require place keeping after the first time used (i.e., Control Rod movement, Scram time testing, etc.). This does not mean the operator need not follow procedure, but place keeping for those steps is not required. The procedure must still be at the job and available for reference. Approval shall be obtained from the supervisor before place keeping is suspended.

d. The following procedure are exempt from this standard:

- Alarm Response procedures
- Administrative and Department procedures

4. Place Keeping Procedure (OP, DP, ON, OT)

The following shall be used to ensure that all the applicable steps of a procedure are performed:

a. IF the procedure provides spaces for initials or check marks, THEN that constitutes acceptable place keeping. Otherwise, place keeping shall be performed as described below.

b. Place keeping marks may be written on clear plastic sheets placed over the procedure page.

c. When a step is in progress, circle the step designator.

d. When the step is complete, place a slash mark through the step designator. Following completion of all sub steps within a step, place a slash mark through the initial step designator.

e. Conditional steps not performed are marked "N/A."

f. Review the procedure when finished to ensure that all applicable steps are completed.

g. It is the responsibility of the user to replace a marked up copy of the procedure with a clean copy of the procedure if the place keeping marks are made directly on the page.

5. Place Keeping for EOP Flowcharts

NOTE

It is the responsibility of the user to ensure that place keeping marks are cleaned off of the flowcharts after any necessary copies are made for event reporting purposes.

a. Circle the entry condition(s) when provided.

b. As subsequent steps are reached, mark the chart to show progress. This can be done by circling the step or marking the flow path up to the step.

c. WHEN an action step is complete, place a check mark next to the step or slash through the step.

d. IF a step cannot be completed (i.e. because of equipment unavailability) or does not apply, mark it as "N/A."

e. IF the condition of a "when" statement is not met, THEN draw a line under the statement.

f. WHEN the condition of a "when" statement is met, THEN place a slash or check mark on the statement.

S. Two-Handed Operation

1. Expectation(s)

a. Control board manipulations should be performed using one hand. Two-handed operation is permitted only when necessary to achieve a desired result.

2. Standard(s)

a. Two-handed operation refers to control board manipulations that are performed using both hands simultaneously.

b. Two-handed operation should be avoided since it is not conducive to effective self-verification.

c. Two-handed operation is appropriate for a very limited number of routine operations, such as:

- Turbine Overspeed and Backup Overspeed Testing
- Out Notch Override
- Lifting Leads and Installing Jumpers
- Manual Scram
- ARI/RPT
- Starting a RWCU pump while adjusting CU-74
- Trip HPCI while closing HPCI-14
- Closing the first generator output breaker and picking up load

T. Skill of the Craft

1. Expectation(s)

a. Skill of the craft tasks are defined by the following criteria:

1) There is no written direction for the task in a controlled document.

2) The complexity of the task is below the threshold for which written direction is required as determined by the CRS/SM.

3) The task is low risk and performance of the task without written guidance will not result in an event as determined by the CRS/SM.

4) The operator who is to perform the task has the capability to complete all of the actions required to perform the task successfully (e.g. operate valves, read gages, operate necessary tools, etc.) as determined by the CRS/SM.

2. Standard(s)

IF any of the above criteria are not met, a controlled document (i.e. procedure, Work Order, etc.) providing guidance for performing the task shall be used.

a. An equipment status change is defined as changing the as-found position of any component that falls within the scope of Operational Configuration Control section of this procedure.

b. An equipment status change occurs when both of the following conditions exist:

1) A component manipulation is performed (except for routine adjustments below).

2) The operator performing the task leaves the manipulated component unattended for any of the following reasons prior to restoring the component to its as-found condition.

- To perform a different task.
- To take a break.
- To be relieved, unless it occurs on station.

c. The following is a non-inclusive list of tasks which may be performed by skill of the craft:

1) Reset/test of annunciators and alarm panels, pulling of annunciator cards.

2) Operation of plant communication systems.

3) Operation of selector switches/pushbuttons to monitor plant parameters.

4) Changing chart papers.

5) Changing light bulbs (ensure correct bulb is used).

6) Adding oil to pump oilers.

7) Checking oil levels on various plant equipment.

8) Valve and pump packing adjustments.

9) Venting and draining systems (pumps, heat exchangers, tanks, filters, coolers, etc.), including hooking up and disconnecting hoses as necessary.

10) Manual makeup/draining of surge/expansion tanks.

11) Blowdown of air/nitrogen receivers, filters, drains.

12) Routine adjustment of system parameters to maintain within operating bands (such as level, temperature, flow, pressure, voltage, MVAR adjustment).

13) Adjustment of cooling water flow to components (ensure dp limits are adhered to).

14) Operating CW/SW traveling screens, SW strainers.

15) Swapping nitrogen gas bottles for CRD carts, swapping hydrogen bottles.

16) Manual sump pump operations.

17) Advancing HVAC roll filters.

18) Adjustment of HVAC thermostats.

19) Operation of small HVAC fans in outbuildings (such as the stack base fan).

20) Draining water from transformer moats.

21) Swap of filters on Circ Water Booster pumps.

22) Operation of fire fighting equipment.

23) Resetting thermal overloads on breakers.

24) Selecting control rods, reset of rod drift alarms.

25) Transferring from FINE to COARSE or COARSE to FINE on the Master Recirculation Flow Controller.

