RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.:	**289-8215**
Review Section:	**16 - Technical Specifications**
Application Section:	**TS Section 3.4 and 3.7**
Date of RAI Issue:	**11/03/2015**

Question No. 16-108

10 CFR 50.36, “Technical Specifications” and 10 CFR 52.47(a)(11) provides the regulatory basis for the following questions. 10 CFR 50.36 sets forth requirements for technical specifications to be included as part of the operating license for a nuclear power facility. Subsection 52.47(a)(11) requires that technical specifications be provided in the application for a design certification.

NUREG-1432, “Standard Technical Specifications-Combustion Engineering Plants,” provides NRC guidance on format and content of technical specifications as one acceptable means to meet 10CFR 50.36 requirements.

SPR 16, Part III.2.A states, in part, “when reviewing a difference between the proposed TS provision and the reference TS provision, verify that the applicant’s written technical or administrative reasoning in support of the difference is logical, complete, and clearly written."

1. On Page B 3.4.10-1, in the “Background” section of the TS Bases, the first paragraph states, in part, “Pressurizer POSRVs are designed to provide overpressure protection function and rapid depressurization function for reactor coolant system (RCS).” The applicant is requested to provide clarification on how the design feature for rapid depressurization is used to support the plant response to postulated design basis events described in DCD Chapter 15, or a reference to the applicable DCD section where this design feature is described and/or used.

2. In the TS Bases for LCO 3.4.11, discussions of design requirements for both the SCS suction line relief valves and the RCS vent opening in the “Background” and “Applicable Safety Analyses” sections are not provided similar to the equivalent STS Bases for LCO 3.4.10. The applicant is requested to provide these supporting information to be consistent with guidance in the STS.

3. On Page B 3.4.11-1, in the “Background” section of the TS Bases, the third paragraph states, in part, “The open RCS vent or the SCS suction line relief valves are the overpressure protection devices which provide backup to the operator in terminating increasing pressure events.” The staff could not find the role of an operator in terminating increasing pressure events described in DCD Chapter 5. The applicant is requested to provide clarification on the above statement.

4. On Page B 3.4.11-1, in the “Applicable Safety Analyses” section of the TS Bases, the first paragraph states, in part, “Safety analyses (Reference 3) demonstrate that the reactor vessel is adequately protected against exceeding the P/T limits during shutdown.” DCD Chapter 15 is listed as Reference 3. The staff could not identify any design basis events described in DCD Chapter 15 where low temperature overpressure protection is needed. The applicant is requested to revise the TS Bases to reference the applicable DCD section.

5. On Page B 3.4.11-2, in the “Applicability” section of the TS Bases, the first paragraph states, in part, “This LCO is applicable in MODE 4 with the temperature of any RCS cold leg less than or equal to the LTOP enable temperature specified in the PTLR during heatup, in MODE 5, and in MODE 6 with the reactor vessel head on.” The applicant is requested to replace the term “heatup” with “cooldown” to reflect the actual plant evolution described in DCD Chapter 5.

6. On Page B 3.4.11-2, in the Bases discussion of Actions A.1 and B.1, the applicant states “With one SCS suction line relief valve inoperable, overpressure relieving capability is reduced. The other SCS suction line relief valve remains OPERABLE or the RCS must be depressurized through an open vent. Either of these paths provides adequate overpressure protection. However, redundancy has been lost.” Action A.1 or Action B.1 specifically states “Restore required SCS suction line relief valve to OPERABLE status.” The option to have “RCS depressurized through an open vent” is not a part of the Action requirements. The applicant is requested to revise the TS Base to be consistent with the specified TS requirements.

7. In TS 3.4.16, Condition B states “Two required RCGV paths from the same location inoperable,” and Action B.1 states “Restore one RCGV path to OPERABLE status” within 6 hours. Condition B appears to indicate a potential loss of function for the RCGV system, and a completion time (CT) of 1 hours should be applied. The applicant is requested to provide a justification for the proposed CT of 6 hours.

