

ITS NRC Questions

Id	1031
NRC Question Number	GMW-002
Category	Technical
ITS Section	3.8
ITS Number	3.8.1
DOC Number	
JFD Number	4
JFD Bases Number	
Page Number(s)	39
NRC Reviewer Supervisor	Rob Elliott
Technical Branch POC	Add Name
Conf Call Requested	N
NRC Question	<p><u>(TS 3.8) Attachment 1, Volume 13, Rev. 0, Page 39 of 289</u> Regarding the proposed deletion of iSTS TS 3.8.1.c and iSTS 3.8.1 ACTION F , provide an explanation of why the KPS time delay relays do not require a TS LCO in accordance with 10 CFR 50.36 criteria. The JFD for deletion of this iSTS LCO states, in part, the following:“The bracketed items specified in ISTS LCO 3.8.1.c and ISTS 3.8.1 ACTION F have been deleted since the Kewaunee design does not include automatic load sequencers.” The iSTS “REVIEWER’S NOTE” for this LCO (3.8.1.c) states the following:“This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event.” Elsewhere in the document, including ISTS SR 3.8.1.11 (ITS SR 3.8.1.12), ISTS SR 3.8.1.19 (ITS SR 3.8.1.16) and the proposed ITS Bases, the phrase “automatic load sequencers” have been revised to reflect the KPS use of “time delay relays.”</p>
Attach File	1
Attach File	2
Issue Date	11/12/2009
Added By	Gerald Waig
Date	

Enclosure (1 of 4), Q&A to Attachment 1, Volume 13 (Section 3.8) Page 2 of 41

Modified

Modified By

Date Added **11/12/2009 2:09 PM**

Notification **NRC/LICENSEE Supervision**

Licensee Response/NRC Response/NRC Question Closure

Id	841
NRC Question Number	GMW-002
Select Application	Licensee Response
Response Date/Time	11/19/2009 6:50 AM
Closure Statement	
Response Statement	<p>The ISTS includes a requirement for Train A and Train B load sequencers, as shown in ITS LCO 3.8.1.c (Page 23). ISTS 3.8.1 ACTION F provides the actions if one of the two sequencers is inoperable, and allows 12 hours to restore the sequencer to OPERABLE status. This 12 hour Completion Time is the same as the time allowed for one offsite circuit and one DG inoperable concurrently as shown in ISTS ACTION D (Page 25). As stated in the Reviewer's Note, the Condition may be deleted if the load sequencer only affects the DG, i.e., it does not affect the offsite circuit. Furthermore, the ISTS Bases for ACTION F (Page 54) states that the sequencer is an essential support system to both the DG and offsite circuit, and that it affects every major ESF System in the Division.</p> <p>The KPS design does not include load sequencers of this design. Each major ESF component has individual time delay relays that operate individual components, not all ESF components. Thus, if a single time delay relay fails, only the individual component and the DG could be affected. The ITS Bases describes this in the Background section, first paragraph (Page 44). The ITS Bases states that when the DG is tied to the ESF bus, loads are then sequentially connected to its respective ESF bus by individual time delay relays.</p>
Question Closure Date	
Attachment 1	
Attachment 2	
Notification	NRC/LICENSEE Supervision Victor Cusumano Jerry Jones Bryan Kays Ray Schiele Gerald Waig
Added By	Robert Hanley
Date Added	11/19/2009 6:52 AM
Modified By	
Date	

Modified

Licensee Response/NRC Response/NRC Question Closure

Id **1001**

NRC Question Number **GMW-002**

Select Application **NRC Question Closure**

Response Date/Time

Closure Statement **This question is closed and no further information is required at this time to draft the Safety Evaluation.**