U. Housekeeping

1. Expectation(s)

a. The Control Room, kitchen area, and operator work stations are maintained orderly and clean.

b. Operations will ensure the highest standards of cleanliness are maintained and hold other departments accountable to the same standard.

c. The Operations management philosophy for maintaining the plant in a high state of cleanliness is based on the following Materiel Condition Standards:

1) Equipment will be:

- Free of deficiencies.
- Leak free.
- Clean and preserved.

2) Spaces will be:

- Uncluttered
- Bright lighted (as designed)
- Painted and preserved

2. Standard(s)

a. Operations personnel keep desks and tables clear of paper, prints, and books not in use. Unused materials are placed in appropriate storage locations. Personal items such as jackets and lunchboxes should be stored under the desk or outside the controlled area.

b. Operations personnel have the responsibility for identifying areas not meeting minimum housekeeping standards and plant materiel condition problems during daily rounds. This includes maintaining clean and orderly areas, prompt removal of debris, tools, and equipment following completion of maintenance, modifications, or testing activities, proper storage of equipment (such as ladders) in designated areas, prevention of foreign material intrusion into open systems, establishment of good radioactive contamination control practices, fire prevention practices such as preventing accumulation of combustible material, maintenance of personnel access/egress paths, and correction of plant material deficiencies.

c. Work areas shall be kept sufficiently clean and orderly so that work activities can proceed in an efficient manner that will produce and maintain quality. They shall be adequately lighted, ventilated, protected, and accessible as appropriate for the work being performed.

d. IF the housekeeping issue is beyond the watchstander's resources, contact the Shift Manager to involve other departments. Set the priority high enough that housekeeping issues are resolved in a timely manner.

e. The Shift Manager should direct the correction of any deficiency not promptly remedied including removal of tools, parts, and equipment not meeting housekeeping requirements.

V. Logkeeping

1. Expectation(s)

a. Operations department logs contain a narrative of equipment/plant status changes, sequence of events, etc. Record the data necessary to maintain an accurate history of plant operation.

2. Standard(s)

a. Logs are legible and entries are made in a narrative manner so that they can be easily read and understood.

b. Narrative logs enhance shift turnover information, aid in troubleshooting and trending suspected plant problems, facilitate recording of special or unusual plant conditions, and improve station management's ability to monitor ongoing plant operations.

c. Capture information in the narrative log in sufficient detail to accurately categorize system and component operability and availability.

d. To aid in event reconstruction, as much significant information as possible is logged during emergencies and abnormal or unexpected events. A rough log may be kept provided that entries are made in the narrative log as soon as possible.

e. Logkeeping does not take precedence over control and monitoring of the plant.

f. Shift management reviews the logs to ensure that the logs are accurate and appropriate.

g. Operations management periodically reviews the logs to determine if logkeeping is in accordance with Operations department expectations.

W. Shift Turnover

1. Expectation(s)

a. Shift relief and turnover is conducted in a manner such that the oncoming shift has the knowledge to continue safe and efficient operation of the plant.

2. Standard(s)

a. All shift personnel are responsible for reviewing and understanding the logs and checklists applicable to their shift position before assuming the shift.

b. The off-going operator shall not leave their work area until they are satisfied that their relief has assumed the shift.

c. Prior to turning over duties to the oncoming shift personnel, the on-duty shift personnel inform their relief of the following as a minimum:

- Overall plant status.
- Evolutions in progress or planned.
- Existing or potential problems with areas, equipment, or processes.
- Pertinent activities conducted during the past shift.
- Abnormal system lineups.

d. Each individual is personally responsible for ensuring their "Active Status" is in good standing prior to assuming duty. This status includes proper number of shifts/hours worked per quarter, training qualifications, respirator quals, proper eyewear, and up-to-date medical status.

e. No person shall assume a shift position unless they are physically and mentally fit to competently assume the responsibilities.

f. No person shall permit their relief to assume the shift if any doubt exists concerning the on-coming person's alertness, coherence, and capability of performing their assigned duties.

g. The off-going operator shall **not** be relieved until the equipment he/she is responsible for is stable or the condition has been discussed and understood by the on-coming operator.

h. IF a plant evolution/transient is in progress, the watch should not be relieved until the evolution/transient is completed or a logical breakpoint has been reached.

i. IF a plant evolution/transient is in progress, the watch should not be relieved until the evolution/transient is completed or a logical breakpoint has been reached.

X. Robust Barrier

1. Expectation(s)

a. Operations personnel should consider the use of Robust Operational Barriers during the performance of evolution that involves control panel operation.

2. Standard(s)

a. Robust Operational Barriers should be determined prior to commencement of the evolution of task. These barriers should be discussed in the Pre-Evolution Brief. When considering which Robust Operational Barrier should be utilized, individuals should ask, "What would be the worst case scenario in which inadvertent manipulation of a component or control in the vicinity of the task to be performed would result in an undesired outcome?"

b. Barriers will be installed by the Operators performing the evolution. IF a turnover occurs while the barriers are in place, THEN the installed barriers should be discussed in the turnover. At the end of the evolution, the barriers will be removed by the individuals who installed them or who relieved the individuals that installed them.

c. The key to the success of this initiative is to maintain its simplicity. The process uses simple tools to create the desired outcome.

3. Discussion

a. Definition - The marking or covering of specific components that are not being manipulated or worked during an evolution in order to prevent inadvertent operation of an incorrect component.

b. Examples may include, but are not limited to:

- When performing the monthly EDG test - Place a cover over the control switch for the feeder breaker. This barrier will prevent the wrong breaker from being opened upon tripping the EDG output breaker during an abort sequence.

- During performance of a plant heat up - Place a cover over the Bypass Valve Opening Jack Control Switch.

