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U-603332
8E.100a
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Docket No. 50-461

10CFR50.90

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: Clinton Power Station Proposed Amendment of
Facility Operating License No. NPF-62 (LA-99-023)

Dear Madam or Sir:

Pursuant to 10 CFR 50.90, AmerGen Energy Company, LLC (AmerGen) hereby applies for amendment of Facility Operating License No. NPF-62 for Clinton Power Station (CPS). Specifically, AmerGen requests review and approval of proposed changes to the Technical Specifications (TSs) to remove the minimum operating time specified in the testing requirements of Surveillance Requirement (SR) 3.6.3.3.1 for the Containment/Hydrogen Mixing System.

A description of the proposed changes, justification, Basis for No Significant Hazards Consideration, and Environmental Impact Consideration are provided in Enclosure 2. An annotated copy of the affected page from the current TS is provided in Enclosure 3. Corresponding TS Bases changes are provided in Enclosure 4 and are for information only. Further, an affidavit supporting the facts set forth in this letter and its enclosures is provided in Enclosure 1.

Sincerely yours,

Michael T. Coyle
Vice President

JEP/JLP/krk

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Enclosures

cc: NRC Clinton Licensing Project Manager
Regional Administrator, USNRC Region III
NRC Resident Office, V-690
Illinois Department of Nuclear Safety

AFFIRMATION

Michael T. Coyle, being first duly sworn, deposes and says: That he is Vice President for Clinton Power Station; that this application for amendment of Facility Operating License NPF-62 has been prepared under his supervision and direction; that he knows the contents thereof; and that the letter and the statements made and the facts contained therein are true and correct to the best of his knowledge and belief.

Date: This 5TH day of October 2000.

Signed: Michael T. Coyle
Michael T. Coyle
Vice President

STATE OF ILLINOIS)
DeWitt COUNTY) SS.

Subscribed and sworn to before me this 5th day of October 2000.

" OFFICIAL SEAL "
Jacqueline S. Matthias
Notary Public, State of Illinois
My Commission Expires 11/24/2001

Jacqueline S. Matthias
(Notary Public)

Revision of CPS Technical Specification Surveillance Requirement (SR) 3.6.3.3.1 for Containment/Drywell Hydrogen Mixing System

BACKGROUND

The Containment/Drywell Hydrogen Mixing System is designed to be operated following a design bases accident (DBA) to ensure a uniformly mixed containment atmosphere following the DBA. This provides the capability for reducing the drywell hydrogen concentration to approximately the bulk average primary containment concentration, and thus minimizes the potential for local hydrogen burns due to the formation of hydrogen pockets above the flammable concentration level. The system consists of two, 100-percent redundant subsystems, with each subsystem primarily consisting of a compressor and associated valves, controls, and piping.

Operability requirements for the Containment/Drywell Hydrogen Mixing System are specified in Technical Specification (TS) 3.6.3.3, "Containment/Drywell Hydrogen Mixing Systems." Associated Surveillance Requirement (SR) 3.6.3.3.1 requires that the system be operated for ≥ 15 minutes every 92 days. The purpose of the proposed change to this SR is to eliminate the minimum operating time (of ≥ 15 minutes) specified in the SR. To facilitate a description, basis and justification for the proposed change for this Technical Specification, a brief description of the CPS design basis and basis for the Surveillance Requirement is provided as follows.

Design Basis for the Containment/Drywell Hydrogen Mixing System

The most limiting DBA relative to hydrogen generation is a loss of coolant accident (LOCA). Following a LOCA, the drywell is immediately pressurized due to the release of steam into the drywell environment. This pressure is relieved by the lowering of the water level within the weir wall, clearing the drywell vents and allowing the mixture of steam and noncondensibles to flow into the primary containment through the suppression pool, thereby removing much of the heat from the steam. The remaining steam in the drywell then begins to condense. As steam flow from the reactor pressure vessel ceases, the drywell pressure falls rapidly.