Response Statement

Question Closure Date **12/1/2009**

Attachment 1

Attachment 2

Notification **NRC/LICENSEE Supervision**

Added By **Gerald Waig**

Date Added **12/1/2009 4:30 PM**

Modified By

Date Modified

ITS NRC Questions

Id **1061**

NRC
Question
Number **GMW-003**

Category **Technical**

ITS Section **3.8**

ITS
Number **3.8.3**

DOC
Number

JFD
Number **5**

JFD Bases
Number

Page
Number(s) **118**

NRC
Reviewer
Supervisor **Rob Elliott**

Technical
Branch POC

Conf Call
Requested **N**

NRC
Question

Attachment 1, Volume 13, Rev. 0, Page 118 of 289 JUSTIFICATION FOR DEVIATIONSITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR JFD #5 STATES, in part: "The KPS CTS does not include any requirements for the Starting Air Systems. Thus, as long as enough air is in each required air start receiver bank to start the DG one time, the pressure is acceptable. KPS has maintained this requirement in the ITS. The SR 3.8.3.4 pressure ensures that the DG can be started at least one time." The KPS USAR states, in part, that the primary or reserve air storage tanks have sufficient storage to crank the DG for twenty seconds. Additionally, the start cycle described in the KPS USAR states that the DG may continue to crank for up to 15 seconds prior to a start failure fault lockout. The proposed KPS ITS 3.8.3 deletes ISTS Condition 3.8.3.E (minimum air start receiver pressure) and proposes a new Condition 3.8.3.E without a minimum air start receiver bank pressure. Bases on the above, explain why the minimum value (≥ 200 psig) for air start receiver bank pressure is not a required condition for TS 3.8.3.

Attach File
1

Attach File
2

Issue Date **11/16/2009**

Added By **Gerald Waig**

Enclosure (1 of 4), Q&A to Attachment 1, Volume 13 (Section 3.8) Page 7 of 41

Date
Modified

Modified By

Date Added **11/16/2009 9:57 AM**

Notification **NRC/LICENSEE Supervision**

Licensee Response/NRC Response/NRC Question Closure

Id **851**

NRC Question Number **GMW-003**

Select Application **Licensee Response**

Response Date/Time **11/19/2009 6:55 AM**

Closure Statement

Response Statement **ISTS 3.8.3 Condition E allows the starting air receivers to be less than the limit in ISTS SR 3.8.3.4, provided the air pressure is sufficient to provide one DG start. In this case, 48 hours is allowed to restore the limit in the SR. If sufficient air for one start is not provided, then ISTS 3.8.3 Condition F requires the DG to be declared inoperable immediately. The KPS ITS submittal has not adopted the 48 hour allowance provided in ISTS 3.8.3 Condition E. When the receiver air bank pressure not within the limit in ITS SR 3.8.3.4, ITS 3.8.3 Condition F must be entered. This is stated in the third Condition (One or more DGs with required starting air receiver bank pressure not within limits). Thus, when the receiver air bank pressure limit stated in ITS SR 3.8.3.4 is not met, in lieu of allowing 48 hours to restore the limit, an immediate declaration of DG inoperability must be made. Therefore, no changes to the ITS submittal appear necessary.**

Question Closure Date

Attachment 1

Attachment 2

Notification **NRC/LICENSEE Supervision
Victor Cusumano
Jerry Jones
Bryan Kays
Ray Schiele**

Added By **Robert Hanley**

Date Added **11/19/2009 6:55 AM**

Modified By

Date Modified

Licensee Response/NRC Response/NRC Question Closure

Id **1301**

NRC Question Number **GMW-003**

Select Application **Licensee Response**

Response Date/Time **12/17/2009 10:55 AM**

Closure Statement

Response Statement **After further discussion with the NRC reviewer, KPS will add the air receiver limit (200 psig) into the associated Condition for Condition F, in lieu of stating "not within limits."**

Question Closure Date

Attachment 1 **GMW-003 Markup 2 .pdf** (746KB)

Attachment 2

Notification **NRC/LICENSEE Supervision
Jerry Jones
Bryan Kays
Gerald Waig**

Added By **David Mielke**

Date Added **12/17/2009 10:53 AM**

Modified By

Date Modified

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.</p>	<p>F.1 Declare associated DG inoperable.</p> <p><u>OR</u></p> <p>One or more DGs with required air receiver bank pressure < 200 psig.</p> <p><u>OR</u></p> <p>Both DGs with Starting Air System inoperable due to inoperable air compressor.</p>	<p>Immediately</p>