8. SR 3.4.16.3 states “Verify the locally operated manual isolation valve from the reactor vessel closure head and the locally operated manual isolation valve from the pressurizer are locked in the open position” with Frequency of 18 months. The position of manual valves that are shown as “locked open (LO)” in the system P&I diagram are not normally controlled under a TS provision. However, an SR is required for verification that all of system valves are in their correct positions with Frequency of 31 days, except valves that are locked or otherwise secured in the required positions that support a design basis event. The applicant is requested to revise SR 3.4.16.3 to be consistent with guidance in the STS

9. In TS 3.7.4, Condition A states “One required MSADV line inoperable.” In the APR1400 design, there are total of two MSADV lines available to support the applicable plant

Modes 1 through 4. The applicant is requested to revise Condition A to state “One MSADV line inoperable” to be consistent with guidance in the STS.

10. In TS 3.7.4, Condition B states “Two or more MSADV lines inoperable,” and Action B.1 states “Restore all but one MSADV line to OPERABLE status.” In the APR1400 design, there are total of two MSADV lines available to support the applicable plant Modes 1 through 4. The applicant is requested to revise Condition B to state “Two MSADV lines inoperable” and Action B.1 to state “Restore one MSADV line to OPERABLE status” to be consistent with guidance in the STS.

11. In TS 3.7.12, “Auxiliary Building Controlled Area Emergency Exhaust System,” a Condition for the mechanical penetration room and safety-related mechanical equipment room boundary inoperable similar to Condition B of the STS 3.7.13, ECCS Pump Room Exhaust Air Cleanup System,” is not provided. The applicant is requested to address this TS requirement omission in the APR1400 TS.

Response

1. The POSRVs perform two functions. The design basis function is to provide overpressure protection for the Reactor Coolant System (RCS). They also provide for RCS depressurization in the Safety Depressurization and Vent System (SDVS) in the case of a Total Loss of Feedwater Accident (TLOFW), a beyond design basis event.

   For the RCS overpressure protection function, the POSRVs actuate when the RCS pressure reaches the set point of the spring loaded pilot valve. The POSRVs return to the closed position when the system pressure decreases below the closing set pressure of the spring loaded pilot valve.

   For the SDVS function, the POSRV is remote manually actuated by opening two in-series motor operated pilot valves that are independent of the overpressure protection pilot valves. This mode provides for rapid depressurization of the RCS.

   The applicable sections of the DCD that describes the use of POSRVs for rapid depressurization are as follows:

   Item f of Section 5.1, “Summary Description,” is:

   > “f. Rapid depressurization of the RCS by manual operation of the pressurizer pilot operated safety relief valves (POSRVs).”

   The last sentence of Section 5.4.14.2, “Description,” is:

   > “The manual actuation of pressurizer POSRVs can be used for rapid depressurization for feed-and-bleed operation in a total loss of feedwater event.”

   The second paragraph of Section 6.3.1.2, “Safe Shutdown,” is:

   > “The SI pumps are used to inject borated water into the reactor coolant system (RCS)

and restore the RCS water inventory when the RCS pressure decrease rapidly by opening pressurizer pilot operated safety relief valves (POSRVs) during beyond design basis event of a total loss of feedwater to steam generators."

Item 2 of Section 7.4.1, "System Description," is:

"A manual actuation of pressurizer POSRVs can be used for rapid depressurization for bleed-and-feed operations in the event of a total loss of feedwater."

The rapid depressurization function during a severe accident is specified in Section 19.2.3.3.4.1.1 of the DCD Tier 2.

2. The design of the APR1400 for LTOP is different from the CE 80+ design. Shutdown Cooling System (SCS) suction line relief valves are installed in the SCS instead of PORVs installed on the top head of the pressurizer. Once the SCS suction line relief valves are aligned to the RCS at LTOP conditions, the valves function as pressure relieving devices. The pressurizer manway is capable of being used as an RCS vent in case of a failure of the SCS suction line relief valves.

   The Background, Applicable Safety Analyses, and LCO portions of the TS Bases for LCO 3.4.11 will be revised as indicated in Attachment 1.

3. Operator action is not required for terminating RCS pressure increasing transients during low temperature conditions. The statement in the Background of TS 3.4.11 will be deleted as indicated in Attachment 1.

4. The design bases for LTOP are provided in DCD Section 5.2.2.1.2 (Design Bases for Low Temperature Overpressure Protection) and Section 5.2.2.2.2 (Design Evaluation for Low Temperature Overpressure Protection). TS Bases B 3.4.11 will be revised to change Reference 3 from Chapter 15 to Chapter 5 as indicated in Attachment 2.