- When performing HCU evolutions - Place a barrier (bright orange netting) over the adjacent HCUs.

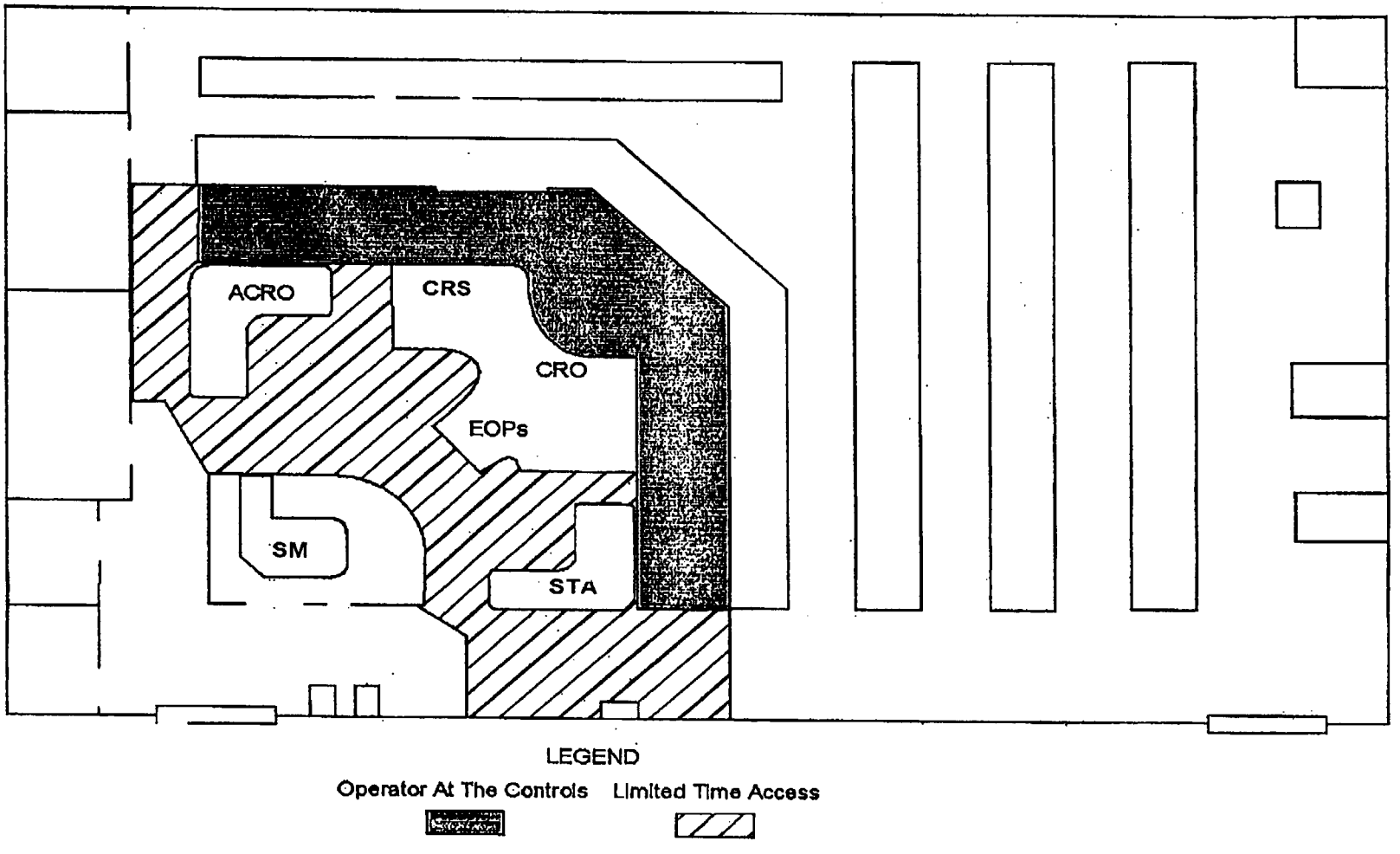
- When performing an APRM Functional Test - Place a barrier over the adjacent APRM drawer.

FINAL CONDITIONS

1. All documents filed as required by AP 6807.

FIGURE 1

OPERATOR AT THE CONTROLS & LIMITED TIME ACCESS AREA



****

Question No. 79 Exam Bank Question No.: 5992 Revision: 5 Point Value: 1
SRO Only: Yes Instructor Guide: LOT-00-604 Objective: SRO 6
Question Level: Fundamental Knowledge/Memory

****

Select the correct answer:

During a Rx Startup at ≈ 60% power, a spurious MSIV closure (MSIV 86A) causes a high pressure condition.

The current plant conditions are:

- Rx pressure 990 psig
- Steam flow 4.7 x 10^6 lbs/hr

At this point:

a.	Core Thermal Limits evaluations are valid and power may be held steady for an indefinite period of time.	Correct Response - The old standard called for a power reduction or MSIVs must be reopened within 2 hours. A recent analysis at the end of 2004 allows us to maintain power.
b.	Core Thermal Limits evaluations are valid and MSIV 86A must be reopened within 2 hours.	Incorrect - Thermal Limits are valid indefinitely if < 4.8 x 10E6 lbs/hr
c.	Core Thermal Limits are suspect and power must be reduced to < 25% before MSIV 86A can be reopened.	Incorrect - MSIVs may be reopened at current power level
d.	Core Thermal Limits are suspect & MSIV 86A should be reopened within 2 hours or power shall be reduced to < 25% in 8 hours.	Incorrect - An old standard that no longer applies

References: OT 3115, Note after Step 4a
Source: New
Required Student References: None
SRO Reference: 10CFR55.43.b.5

Task Associations

Task Number	Task Title
2000180501	Respond to High Reactor Pressure

Knowledge and Abilities Associations

System	K/A	Statement		
295025	EA2.01	Ability to determine and/or interpret the following as they apply to HIGH REACTOR PRESSURE:(CFR 41.10, 43.5, 45.13).: Reactor pressure	4.3	4.3

Static Simulator Exams: None
Last Revised: 12/22/2004 1:23:11 PM by Hallonquist, Nora E.