DOCs M02, L01, and L03

3

5

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
3.7.a.7, Table 4.1-3, #9	<p>SR 3.8.3.1 Verify each fuel oil storage tank and associated day tanks contains \geq [33,000] gal of fuel.</p> <p>[32,888] usable</p>	31 days
DOC M02	<p>SR 3.8.3.2 Verify lubricating oil inventory is \geq [500] gal.</p> <p>504 for each DG</p>	31 days
DOC M02	<p>SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.</p>	In accordance with the Diesel Fuel Oil Testing Program
DOC M02	<p>SR 3.8.3.4 Verify each DG air start receiver pressure is \geq [225] psig.</p> <p>required 200 bank</p>	31 days
DOC M03	<p>SR 3.8.3.5 Check for and remove accumulated water from each fuel oil storage tank.</p> <p>6</p>	[92] [31] days
DOC M02	<p>SR 3.8.3.5 Verify each Starting Air System air compressor operates to automatically recharge the required air receiver bank.</p> <p>31 days</p>	31 days

1

2

2

2

4

5

Licensee Response/NRC Response/NRC Question Closure

Id **1831**

NRC Question Number **GMW-003**

Select Application **NRC Question Closure**

Response Date/Time

Closure Statement **This question is closed and no further information is required at this time to draft the Safety Evaluation.**

Response Statement

Question Closure Date **1/20/2010**

Attachment 1

Attachment 2

Notification **NRC/LICENSEE Supervision**

Added By **Gerald Waig**

Date Added **1/20/2010 1:33 PM**

Modified By

Date Modified

ITS NRC Questions

Id **1071**

NRC
Question
Number **GMW-004**

Category **Technical**

ITS Section **3.8**

ITS Number **3.8.3**

DOC
Number **L-3**

JFD Number

JFD Bases
Number

Page
Number(s) **116**

NRC
Reviewer
Supervisor **Rob Elliott**

Technical
Branch POC **Add Name**

Conf Call
Requested **N**

NRC
Question **Attachment 1, Volume 13, Rev. 0, Page 116 of 289 Proposed ITS 3.8.3, Required Action E.2 "NOTE" states as follows: "The cross-tie between the DG Starting Air Systems may be intermittently opened under administrative control to achieve and maintain the inoperable Starting Air System air receiver banks pressure \geq 200 psig." This note is not found in the KPS CTS or in the ISTS. Explain how the above proposed ITS Required Action maintains the independence of the DG starting air system as described in the KPS USAR.**

Attach File 1

Attach File 2

Issue Date **11/16/2009**

Added By **Gerald Waig**

Date
Modified

Modified By

Date Added **11/16/2009 10:07 AM**

Notification **NRC/LICENSEE Supervision**

Licensee Response/NRC Response/NRC Question Closure

Id **831**

NRC
Question
Number **GMW-004**

Select
Application **Licensee Response**

Response
Date/Time **11/17/2009 4:25 PM**

Closure
Statement

Response
Statement **Reference Flow Diagram Diesel Generator Startup Air Compressor A &B and Fish
Screen Air, OPERM-213-9.**

Each train of the D/G Startup Air System consists of one air compressor, a primary bank consisting of two air receivers, and a reserve bank consisting of two air receivers. The primary and reserve bank inlet piping is separated by two inlet check valves, one for each bank. The primary and reserve bank outlet piping is separated by one discharge check valve for the primary bank and one closed manual discharge valve for the reserve bank. Also, each primary and reserve bank has a normally closed, manual cross-connect valve. The cross-connect valves provide the ability to cross-connect the primary and reserve banks of an air system train. The cross-connect valves also provide the ability to cross-connect the bank(s) of one air system train to the bank(s) of the other air system train.