5. During RCS heatup and cooldown, RCS cold leg temperature remains less than or equal to the LTOP enable temperature. TS Bases B 3.4.11 will be revised to delete "during heatup" as indicated in Attachment 3.

6. The action to depressurize through an open vent in the Bases of Action A.1 and B.1 will be deleted. TS Bases B 3.4.11 will be revised as indicated in Attachment 4.

7. Condition B does not indicate a total loss of function of the RCGV system, but rather a loss of function for either the reactor vessel closure head vent paths or the pressurizer steam space vent paths. Therefore, the completion time of 6 hours is reasonable to allow time to correct the situation considering that the remaining paths are available.

8. All of the locally operated manual isolation valves in the vent path shall be locked open to ensure that a vent path can be established from the reactor vessel closure head and the pressurizer to the IRWST. The position of these valves can be secured to be maintained open because these valves are locked in the open position during refueling operation period. Moreover, since these valves are located inside containment, it is difficult for

operators to verify the valve's proper position during normal power operation due to radiation and access limitations. The 18-month frequency is conservative and reasonable based on industry accepted practice and limited accessibility during normal operation.

9. Condition A in TS 3.7.4 and the Required Action A.1 in Bases 3.7.4 will be revised as indicated in Attachment 5 to state "One MSADV line inoperable," (i.e., the word "required" will be deleted), to be consistent with guidance in the STS.

   In addition, the words "per steam generator" will be added in the subject of LCO 3.7.4 to avoid any confusion on the number of MSADV lines that need to be OPERABLE.

10. In TS 3.7.4, Condition B will be revised as indicated in Attachment 6 to state "Two MSADV lines inoperable" to be consistent with guidance in the STS and Required Action B.1 will be revised to state "Restore one MSADV line to OPERABLE status".

11. TS 3.7.12 and the associated Bases for 3.7.12 will be revised as indicated in Attachment 7 to add a Condition B for two ABCAEES divisions inoperable due to an inoperable mechanical penetration room or safety related mechanical equipment room boundary similar to the equivalent requirements of Condition B in STS 3.7.13.

    A reviewer's note will also be added to the Bases of 3.7.12 that states adoption of Condition B is dependent on a commitment from the operating licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B; consistent with STS.

    The APR1400 design does not have any toxic gas sources that could impact the habitability of the unit and, therefore, the ABCAEES does not have a safety function to mitigate the consequences of a toxic gas event. Based on the COL applicant's design of the various gas supplies, future needs could arise that may rely on the ABCAEES for toxic gas mitigation.

    Therefore, a reviewer's note is added to the Bases stating that toxic gas isolation mode is to be determined by the COL applicant and toxic gas as a potential hazard will be placed in brackets.

Impact on DCD

Same as changes described in the impact on Technical Specifications section.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

TS Sections 3.7.4 and 3.7.12 and Bases Sections B 3.4.11, B 3.7.4, and B 3.7.12 will be revised as indicated in the attachments.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical or Environmental Report.

The LTOP System controls RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1).

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.11 Low Temperature Overpressure Protection (LTOP) Syster

BASES

BACKGROUND

~~The purpose of the low temperature overpressure protection (LTOP) system LCO is to limit reactor coolant pressure at low temperatures to levels which will not compromise reactor coolant pressure boundary (RCPB) integrity (Reference 1).~~ The reactor vessel is the limiting component for demonstrating that protection is provided. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," provides the allowable combinations for operational pressure and temperature during cooldown, shutdown, and heatup to keep from violating the Reference 1 requirements during the LTOP MODES.

The reactor vessel material is less tough at low temperatures than at normal operating temperatures. As reactor vessel neutron exposure accumulates, the vessel material toughness decreases and becomes less resistant to pressure stress at low temperatures (Reference 2). RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased.