QUESTION # 79
REFERENCE

VERMONT YANKEE NUCLEAR POWER STATION

OPERATIONAL TRANSIENT PROCEDURE

OT 3115

REVISION 9

REACTOR PRESSURE TRANSIENTS

USE CLASSIFICATION: **REFERENCE**

RESPONSIBLE PROCEDURE OWNER: **Manager, Operations**

REQUIRED REVIEWS		Yes/No
E-Plan	10CFR50.54(q)	No
Security	10CFR50.54(p)	No
Probable Risk Analysis (PRA)		No
Reactivity Management		Yes

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Effective Date: 12/16/04

ENTRY CONDITIONS

1. An unexpected or unexplained change in reactor pressure.

IMMEDIATE OPERATOR ACTIONS

1. IF unsuccessful controlling pressure with either the EPR or MPR, THEN manually SCRAM the reactor and enter OT 3100, Reactor Scram.

a. IF pressure is RISING, THEN manually control reactor pressure between 800 psig and 1000 psig using the Bypass Opening Jack, unless otherwise directed.

b. IF pressure is LOWERING, THEN close the MSIVs to prevent a rapid cooldown.

FOLLOW-UP ACTIONS

1. Determine if the pressure change was caused by one of the following:

   - Pressure regulator failure: Go to steps 2 and 3.
   - MSIV, stop valve, or control valve closure: Go to steps 4 and 5.
   - Bypass valve failure: Go to step 6.
   - Reactivity changes: Go to step 7.

2. IF pressure change was due to **EPR** failure, THEN perform the following:

   a. IF pressure is **RISING**, THEN:

      1) Verify that the MPR takes control.

      2) Place the EPR CUTOUT SWITCH on CRP 9-7 to CUTOUT.

      3) Lower the MPR setpoint to return reactor pressure to pre-transient pressure.

   b. IF pressure is **LOWERING**, THEN:

      1) Place the EPR CUTOUT SWITCH on CRP 9-7 to CUTOUT.

      2) Verify the MPR takes control.

      3) Lower the MPR setpoint to return reactor pressure to the pre-transient pressure.

3. IF pressure change was due to **MPR** failure, THEN perform the following:

   a. IF pressure is **RISING**, THEN:

      1) IF the EPR is available:

         a) Verify the EPR takes control.

         b) Lower the EPR setpoint to return reactor pressure to the pre-transient pressure.

      2) IF the EPR is unavailable:

         a) Place the MPR SETPOINT SWITCH to LOWER.

         b) Lower the MPR setpoint to return reactor pressure to the pre-transient pressure.

   b. IF pressure is **LOWERING**, THEN:

      1) Place the MPR SETPOINT SWITCH to RAISE.

      2) Raise the MPR setpoint to return reactor pressure to the pre-transient pressure.

> **NOTE**
>
> As reactor power is reduced below the steam flow indicated in the following step, reactor pressure will decrease.

4. IF pressure change was due to an MSIV closure, THEN:

   a. Reduce reactor power at a rate not to exceed 10% RTP/min. until the following criteria are satisfied:

      1) Reactor pressure ≤1000 psig,

      AND

      2)

No. of Isolated Steam Lines	Total Steam Flow
1	≤4.8 Mlbs/hr (≤75% RTP)
2	≤3.2 Mlbs/hr

NOTE

Long term steady state operations with 1 MSIV isolated is permissible provided that reactor power is limited to ≤75% of rated thermal power. (GENE-L12-00-06P)

b. IF 2 main steam lines are passing steam, THEN: (EDCR97-422, GENE-L12-00-06P)

1) Consider core thermal limits (MCPR and APLHGR) evaluation suspect.

2) Initiate actions to restore ≥3 main steam lines to service within 2 hours or reduce reactor power to <25% RTP within the next 8 hours.

3) When reactor power is ≤25% RTP, do not exceed 25% RTP until ≥3 main steam lines are in service.

5. IF the pressure change was due to the closure of any **stop or control valve**, THEN adjust the EPR/MPR setpoint as necessary to return pressure to the pre-transient value.

6. IF the pressure change was due to the failure of the **bypass valves**, THEN perform the following:

a. Confirm/initiate a reactor SCRAM and enter OT 3100, Reactor SCRAM.

b. Shut the MSIVs.

c. Control reactor pressure using SRVs, unless otherwise directed.

7. IF the pressure change was due to, or caused, a **positive reactivity insertion**, THEN enter OT 3110, Positive Reactivity Insertion.

8. IF either the MPR or EPR is not operable, THEN initiate a Condition Report per AP 0009 and ensure an operability determination is completed per ENN-OP-104 within 24 hours.