During this post-LOCA period of time, the hydrogen mixing compressors are manually started. The compressors take suction from the drywell atmosphere through their motor-operated drywell isolation suction valves and discharge to the suppression pool through sparger assemblies. The sparger assemblies discharge below the water level of the suppression pool to remove any fission products, fission gases, and condense any steam before entering the containment. The operation of the compressors will cause the pressure in the drywell to decrease and become lower with respect to the containment. As a result of the negative pressure created in the drywell, primary containment atmosphere flows back into the drywell through the drywell post-LOCA vacuum relief valves, equalizing the pressure

and mixing the containment atmosphere with the drywell atmosphere. This mixing process ensures that local concentrations of hydrogen with greater than 4 percent by volume cannot occur following a LOCA.

Hydrogen may accumulate following a LOCA as a result of (1) a metal steam reaction between the zirconium fuel rod cladding and the reactor coolant; and (2) radiolytic decomposition of water in the reactor coolant system. The peak (maximum) hydrogen generation as a function of time following the initiation of the accident is calculated using the conservative assumptions recommended in Regulatory Guide 1.7, "Control of Combustible Gas Concentration in Containment Following a Loss of Coolant Accident." This calculation confirms that when the mitigating systems are actuated in accordance with plant procedures, the peak hydrogen concentration remains below the 4 volume percent flammable limit. A detailed discussion is provided in Section 6.2.5 of the Clinton Power Station Updated Safety Analysis Report (USAR).

The Containment/Drywell Hydrogen Mixing System is composed of two Engineered Safety Feature subsystems that are designed to operate following a LOCA in post-accident environments without loss of function. The subsystems are redundant, with each consisting of a compressor and associated valves, controls, and piping. Details of the Containment/Drywell Hydrogen Mixing System are provided in USAR Section 6.2.5.1.2.4.1. The hydrogen mixing compressor assembly for each subsystem is composed of a 60 hp, 460 VAC, 3600 rpm, 3-phase motor connected to a twelve-stage centrifugal compressor. Each has the capacity to pump 800 scfm at a pressure of 4.4 psid. Each subsystem is powered from a separate emergency power supply. Since each subsystem can provide 100% of the mixing requirements, the Containment/Drywell Hydrogen Mixing System will provide its design function with a worst case single active failure.

Associated Testing of Surveillance Requirement SR 3.6.3.3.1

For periodic verification of Containment/Hydrogen Mixing System operability, the existing SR 3.6.3.3.1 requires each subsystem to be operated for ≥15 minutes every 92 days. The purpose of this SR is to ensure that all associated controls are functioning properly. More specifically, the SR ensures that there is no blockage, compressor failure, or excessive vibration detected.

The current requirement specifies that the system (i.e., each subsystem) operates for a minimum of 15 minutes. Plant operating experience to date, however, has identified an operating challenge and a safety concern with the periodic performance of this surveillance test during plant operation. The concern is the impact of test performance on drywell pressure during normal plant operation. Specifically, due to the leak-tightness of the drywell, and the intended design of the mixing compressors, performance of the testing required per SR 3.6.3.3.1 causes a reduction in drywell pressure while the compressor(s) is operated. This presents a challenge to maintaining the drywell pressure within a certain

pressure range, the limits of which are established for conformance to other TS requirements described as follows:

(1) TS LCO 3.6.5.4, "Drywell Pressure," requires drywell-to-primary containment differential pressure to be maintained ≥ -0.2 psid and ≤ 1.0 psid. This limitation on the drywell-to-primary containment differential pressure ensures that (1) suppression pool water is not forced over the weir wall, (2) vent clearing does not occur during normal operation, (3) containment conditions are consistent with the safety analyses, and (4) LOCA drywell pressures and pool swell loads are within design values. In practice, the upper limit can sometimes be an operational challenge because of the inherent leak tightness of the drywell at CPS. Even minor air leakage from the many air-operated components in the drywell can cause drywell pressure to increase such that the drywell pressure must sometimes be equalized (to the primary containment) to maintain pressure below this limit. While the inherent leak tightness of the drywell can cause drywell pressure to increase for the noted reason, it can also cause drywell pressure to decrease during performance of mixing compressor operation (which, by design, draws a vacuum on the drywell), as further explained below.