Revised. Refer to the next page for the revised backgroud

~~Overpressure protection given by the LCO is provided by placing the SCS suction line relief valves in service or depressurizing the reactor coolant system (RCS) through an open vent. The open RCS vent or the SCS suction line relief valves are the overpressure protection devices which provide backup to the operator in terminating increasing pressure events.~~

operation of one charging pump;

APPLICABLE SAFETY ANALYSES

Safety analyses (Reference 3) demonstrate that the reactor vessel is adequately protected against exceeding the P/T limits during shutdown. Transients that are capable of overpressurizing the RCS have been identified and evaluated. Postulated transients include inadvertent safety injection actuation; energizing the pressurizer heaters; ~~failing the makeup control valve open; temporary loss of decay heat removal;~~ and, reactor coolant thermal expansion caused by reactor coolant pump (RCP) start causing heat transfer from hot steam generators.

one

Revised for the BACKGROUND

The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only while shutdown; a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3 requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the P/T limits.

This LCO provides RCS overpressure protection by having adequate pressure relief capacity. The pressure relief capacity requires either two OPERABLE SCS suction line relief valves or the RCS depressurized and an RCS vent of sufficient size. One SCS suction line relief valve or the RCS vent is sufficient to provide the overpressure protection necessary to terminate an increasing pressure event.

The LTOP System for pressure relief consists of two OPERABLE SCS suction line relief valves with their opening setpoints or an RCS vent of sufficient size. Two relief valves are required for redundancy. One SCS suction line relief valve has adequate relieving capability to prevent overpressurization for the limiting low temperature overpressurization transients.

SCS suction line relief valve Requirements

As designed for the LTOP System, the SCS suction line relief valves automatically open if the RCS pressure approaches their opening setpoints. When the SCS suction line relief valves are opened in an increasing pressure transient, the release of coolant causes the pressure increase to slow and maintain RCS pressure below the P/T limits.

RCS Vent Requirements

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from an RCS overpressure transient and maintaining pressure below the P/T limits.

For an RCS vent to meet the specified flow capacity, it requires removing a pressurizer manway that located above the level of reactor coolant, so as not to drain the RCS when open.

steam generator secondary water temperature of 138.9 °C (250 °F) higher than

BASES

APPLICABLE SAFETY ANALYSES (continued)

The LTOP system is designed to protect the RCS from overpressurization resulting from any of the following conditions:

a. The starting of an idle RCP with the ~~secondary water temperature of the steam generator less than or equal to 55.6 °C (100 °F) above~~ the RCS cold leg temperature

b. The inadvertent starting of four (4) safety injection pumps and one charging pump

Revised. Refer to the next page for the revised APPLICABLE SAFETY ANALYSES

~~LTOP system satisfies LCO SELECTION CRITERION 2.~~

LCO

~~The LCO requires that the SCS suction line relief valves be OPERABLE with a setpoint at the overpressure limit or the RCS be depressurized via an open vent.~~

APPLICABILITY

Revised. Refer to the last page for the revised LCO

This LCO is applicable in MODE 4 with the temperature of any RCS cold leg less than or equal to the LTOP enable temperature specified in the PTLR during heatup, in MODE 5, and in MODE 6 with the reactor vessel head on. The LCO is not applicable for operating conditions above the specified temperatures because the POSRVs are able to provide overpressure protection. With the vessel head off, there is no need for overpressure protection.

ACTIONS

A.1 and B.1

With one SCS suction line relief valve inoperable, overpressure relieving capability is reduced. The other SCS suction line relief valve remains OPERABLE or the RCS must be depressurized through an open vent. Either of these paths provides adequate overpressure protection. However, redundancy has been lost. The 7-day Completion Time in MODE 4 and 24-hour Completion Time in MODES 5 and 6 (per GL 90-06) (Reference 4) reflect the need to restore redundancy and also takes into consideration the other overpressure protection paths available in this condition.

Revised for the APPLICABLE SAFETY ANALYSES

SCS suction line relief valve Performance

SCS suction line relief valves are opened if the RCS pressure increases to the LTOP valve opening setpoints. When SCS suction line relief valves are opened in an increasing pressure transient, the release of coolant causes the pressure increase to slow and limits the RCS pressure below the P/T limits.

RCS Vent Performance

With the RCS depressurized, a vent size of more than one of SCS suction line relief valve flow area is capable of mitigating the limiting allowed LTOP overpressure transient. In that event, this size vent maintains RCS pressure less than the maximum RCS pressure on the P/T limits.
The RCS vent is passive and is not subject to active failure.