9. IF either the MPR or EPR is not operable when <25% RTP, THEN consider core thermal limits (MCPR and APLHGR) suspect and do not exceed 25% RTP. (EDCR 97-422)

VERIFICATION OF AUTOMATIC ACTIONS (LOWERING PRESSURE)

	ACTIONS	CONDITIONS
1.	Group 1 isolation	RPV pressure <800 psig in RUN mode. (5-H-5) and (5-J-5)
2.	Reactor SCRAM	≤10% MSIV closure in RUN mode. (5-K-5)

VERIFICATION OF AUTOMATIC ACTIONS (RISING PRESSURE)

	ACTIONS	CONDITIONS
1.	Reactor Hi Pressure Alarm	1030 psig (5-E-7)
2.	Reactor SCRAM	1038 psig (5-K-3) (Tech Spec. ≤1055 psig)

Question # 79

Entergy	CONDITION REPORT	CR-VTY-2005-00423

Originator: Wamser,Christopher J
Originator Group: Operations Mgr\ Mgmt
Supervisor Name:
Discovered Date: 02/03/2005 17:00

Originator Phone: 5409
Operability Required: Y
Reportability Required: N
Initiated Date: 02/03/2005 17:17

Condition Description:

Conflicting Guidance in Procedures

Guidance for operation with one Main Steam Line (MSL) out of service is not consistent between OP 0105 (Reactor Operation) and OT 3115 (Reactor Pressure Transient).

The guidance in OP 0105 is more conservative than is required under current analysis. This condition does not pose an operability concern to any system or component.

Immediate Action Description:

Validated that the guidance in OT 3115 is correct. Provided guidance to the Operations department to make them aware of the issue until OP 0105 guidance is revised.

Suggested Action Description:

REFERENCE ITEMS:

Type Code	Description
PROCEDURE	OP 0105
PROCEDURE	OP 3115

TRENDING (For Reference Purposes Only):

Trend Type	Trend Code
KEY WORDS	KW-PROCEDURE
HOW IDENTIFIED	HI-SELF-IDENTIFIED

Entergy	ADMIN	CR-VTY-2005-00423

Initiated Date: 2/3/2005 17:17 **Owner Group :** Operations Mgr\ Mgmt

Current Contact: FJB

Current Significance: C - MPC & CORRECT

Closed by:

Summary Description:

Conflicting Guidance in Procedures

Guidance for operation with one Main Steam Line (MSL) out of service is not consistent between OP 0105 (Reactor Operation) and OT 3115 (Reactor Pressure Transient).

The guidance in OP 0105 is more conservative than is required under current analysis. This condition does not pose an operability concern to any system or component.

Remarks Description:

Closure Description:

Entergy	OPERABILITY	CR-VTY-2005-00423

OperabilityVersion: 1

Operability Code: ADMIN - NA

Immediate Report Code: NOT APPLICABLE

Performed By: Ramsey,Michael 02/03/2005 17:25

Approved By: Von der Esch,Gary R 02/03/2005 19:53

Operability Description:

Procdure is more conservative than required. Not an operability concern as explained by the Operations Manager in the condition description of the CR.

Approval Comments:

Entergy	ASSIGNMENTS	CR-VTY-2005-00423

Version: 1

Significance Code: C - MPC & CORRECT

Classification Code: C

Owner Group: Operations Mgr\ Mgmt

Performed By: Burger,Frederick J 02/08/2005 11:48

Assignment Description:

CR-VTY-2005-423
Screening Data
Significance: C - MPC & CORRECT
Owner : Operations Mgr\ Mgmt
Comments:
A Human Performance Evaluation VYAPF 0009.05 is required for all HU identified CRs
Trending Items
PROCEDURE
SELF-IDENTIFIED
Self identified
Not an Industrial Safety issue
Not a Security issue

Keywords: Procedure

Control Room was notified and appropriate administrative guidance was put in place to inform Operations of the issue.

Entergy	CORRECTIVE ACTION	CR-VTY-2005-00423

CA Number: 1

	Group	Name
Assigned By:	CRG/CARB/OSRC	
Assigned To:	Operations Mgr\ Mgmt	Twarog,John R
Subassigned To :	Operations Staff	Heathwaite,Frederick M
Originated By:	Burger,Frederick J	02/08/2005 11:50:1(
Performed By:		
Subperformed By:	Heathwaite,Frederick M	02/23/2005 02:05:2(
Approved By:		
Closed By:		

Current Due Date: 03/09/2005 **Initial Due Date:** 03/09/2005

CA Type: CR DISPOSITION

Plant Constraint: 0 NONE

CA Description:

CR Disposition
Conflicting Guidance in Procedures
(Review CR for Full Details)
Review Screening Comments on the Assignment Tab

The CRG has initially classified this CR as
Classification Code - "C"
Significance Code - " MPC & CORRECT"

Follow the process provided in AP 0009 Appendix K. If during your investigations into this event it is determined that the classification should be changed, contact the CA&A representative for re-consideration by the CRG.

Perform Most Probable Cause Evaluation. Issue the appropriate CAs. (per LI 102)

CR Disposition Guidelines: This is only a guide. It is not a substitute for the applicable procedures.

All Attachments are to be in PDF format

oAttach Most Probable Cause Investigation Report or Document in the Response or Sub response field
oEnsure all Screening Comments have been addressed in the investigation - (CR assignment tab)
oDevelop adequate corrective actions and issue CAs. (Due Dates per LI 102 Attachment 9.5)
o LT CAs Require Approval from Manager/ GMPO or Director prior to initiating
oAttach completed VYAPF 0009.02 (CR Trend Input Data Sheet) in accordance with Appendix E.
oAttach completed VYAPF 0009.05 (Human Performance Evaluation) if required. Include Cause Dept
ooAttach completed EN-LI-118 Attachment 9.17 (Equipment Failure Evaluation Checklist) .if assigned.
oSpecify any references needed and enter into Ref. Items.