(2) TS LCO 3.6.5.6, "Drywell Post-LOCA Vacuum Relief System," requires the post-LOCA vacuum breakers to be capable of fully opening at a differential pressure of ≤ 0.2 psid. This limit for the vacuum breakers is consistent with the lower limit specified in TS 3.6.5.4 (as described above). Uncertainties in the setpoints associated with the vacuum breakers dictate that some margin to the -0.2 psid limit should be maintained to prevent unnecessary challenges to the vacuum breakers during plant operation.

From the above, it can be seen that during normal plant operation at CPS, drywell pressure must be maintained at a level that provides margin to the upper operating limit established for compliance with the TS 3.6.5.4, as well as margin to the lower operating limit associated with this TS and TS 3.6.5.6. The leak tightness of the drywell is a factor in maintaining drywell pressure to within the desired band.

Experience with testing performance pursuant to SR 3.6.3.3.1, however, has shown that running a hydrogen mixing compressor(s) for an extended period of time can reduce drywell pressure significantly due to the leak tightness of the drywell at CPS (as explained above). A 15-minute test run of the mixing compressor(s) can cause drywell pressure to change by an amount that can challenge the lower drywell pressure limit when the test is begun at normal drywell operating pressure, or even at an initial operating pressure close to the upper drywell pressure limit.*

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* During a recent surveillance test performance of the Containment/Drywell Hydrogen Mixing System, the drywell pressure was reduced such that the plant was required to enter LCO 3.6.5.4. Actions were taken to restore the drywell-to-primary containment differential pressure to within limits within the one-hour Completion Time. However, if limits were not restored within the hour, actions would have been required to be taken to shut down the plant.

By design, the hydrogen mixing compressors are hard-piped directly to (and from) the drywell with no alternate flow path for testing. Such a design minimizes the potential for drywell bypass leakage through the hydrogen mixing system boundaries. As discussed below, eliminating the minimum 15-minute run time would not impact the reliability of the compressors, since it would reduce the potentially adverse operational impact of such testing.

DESCRIPTION OF PROPOSED CHANGE

The proposed change to the Technical Specifications, as reflected in the annotated TS pages provided in Enclosure 3, removes the minimum run time requirement of 15 minutes. Specifically, SR 3.6.3.3.1 would be revised as follows:

Current TS SR 3.6.3.3.1:

Operate each Containment/Drywell Hydrogen Mixing System for ≥ 15 minutes.

Proposed TS SR 3.6.3.3.1:

Operate each Containment/Drywell Hydrogen Mixing System.

A corresponding markup to the Bases for SR 3.6.3.3.1 is provided for information only in Enclosure 4.

JUSTIFICATION FOR PROPOSED CHANGES

The proposed change is necessary due to the concern of drywell pressure reduction during the performance of the SR. The existing CPS Bases for SR 3.6.3.3.1 do not justify or provide a specific basis for the 15-minute minimum run time. The Bases only state that operating each Containment/Drywell Hydrogen Mixing System for a 15-minute run time ensures that "each system is Operable and that all associated controls are functioning properly." This would include the detection of blockage, compressor failure, or excessive vibration.

During the performance of the SR, data is taken for run time, flow, and vibrations. Following a startup period, allowing the apparatus to achieve the designed speed and actuation of all delayed support components, the flow and vibration values are recorded. Any abnormality in the functioning of the equipment would appear at this time. This data provides the information that supports verifying the system is capable of performing its intended function. The various data are recorded following two minutes of operation of the compressors. With proper preparation, the collection of data can be completed in less than five minutes.

The hydrogen mixing compressors are also run during testing performed pursuant to SR 3.6.3.3.2 for the demonstration of the Containment/Drywell Hydrogen Mixing System flow rate. This surveillance is performed every 18 months and is a more complete operation of the system, wherein full vibrations and temperature data are collected after a time that allows the bearing temperatures to achieve a steady state temperature. This test is typically performed with a system run time of ≥ 30 minutes or until the parameters reach steady state. Although not stated in the TS Bases, it might be surmised that obtaining a steady state temperature was the basis for the 15-minute run time requirement. However, 15 minutes does not provide an adequate time for the equipment to reach a steady state temperature, and it is not needed to verify satisfactory operation of the system consistent to the extent required by SR 3.6.3.3.1.