LTOP System satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

Revised for the LCO

LCO

This LCO is required to ensure that the LTOP System is OPERABLE. The LTOP System is OPERABLE when one of the limiting low temperature overpressurization transients occurs and pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

The elements of the LCO that provide overpressure mitigation through pressure relief are:

a. Two SCS suction line relief valves or
b. The depressurized RCS and an RCS vent.

A SCS suction line relief valve is OPERABLE for LTOP when its lift setpoint is set within the limits specified in the P/T limits and testing has proven its ability to open at that setpoint.

An RCS vent is OPERABLE when open with an area $\geq$ 180.6 cm^2 (28 in^2) which is more than one of SCS suction line relief valve flow area.

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

BASES

REFERENCES

1. 10 CFR Part 50, Appendix G.
2. Generic Letter 88-11.
3. DCD Tier 2, ~~Chapter 15.~~ Chapter 5
4. Generic Letter 90-06.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The LTOP system is designed to protect the RCS from overpressurization resulting from any of the following conditions:

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LTOP system satisfies LCO SELECTION CRITERION 2.

LCO

The LCO requires that the SCS suction line relief valves be OPERABLE with a setpoint at the overpressure limit or the RCS be depressurized via an open vent.

APPLICABILITY

This LCO is applicable in MODE 4 with the temperature of any RCS cold leg less than or equal to the LTOP enable temperature specified in the PTLR during heatup, in MODE 5, and in MODE 6 with the reactor vessel head on. The LCO is not applicable for operating conditions above the specified temperatures because the POSRVs are able to provide overpressure protection. With the vessel head off, there is no need for overpressure protection.

ACTIONS

A.1 and B.1

With one SCS suction line relief valve inoperable, overpressure relieving capability is reduced. The other SCS suction line relief valve remains OPERABLE or the RCS must be depressurized through an open vent. Either of these paths provides adequate overpressure protection. However, redundancy has been lost. The 7-day Completion Time in MODE 4 and 24-hour Completion Time in MODES 5 and 6 (per GL 90-06) (Reference 4) reflect the need to restore redundancy and also takes into consideration the other overpressure protection paths available in this condition.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The LTOP system is designed to protect the RCS from overpressurization resulting from any of the following conditions:

a. The starting of an idle RCP with the secondary water temperature of the steam generator less than or equal to 55.6 °C (100 °F) above the RCS cold leg temperature

b. The inadvertent starting of four (4) safety injection pumps and one charging pump

LTOP system satisfies LCO SELECTION CRITERION 2.

LCO

The LCO requires that the SCS suction line relief valves be OPERABLE with a setpoint at the overpressure limit or the RCS be depressurized via an open vent.

APPLICABILITY

This LCO is applicable in MODE 4 with the temperature of any RCS cold leg less than or equal to the LTOP enable temperature specified in the PTLR during heatup, in MODE 5, and in MODE 6 with the reactor vessel head on. The LCO is not applicable for operating conditions above the specified temperatures because the POSRVs are able to provide overpressure protection. With the vessel head off, there is no need for overpressure protection.

ACTIONS

A.1 and B.1

With one SCS suction line relief valve inoperable, overpressure relieving capability is reduced. The other SCS suction line relief valve remains OPERABLE ~~or the RCS must be depressurized through an open vent. Either~~ of these paths provides adequate overpressure protection. ~~However, redundancy has been lost. The 7-day Completion Time in~~ MODE 4 and 24-hour Completion Time in MODES 5 and 6 (per GL 90-06) (Reference 4) reflect the need to restore redundancy and also takes into consideration the other overpressure protection paths available in this condition.

and one

3.7 PLANT SYSTEMS

3.7.4 Main Steam Atmospheric Dump Valves (MSADVs)

per steam generator

LCO 3.7.4 Two MSADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when a steam generator is being relied upon for heat removal.

ACTIONS

Delete

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~required~~ MSADV line inoperable.	A.1 Restore MSADV line to OPERABLE status.	7 days
B. Two or more MSADV lines inoperable.	B.1 Restore all but one MSADV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4, without reliance upon steam generator for heat removal.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each MSADV.	18 months
SR 3.7.4.2	Verify one complete cycle of each MSADV block valve.	18 months

BASES

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when steam generator is being relied upon for heat removal, the MSADVs are required to be OPERABLE.