Response:

Subresponse :

See attached CR Investigation and Trend Sheet

Closure Comments:

Attachments:

Subresp Description
CR Investigation and Trend Sheet

Attachment Header

Document Name:

untitled

Document Location

Subresp Description

Attach Title:

CR Investigation and Trend Sheet

Entergy	CORRECTIVE ACTION	CR-VTY-2005-00423

CA Number: 2

	Group	Name
Assigned By:	Operations Staff	Heathwaite,Frederick M
Assigned To:	Operations Staff	
Subassigned To :		

Originated By: Heathwaite,Frederick M 02/23/2005 02:07:19

Performed By:

Subperformed By:

Approved By:

Closed By:

Current Due Date: 09/01/2005 **Initial Due Date:** 09/01/2005

CA Type: EN CA

Plant Constraint: 0 NONE

CA Description:

Update OP 0105 as necessary to include new MSIV requirements per EDCR97-422.

Response:

Subresponse :

Closure Comments:

VERMONT YANKEE NUCLEAR POWER STATION

OPERATIONAL TRANSIENT PROCEDURE

QUESTION # 79

OT 3116

REVISION 8

NOTE: Reference OT3115, Rev 9 Supersedes this Procedure.

REACTOR HIGH PRESSURE

USE CLASSIFICATION: **REFERENCE**

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Issue Date: 11/03/00

CANCELLED

CONTROL COPY

VALID ONLY WHEN STAMP IS RED

ENTRY CONDITIONS

An unexpected or unexplained increase in reactor pressure.

IMMEDIATE OPERATOR ACTIONS

1. **If unsuccessful controlling pressure with either the MPR and EPR:**

   a. **manually SCRAM the reactor and enter OT 3100, Scram Procedure,**

   b. **manually control reactor pressure between 800 psig and 1000 psig with the bypass valve opening jack, unless otherwise directed.**

2. **If EPR is in control and fails:**

   a. **place the EPR cutout switch on CRP 9-7 to CUTOUT,**

   b. **verify that MPR takes control, and**

   c. **lower MPR setpoint as necessary.**

3. **If MPR is in control and fails when the EPR is available:**

   a. **manually take control with EPR, and**

   b. **lower EPR setpoint as necessary.**

FOLLOW-UP ACTIONS

1. Determine if the pressure increase was caused by any of the following:

   a. positive reactivity insertion

   b. stop valve, control valve, or MSIV closure

2. Enter procedure OT 3110, Positive Reactivity Insertion.

NOTE

As reactor power is reduced below the steam flow indicated in the following step, reactor pressure will decrease.

3. If an MSIV closure caused the pressure increase:

   a. Reduce reactor power at a rate not to exceed 10% RTP/min. until total steam flow satisfies the following criteria:

No. of Isolated Steam Lines	Total Steam Flow
1	$\leq 4.8 \times 10^6$ lbs/hr
2	$\leq 3.2 \times 10^6$ lbs/hr

   b. When pressure decreases to approximately 1000 psig, stop lowering power.

CAUTION

Do not attempt to reopen the failed MSIV until its companion MSIV is closed.

   c. If less than 4 main steam lines passing steam (except surveillance): (EDCR97-422)

      - Consider core thermal limits (MCPR and APLHGR) evaluation suspect.
      - Initiate actions to restore 4 main steam lines to service within 2 hours or reduce power to less than 25% within the next 8 hours.
      - When reactor power is less than or equal to 25% RTP, do not exceed 25% RTP until all four steam lines are in service.

   d. Both MSIVs may be reopened after the failed MSIV is demonstrated operable as follows:

      1) Close/check closed the associated inboard and outboard MSIVs.

      2) Open the outboard MSIV by placing its control switch to the AUTO OPEN position.

      3) Equalize the upstream and downstream pressures as follows:

         a) Open Stm Line Drain MS-74.

         b) Open Stm Line Drain MS-77.

         c) Open Stm Line Drain MS-78.

4) If the bypass valves open, raise the setpoint of the turbine pressure regulator which is in service until the bypass valves shut.

5) When the MSIVs have been closed for 30 minutes or more:

a) Open Stm Line Drain MS-79.

b) Drain condensation for 8-12 minutes.

c) Close Stm Line Drain MS-79.

6) When RX PRESS PI 2-3-56A(B) and MAIN STEAM PRESSURE PI-101-2 pressures are within 50 psig, open the inboard MSIVs.

4. If any stop or control valve failed closed, attempt to reopen them.

5. If either the MPR or EPR is not operable, initiate an ER per AP 0009 and ensure an operability determination, per AP 0167, is completed within 24 hours.

6. If either the MPR or EPR is not operable when <25% RTP, then consider core thermal limits (MCPR and APLHGR) suspect and do not exceed 25% RTP. (EDCR 97-422)

VERIFICATION OF AUTOMATIC ACTIONS

	ACTIONS	CONDITIONS
1.	Reactor Hi Press alarm	1030 psig (5-E-7)
2.	Scram	1038 psig (5-K-3) (Tech. Spec. ≤1055 psig)

VERMONT YANKEE NUCLEAR POWER STATION

OPERATIONAL TRANSIENT PROCEDURE

Question #79 Reference
NOTE: OT 3115, Rev 9
Supersedes this
procedure

OT 3115

REVISION 8

REACTOR LOW PRESSURE

USE CLASSIFICATION: **REFERENCE**

LPC No.	Effective Date	Affected Pages

Implementation Statement: N/A

Issue Date: 11/03/00

SUPERCEDED

CONTROL COPY
VALID ONLY WHEN STAMP IS RED

ENTRY CONDITIONS

An unexpected or unexplained decrease in reactor pressure WHEN reactor coolant temperature >212°F.