It should be noted that SR data, to date, has yielded consistently acceptable results and shown little change over time. Thus, from a compressor performance standpoint, a 15-minute run time adds no additional benefit compared to a shorter duration of time long enough to gather the data. Discussions with the equipment vendor concluded that demonstrating reliability and operability of the system (per SR 3.6.3.3.1) should be based on the data gathered and not on a 15-minute run time.

CPS has investigated options for creating an alternate flow path for testing purposes so that this proposed change would not be necessary. Being able to draw from and return to the same volume would circumvent the possibility of creating an undesirable pressure differential between the drywell and containment. However, based on the system design as previously described, creating such an alternate flow path for the mixing system would require a design change.

CPS has also investigated a method for venting the drywell to relieve the negative pressure imposed by the mixing compressor(s) during performance of the testing required per SR 3.6.3.3.1. This would minimize the pressure perturbation imposed on the drywell. This investigation has identified that the drywell purge system can be used to create a pathway between the drywell and containment. However, this is not the intended use for that system and requires careful administrative control. Such a pathway constitutes a direct connection between the drywell and containment atmospheres while in use, which can involve ALARA concerns. Further, such use of the purge system presents additional challenges to the associated drywell isolation valves. Therefore, this is not considered to be an acceptable long-term solution.

In summary, it has been determined that the proposed changes to TS SR 3.6.3.3.1 will not reduce the effectiveness of testing required to verify operability of the hydrogen mixing system. At the same time, the reduced testing requirements will mitigate the operational concern or risk associated with the periodic drywell pressure perturbations caused by such testing during plant operation. The proposed changes are thus considered to be an acceptable compromise between these two concerns.

BASIS FOR NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

In accordance with 10 CFR 50.92, a proposed change to the operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed change would not: (1) involve a significant increase in the probability or consequences of any accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. The proposed change has been evaluated against each of the three criteria and it has been determined that the change does not involve a significant hazard because:

(1) The proposed change does not involve a significant increase in the probability or consequences of any accident previously evaluated.

The proposed Technical Specification (TS) change deletes the minimum run time requirement (of 15 minutes) for the Containment/Drywell Hydrogen Mixing System as denoted in Surveillance Requirement 3.6.3.3.1. Satisfying a TS Surveillance Requirement ensures that the associated system will function to mitigate the consequences of an accident, and, as such is not an initiator of an accident or malfunction. Therefore, since such a test requirement or operation is not an initiator to any accident previously evaluated, the probability of an accident previously evaluated is not significantly increased.

In addition, the equipment being tested is still required to be operable and capable of performing its accident mitigation function assumed in the accident analysis. Eliminating the time requirement from the Surveillance Requirement does not reduce or relax the requirements to ensure that all controls are functioning properly. Also, it does not reduce or relax the requirements for ensuring the degraded conditions such as piping blockage, compressor failure or excessive vibration can be detected for corrective action. As a result, the consequences of any accident previously evaluated are not significantly effected. Therefore, this change does not involve a significant increase in the consequences of an accident previously evaluated.

(2) The proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed TS change, as denoted in Surveillance Requirement 3.6.3.3.1, does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. No new potential accident initiators are therefore introduced by the proposed change. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) The proposed change will not involve a significant reduction in the margin of safety.

The proposed TS change to delete the minimum run time requirement in Surveillance Requirement 3.6.3.3.1 does not result in a significant reduction in the margin of safety. As provided in the justification for the proposed change, the 15-minute run time acceptance criterion is not necessary to ensure that the Containment/Drywell Hydrogen Mixing can perform its required function. Thus, if a margin of safety can be ascribed to proper operation of this system for LOCA mitigation, the system will continue to be tested in a manner that gives confidence that it can perform its assumed safety function. Therefore, this change does not involve a significant reduction in a margin of safety.