In MODES 5 and 6, an SGTR is not a credible event.

ACTIONS

A.1

Delete

With one ~~required~~ MSADV line inoperable, action must be taken to restore the OPERABLE status within 7 days. The 7-day Completion Time takes into account the redundant capability afforded by the remaining OPERABLE MSADV lines, and a nonsafety grade backup in the steam bypass system and MSSVs.

B.1

With two MSADV lines inoperable, action must be taken to restore one of the MSADV lines to OPERABLE status. As the block valve can be closed to isolate an MSADV, some repairs could be possible with the unit at power. The 24-hour Completion Time is reasonable to repair inoperable MSADV lines, based on the availability of the steam bypass system and MSSVs, and the low probability of an event occurring during this period that requires the MSADV lines.

C.1 and C.2

If the MSADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon the steam generator for heat removal, within 24 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

3.7 PLANT SYSTEMS

3.7.4 Main Steam Atmospheric Dump Valves (MSADVs)

LCO 3.7.4 Two MSADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when a steam generator is being relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required MSADV line inoperable.	A.1 Restore MSADV line to OPERABLE status.	7 days
B. Two ~~or more~~ MSADV lines inoperable.	B.1 Restore ~~all but~~ one MSADV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4, without reliance upon steam generator for heat removal.	6 hours 24 hours

Delete

Delete

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each MSADV.	18 months
SR 3.7.4.2	Verify one complete cycle of each MSADV block valve.	18 months

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Controlled Area Emergency Exhaust System (ABCAEES)

LCO 3.7.12 Two ABCAEES divisions shall be OPERABLE.

NOTE

The mechanical penetration room and safety-related mechanical equipment room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABCAEES division inoperable.	A.1 Restore inoperable ABCAEES division to OPERABLE status.	7 days
C. ~~B.~~ Required Action and associated Completion Time not met.	C.1 ~~B.1~~ Be in MODE 3. AND C.2 ~~B.2~~ Be in MODE 5.	6 hours 36 hours
B. Two ABCAEES divisions inoperable due to inoperable mechanical penetration room or safety-related mechanical equipment room boundary	B.1 Restore mechanical penetration room and safety-related mechanical equipment room boundary	24 hours

BASES

LCO (continued)

The LCO is modified by a Note allowing the mechanical penetration room and safety-related mechanical equipment room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the MCR. This individual will have a method to rapidly close the opening when a need for the mechanical penetration rooms or the safety-related mechanical equipment rooms isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ABCAEES is required to be OPERABLE consistent with the OPERABILITY requirements of the ECCS.

In MODES 5 and 6, the ABCAEES is not required to be OPERABLE, since the ECCS is not required to be OPERABLE.

ACTIONS

A.1

With one ABCAEES division inoperable, the inoperable ABCAEES division must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE division is adequate to perform the ABCAEES function.

Insert "A"

The 7-day Completion Time is appropriate because the risk contribution of the system is less than that for the ECCS (72-hour Completion Time) and this system is not a direct support system for the ECCS. The 7-day Completion Time is reasonable, based on the low probability of a DBA occurring during this time period and the consideration that the remaining division can provide the required capability.

C.1 and C.2

~~B.1 and B.2~~

If the inoperable ABCAEES division cannot be restored to OPERABLE status within the associated Completion Time, the unit must be in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours.

"A"

B.1

----------REVIEWER'S NOTE----------

Adoption of Condition B is dependent on a commitment from the operating licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.

----------REVIEWER'S NOTE----------

The need for toxic gas isolation mode will be determined by the COL applicant.

If the mechanical penetration room or safety-related mechanical equipment room boundary is inoperable, the ABCAEES divisions cannot perform their intended functions. Actions must be taken to restore an OPERABLE mechanical penetration room and safety-related mechanical equipment room boundary within 24 hours.

During the period that the mechanical penetration room or safety-related mechanical equipment room boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, [toxic gases], smoke, temperature, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the mechanical penetration room or safety-related mechanical equipment room boundary.