IMMEDIATE OPERATOR ACTIONS

1. **If unsuccessful controlling pressure with either the EPR or MPR:**

   a. **if reactor is critical, manually scram the reactor and enter OT 3100, Scram Procedure,**

   b. **close the MSIVs to prevent a rapid cooldown.**

FOLLOW-UP ACTIONS

1. If EPR failure has occurred, place the EPR CUTOUT SWITCH on CRP 9-7 to CUTOUT, and allow the MPR to take control of pressure.

2. If on MPR and it fails low, place the MPR control switch to RAISE to attempt to regain pressure control.

3. If either the MPR or EPR is not operable, initiate an ER per AP 0009 and ensure an operability determination, per AP 0167, is completed within 24 hours.

4. If either the MPR or EPR is not operable when <25% RTP, then consider core thermal limits (MCPR and APLHGR) suspect and do not exceed 25% RTP. (EDCR 97-422)

VERIFICATION OF AUTOMATIC ACTIONS (MODE SWITCH IN RUN)

	ACTIONS	CONDITIONS
1.	Group 1 isolation closes: a. MSIVs MS-80 and 86A through D b. MSL drains MS-74 and 77 c. Recirc System Sample Valves RV-39/40	RPV pressure less than 800 psig in the RUN mode. (5-H-5)(5-J-5)
2.	Reactor Scram	≤10% MSIV closure in the RUN mode. (5-K-5)

QUESTION #79
REFERENCE

VERMONT YANKEE NUCLEAR POWER STATION

OPERATING PROCEDURE

OP 0105

REVISION 11

REACTOR OPERATIONS

USE CLASSIFICATION: **CONTINUOUS**

RESPONSIBLE PROCEDURE OWNER: **Manager, Operations**

REQUIRED REVIEWS		Yes/No
E-Plan	10CFR50.54(q)	No
Security	10CFR50.54(p)	No
Probable Risk Analysis (PRA)		No
Reactivity Management		No

LPC No.	Effective Date	Affected Pages
1	05/03/04	7, 60, 66, 74, 87, 94 & 100 of 146
2	07/02/04	60, 91, 104, 110 of 146; VYOPF 0105.04 Pg 2 of 4; VYOPF 0105.06 Pg 2 of 3; VYOPF 0105.07 Pg 1 of 6; Figure 1 Pg 1 of 1 & Figure 2 Pg 1 of 1
3	10/12/04	68, 84, 107 & 110 of 146; VYOPF 0105.06 Pg 2 of 3; & VYOPF 0105.07 Pg 2 of 6

Implementation Statement: N/A

Issue Date: 04/22/04

TABLE OF CONTENTS

PURPOSE 3

DISCUSSION 3

ATTACHMENTS 4

QA REQUIREMENTS CROSS REFERENCE 5

1. PHASE 1 From Cold Shutdown to Reactor Critical, RCS <212°F 6
   - A. Reactor Criticality 15
2. PHASE 2 Reactor Power Increase to 1½ Bypass Valves 25
   - A. Preparation Before Turbine Generator Operation 31
   - B. Continuing Reactor S/U, When Chemistry Samples are Sat 34
   - C. Starting a Reactor Feed Pump 41
   - D. Turbine Chest Warmup 47
3. PHASE 3 Turbine Startup and Synchronization 55
   - A. Turbine Startup and Synchronization of the Generator 59
   - B. Turbine Startup 60
   - C. Generator Synchronization and Loading 68
4. PHASE 4 Reactor Power Increase to Full Rated Power 74
   - A. Increasing Reactor Power 79
   - B. Starting an Additional Reactor Feed Pump 88
5. PHASE 5 Reactor Power Decrease (From Rated Power to Mode Switch in Shutdown) 94
   - A. Decreasing Reactor Power 100
   - B. Removing Turbine Generator from the Line 113
   - C. Continuing Power Reduction 122
6. PHASE 6 Mode Switch in Shutdown to Cold Shutdown 144

FINAL CONDITIONS 146

Following Plant Shutdowns after long operating cycles, or Startups after extended or refueling outages, the potential exists for significant conditions to exist which could jeopardize plant safety margins. These evolutions may be designated as Infrequently Performed Test or Evolutions (IPTEs) and a Management Designee assigned by the General Manager, Plant Operations to provide line management authority and be responsible for the safe conduct of the evolution. Further details for conducting IPTEs and responsibilities of the Management Designee are addressed by AP 6100. (SOER9101OP1)

Event Lines outlining the major evolutions required to startup and shutdown the reactor have been developed (Appendix E and F). The Event Lines do not provide procedural guidance, OP 0105, Reactor Operations procedure does. The Event Lines were not developed to be used as a procedure in the way the EOP flowcharts are utilized. On Startup and Shutdown Event Lines, as the evolutions are completed, the boxes are checked off. The Event Lines will be used during the turnover process as an outline. Thus Event Lines provide an overview for both plant and shift management of the major evolutions required to startup and shutdown the plant. Certain evolutions not performed by the Operations Department are included on the Event Lines for information only. These evolutions are in brackets and include both surveillance and maintenance activities. Appendix G is used to remove the turbine generator from service while the reactor remains at ≅ 15% RTP. Appendix H returns the turbine generator to service.