Normal alignment has the primary bank supplying the startup air to its associated D/G with the reserve bank isolated for supplying startup air to the D/G. However, the reserve bank air pressure is maintained by the air compressor through the inlet check valve. Cross-connect valves for the primary and reserve banks are closed.

When cross-connecting the OPERABLE D/G Startup Air System with the INOPERABLE D/G Startup Air System, the reserve bank on the OPERABLE air system would be aligned to the INOPERABLE air system.

The OPERABLE air system's primary bank inlet check valve, primary bank closed manual cross-connect valve, and reserve bank closed manual outlet valve maintain train independence from the INOPERABLE air system during the time the OPERABLE air system reserve bank cross-connect valve is open. Also, the dedicated operator provides control for maintaining the air pressure in the reserve bank of the OPERABLE air system.

Question
Closure
Date

Attachment
1 **GWM-004 Dwg.pdf** (414KB)

Attachment
2

Enclosure (1 of 4), Q&A to Attachment 1, Volume 13 (Section 3.8) Page 14 of 41

Notification **NRC/LICENSEE Supervision**
Kristy Bucholtz
Victor Cusumano
Jerry Jones
Bryan Kays
David Mielke

Added By **Robert Hanley**

Date Added **11/17/2009 4:25 PM**

Modified By

Date
Modified

Licensee Response/NRC Response/NRC Question Closure

Id **2771**

NRC
Question
Number **GMW-004**

Select
Application **Licensee Response**

Response
Date/Time **4/12/2010 4:40 PM**

Closure
Statement

Response
Statement **After further discussion, DEK has decided to delete the Note to ITS 3.8.3 Required Action E.2. In doing so, the OPERABLE starting air compressor will not be allowed to be used to recharge the air start receivers associated with the inoperable compressor. If it is used, then both air start systems would be considered inoperable and appropriate ACTIONS entered (i.e., ITS 3.8.3 ACTION F). A draft markup regarding this change is attached. This change will be reflected in the supplement to this section of the ITS conversion amendment.**

Question
Closure Date

Attachment
1 **GMW-004 Markup.pdf** (948KB)

Attachment
2

Notification **NRC/LICENSEE Supervision**
Jerry Jones
Bryan Kays
Ray Schiele
Gerald Waig

Added By **Robert Hanley**

Date Added **4/12/2010 4:41 PM**

Modified By

Date
Modified

DISCUSSION OF CHANGES**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR**

change is designated as less restrictive since less stringent Required Actions are being applied in the ITS than were applied in the CTS.

- L02 *(Category 7 - Relaxation of Surveillance Frequency)* CTS Table TS 4.1-3 Equipment Test 9 requires the diesel fuel oil inventory to be verified within limits weekly (every 7 days). ITS SR 3.8.3.1 requires the verification to be performed every 31 days. This changes the CTS by extending the Surveillance interval from 7 days to 31 days.

The purpose of the Surveillance is to verify that there is sufficient diesel fuel oil to operate the associated DG for 7 days. The change is acceptable since the DG is normally only required to be run every 31 days. Therefore, the 31 day check of the diesel fuel oil level is sufficient. Furthermore, a low level alarm is provided and the operators would be aware of any large use of diesel fuel oil during this period. This change is designated as less restrictive because a Surveillance will be performed less frequently under the ITS than under the CTS.

- L03 *(Category 4 – Relaxation of Required Action)* CTS 3.7.a.7 requires the DGs to be OPERABLE. However, no explicit requirements are specified in the CTS for the DG Starting Air Systems. Thus, if a DG Starting Air System is inoperable, the associated DG would be inoperable and the associated actions of CTS 3.7.b would be taken. ITS LCO 3.8.3, in part, requires the Starting Air System for each DG to be OPERABLE. This is discussed in DOC A05. ITS 3.8.3 ACTION E provides the actions when a DG air compressor is inoperable and ITS 3.8.3 ACTION F provides the actions if the requirements of ACTION E are not met or if the required air receiver bank for one or more DGs is not within limits. This changes the CTS by adding specific actions for when a DG Starting Air System is inoperable.