Based upon the above analysis, the proposed change will not increase the probability or consequences of any accident previously evaluated, create the possibility of a new or different kind of accident from any accident previously evaluated, or involve a significant reduction in the margin of safety. Therefore, the proposed change meets the requirements of 10 CFR 50.92(c) and involves no significant hazards consideration.

Environmental Impact Consideration

The proposed license amendment was evaluated against the criteria of 10 CFR 51.22 for environmental considerations. Since the proposed change involves no change to the design or operation of the facility (apart from reduced testing of the affected equipment during normal plant operation), the proposed change (1) does not significantly increase individual or cumulative occupational radiation exposures, (2) does not significantly change the types or significantly increase the amount of effluents that may be released offsite, and (3) as discussed in this enclosure, does not involve a significant hazards consideration. Based on the foregoing, it has been concluded that the proposed Technical Specification change meets the criteria given in 10 CFR 51.22(c)(9) for categorical exclusion from the requirement for an Environmental Impact Statement.

Marked-Up Pages of the Technical Specifications

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3.6 CONTAINMENT SYSTEMS

3.6.3.3 Containment/Drywell Hydrogen Mixing Systems

LCO 3.6.3.3 Two Containment/Drywell Hydrogen Mixing Systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One Containment/ Drywell Hydrogen Mixing System inoperable.	A.1	--------NOTE--------- LCO 3.0.4 is not applicable. ----------	
		Restore Containment/ Drywell Hydrogen Mixing System to OPERABLE status.	30 days
B. Two Containment/ Drywell Hydrogen Mixing Systems inoperable.	B.1	Verify by administrative means that the hydrogen control function is maintained.	1 hour
	AND		
	B.2	Restore one Containment/Drywell Hydrogen Mixing System to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.3.1	Operate each Containment/Drywell Hydrogen Mixing System ~~for ≥ 15 minutes~~.	92 days
SR 3.6.3.3.2	Verify each Containment/Drywell Hydrogen Mixing System flow rate is ≥ 800 scfm.	18 months

Marked-Up Pages of the Technical Specification Bases

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B 3.6 CONTAINMENT SYSTEMS

B 3.6.3.3 Containment/Drywell Hydrogen Mixing System

BASES

BACKGROUND

The Containment/Drywell Hydrogen Mixing System ensures a uniformly mixed post accident containment atmosphere, thereby minimizing the potential for local hydrogen burns due to a pocket of hydrogen above the flammable concentration.

The Containment/Drywell Hydrogen Mixing System is an Engineered Safety Feature and is designed to operate following a loss of coolant accident (LOCA) in post accident environments without loss of function. Each system consists of a compressor (located inside primary containment with a suction line connected to the drywell) and associated valves, controls, and piping. Each system is sized to pump 800 scfm. Each system is powered from a separate emergency power supply. Since each system can provide 100% of the mixing requirements, the system will provide its design function with a worst case single active failure.

Following a LOCA, the drywell is immediately pressurized due to the release of steam into the drywell environment. This pressure is relieved by the lowering of the water level within the weir wall, clearing the drywell vents and allowing the mixture of steam and noncondensibles to flow into the primary containment through the suppression pool, removing much of the heat from the steam. The remaining steam in the drywell begins to condense. As steam flow from the reactor pressure vessel ceases, the drywell pressure falls rapidly. The compressors are manually started after a LOCA. The compressors draw in air from the drywell and force it through the suppression pool and into the primary containment. As a result of the negative pressure created in the drywell due to the operation of the compressors, primary containment atmosphere flows back into the drywell through the drywell post-LOCA vacuum relief valves, mixing the containment atmosphere with the drywell atmosphere to dilute the hydrogen. While containment and drywell atmosphere mixing continues following the LOCA, hydrogen continues to be produced. Eventually, the hydrogen recombiners are manually placed in operation.

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BASES (continued)

APPLICABLE SAFETY ANALYSES

The Containment/Drywell Hydrogen Mixing System provides the capability for reducing the drywell hydrogen concentration to approximately the bulk average primary containment concentration following a Design Basis Accident (DBA). The limiting DBA relative to hydrogen generation is a LOCA.