RTP means Rated Thermal Power as defined by Tech Specs.

ATTACHMENTS

1.	Appendix A	Reactor Heatup With the MSIVs Closed
2.	Appendix B	Shutdown With Startup Transformers Out of Service
3.	Appendix C	Hot Standby Behind the MSIVs
4.	Appendix D	In-Sequence Critical Procedure
5.	Appendix E	Startup Event Line
6.	Appendix F	Shutdown Event Line
7.	Appendix G	Turbine Shutdown at Power
8.	Appendix H	Turbine Startup at Power
9.	VYOPF 0105.01	Reactor Startup Prerequisite List
10.	VYOPF 0105.02	Reactor Startup To Criticality Check Sheet
11.	VYOPF 0105.03	Reactor Criticality Check Sheet, Regular and In-Sequence
12.	VYOPF 0105.04	Reactor and Generation Systems Heatup To Low Power Prerequisite List
13.	VYOPF 0105.05	Reactor and Generation Systems Heatup To Low Power Check Sheet
14.	VYOPF 0105.06	Increasing Power Check Sheet
15.	VYOPF 0105.07	Decreasing Power/Shutdown Check Sheet
16.	VYOPF 0105.08	In-Sequence Critical Prerequisite List
17.	VYOPF 0105.09	Procedure Variance Form
18.	VYOPF 0105.10	Shutdown With S/U Transformers Out of Service Check Sheet
19.	VYOPF 0105.11	Hot Standby Behind the MSIVs Check Sheet
20.	VYOPF 0105.12	Deleted
21.	VYOPF 0105.13	Plant Operating Parameters
22.	VYOPF 0105.14	Turbine Shutdown at Power Check Sheet

23.	VYOPF 0105.15	Turbine Startup at Power Check Sheet
24.	Figure 1	Turbine Trip Logic
25.	Figure 2	Speed Load Changer Setting

QA REQUIREMENTS CROSS REFERENCE

None

PURPOSE

To provide Operations Department personnel with the instructions necessary to prepare the plant for, and to achieve; 1) plant startup from all rods inserted to normal full power operations, 2) plant shutdown from normal full power operations to all rods inserted with reactor coolant temperature <212°F, 3) Reactor heatup with MSIVs closed, 4) plant shutdown without the startup transformers, 5) hot standby behind the MSIVs, and 6) Insequence Critical testing, 7) turbine shutdown at power and, 8) turbine startup at power.

DISCUSSION

Each order to commence a reactor startup from any shutdown condition is issued by the General Manager, Plant Operations or his designated alternate. The Shift Manager, upon receipt of such orders, schedules the startup of various components and systems to meet the startup and load schedules, and issues these orders to the Control Room Supervisor.

It is the intent of this procedure to outline the many steps required to achieve a safe reactor startup, plant startup, maneuvering at power, plant shutdown, reactor shutdown, and shutdown operations. The sequence of steps phase to phase, or section to section specified may be altered and/or performed concurrently at the discretion of the Shift Manager and the Control Room Supervisor to suit existing plant conditions. A variance is a step that is omitted, or, if going from one phase to another without all the steps of the previous phase being completed. Any variance shall be documented on the Variance form and approved by the Shift Manager and the CRS on VYOPF 0105.09.

Instructions are also provided for:

Appendix "A", Reactor Heatup with MSIVs Closed

Appendix "B", Plant Shutdown Without the Startup Transformers.

Appendix "C", Hot Standby Behind the MSIVs.

Appendix "D", In-sequence Critical Procedure.

Appendix "E", Startup Event Line

Appendix "F", Shutdown Event Line

Appendix "G", Turbine Shutdown at Power

Appendix "H", Turbine Startup at Power

VYOPF 0105.09, Procedure Variance Form.

13. If any of the following conditions exist when <25% RTP, then consider core thermal limits (MCPR and APLHGR) evaluation suspect and do not exceed 25% RTP: (EDCR 97-422)

    a. Less than 4 main steam lines passing steam (except surveillances).

    b. MTS-2 tripped or any bypass valve inoperable.

    c. Either EPR or MPR out of service.

    d. Feedwater heater string bypassed.

14. If any of the following conditions exist when CTP >25% RTP, then consider core thermal limits (MCPR and APLHGR) evaluation suspect: (EDCR 97-422)

    a. Less than 4 main steam lines passing steam (except surveillances).

    b. MTS-2 tripped or any bypass valve inoperable.

    c. Feedwater heater string bypassed.

    Then exit the condition within 2 hours or reduce CTP to less than 25% RTP within the next 8 hours.

15. If either the MPR or EPR is not operable, initiate an ER per AP 0009 and ensure an operability determination, per ENN-OP-104, is completed within 24 hours.

16. When opening a manual containment isolation valve that is within the primary containment boundary as defined by PP 7006, "Primary Containment Leak Rate Testing Program," when primary containment integrity is required, either enter the TS LCO (TS 3.7.A.8) or apply all of the following administrative controls:

    - Station a dedicated operator with no concurrent duties in the immediate vicinity of the valve controls to rapidly close the valve when directed by the control room.

    - Establish communication with the control room that is immediately available using either Gaitronics, sound powered phones, radios, telephones or other means.

    These administrative controls will ensure the manual containment isolation valve can be rapidly closed when primary containment isolation is required during accident conditions (NVY99004_02).

17. If the air lock is opened during periods when primary containment integrity <u>is not required</u>, the air lock must be leak-rate tested at the end of the period prior to primary containment integrity being required.