Hydrogen may accumulate in primary containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant; and

b. Radiolytic decomposition of water in the Reactor Coolant System.

To evaluate the potential for hydrogen accumulation in primary containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 1 are used to maximize the amount of hydrogen calculated.

The calculation confirms that when the mitigating systems are actuated in accordance with plant procedures, the peak hydrogen concentration in the primary containment remains < 4 v/o.

The Containment/Drywell Hydrogen Mixing System satisfies Criterion 3 of the NRC Policy Statement.

LCO

Two systems must be OPERABLE to ensure operation of at least one Containment/Drywell Hydrogen Mixing System in the event of a worst case single active failure. Operation with at least one OPERABLE Containment/Drywell Hydrogen Mixing System provides the capability of controlling the hydrogen concentration in the drywell without exceeding the flammability limit.

APPLICABILITY

In MODES 1 and 2, the two Containment/Drywell Hydrogen Mixing Systems ensure the capability to prevent localized hydrogen concentrations above the flammability limit of 4.0 v/o in the drywell, assuming a worst case single active failure.

In MODE 3, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that

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BASES

APPLICABILITY (continued)

calculated for the DBA LOCA. Also, because of the limited time in this MODE, the probability of an accident requiring the Containment/Drywell Hydrogen Mixing System is low. Therefore, the Containment/Drywell Hydrogen Mixing System is not required in MODE 3.

In MODES 4 and 5, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations in these MODES. Therefore, the Containment/Drywell Hydrogen Mixing System is not required in these MODES.

ACTIONS

A.1

With one Containment/Drywell Hydrogen Mixing System inoperable, the inoperable system must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE system is adequate to perform the hydrogen mixing function. However, the overall reliability is reduced because a single failure in the OPERABLE system could result in reduced hydrogen mixing capability. The 30 day Completion Time is based on the low probability of failure of the OPERABLE Containment/Drywell Hydrogen Mixing system, the low probability of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, and the amount of time available after the event for operator action to prevent hydrogen accumulation from exceeding this limit.

Required Action A.1 has been modified by a Note indicating the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one system is inoperable. This allowance is provided because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, the low probability of the failure of the OPERABLE system, and the amount of time available after a postulated LOCA for operator action to prevent exceeding the flammability limit.

B.1 and B.2

With two Containment/Drywell Hydrogen Mixing Systems inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by one division of the hydrogen igniters. The 1 hour Completion Time allows a

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BASES

ACTIONS

B.1 and B.2 (continued)

reasonable period of time to verify that a loss of hydrogen control function does not exist. The verification may be performed as an administrative check by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two Containment/ Drywell Hydrogen Mixing Systems inoperable for up to 7 days. Seven days is a reasonable time to allow two Containment/ Drywell Hydrogen Mixing Systems to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit.

C.1

If any Required Action and associated Completion Time cannot be met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.3.1

Operating each Containment/Drywell Hydrogen Mixing System ~~for ≥ 15 minutes~~ ensures that each system is OPERABLE and ~~that all~~ associated controls are functioning properly. It also ensures that blockage, compressor failure, or excessive vibration can be detected for corrective action. The 92 day Frequency is consistent with Inservice Testing Program Frequencies, operating experience, the known reliability of the compressor and controls, and the two redundant subsystems available.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.3.1 (continued)

With regard to operating time values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 3).

SR 3.6.3.3.2

Verifying that each Containment/Drywell Hydrogen Mixing System flow rate is ≥ 800 scfm ensures that each system is capable of maintaining drywell hydrogen concentrations below the flammability limit. In practice, verifying that the system differential pressure is less than 4.4 psid with the compressor running ensures that the system flow rate is greater than 800 scfm. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

With regard to system differential pressure values used to verify the required system flow rate as read from plant indication instrumentation, the procedural limit is considered to be not nominal and therefore requires compensation for instrument indication uncertainties (Ref. 3).

REFERENCES

1. Regulatory Guide 1.7.
2. USAR, Section 6.2.5.
3. Calculation IP-O-0076.