The purpose of the air receiver bank pressure requirement is to ensure adequate starting air is available for OPERABILITY of the DGs. For KPS, the DGs are also dependent upon air for operation of the DG room ventilation system. This dependency for operation requires a sufficient volume of air at a pressure greater than 13 psig for operation. Under normal operations, the emergency powered air compressors maintain the air receiver banks, from which the operating air is also provided, pressurized (220-240 psig).

The Kewaunee design consists of two primary air receiver banks normally aligned (one for each DG) and two reserve air receiver banks normally isolated (one for each DG). Each air receiver bank includes two air receivers. The KPS design allows the primary air receiver bank and its associated reserve air receiver bank to be in service simultaneously. In the event of an air compressor failure or required maintenance on the air compressor, both air receiver banks (primary and reserve) can be placed in service ~~and the opposite DGs air compressor is available to recharge the air receiver banks to the normal band (i.e., a cross-tie between the DG Starting Air Systems is provided).~~

KPS has performed an analysis for an operating condition where a start demand for a DG occurs with both the primary and reserve air receiver banks in service and at a pressure of 197 psig (which accounts for 200 psig low pressure alarm and instrument tolerances), and analyzes for or includes assumptions for:

DISCUSSION OF CHANGES**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR**

- The mass of air consumed by a six second start (i.e., worse case start and meet accident response time), from a reduced air receiver banks pressure of 197 psig. The assumed 197 psig pressure accounts for a low air receiver bank pressure alarm at 200 psig, and accounts for instrument tolerances.
- The mass of air consumed during ventilation damper operations.
- The mass of air consumed in the tubing which supports the ventilation damper operations.
- Leakage within the Starting Air System while in the alignment described above (primary and reserve air receiver banks in service).

With these conservative assumptions, the analysis demonstrates that the combined capacity of the primary and reserve air receiver banks supply greater than 48 hours of operating air for the associated DG. While the capability exists to cross-tie the air receiver banks of one DG to the other, this is not assumed in the analysis.

The proposed ITS 3.8.3 ACTION E will ensure the two primary assumptions of the analysis are met. When one air compressor is inoperable, ITS 3.8.3 Required Action E.1 requires the two air receiver banks (primary and reserve) to be aligned to the associated DG (i.e., both placed in service) within 1 hour. ITS 3.8.3 Required Action E.2 will require the pressure in the in-service air receiver banks to be ≥ 200 psig. ~~Also, the Note to the Required Action will allow the other DG's Starting Air System to be intermittently cross-tied to the inoperable DG's Starting Air System to maintain this pressure.~~ If these two requirements are met, ITS 3.8.3 Required Action E.3 will allow 48 hours to restore the inoperable air compressor to OPERABLE status. During this 48 hour period, ITS 3.8.3 Required Actions E.1 and E.2 are required to be met. If either one of these Required Actions (Required Action E.1 or E.2) are not met, then ITS 3.8.3 ACTION F will require the associated DG to be immediately declared inoperable. This ensures that, at all times during the 48 hour restoration time, the DG has sufficient air in the air receiver banks to start and operate for 48 hours. In addition, if the other DG's air compressor becomes inoperable during this time, ITS 3.8.3 ACTION F would require both DGs to be immediately declared inoperable. Thus, the proposed ACTIONS E and F only allow one air compressor to be inoperable at a time.

Periodic testing is also conducted to ensure the leakage of the system assumed in the analysis continues to be valid. The ITS also includes routine testing of the air compressors and the required air receiver banks, as discussed in DOC M03.

These changes are designated as less restrictive because a new allowance is included in the Technical Specifications to allow one DG's Starting Air System air compressor to be inoperable for up to 48 hours prior to declaring the associated DG inoperable.

[CTS](#)

5

INSERT 1

DOC L03

E. One DG with Starting Air System inoperable due to inoperable air compressor.

E.1

Align both air receiver banks to the associated DG.

1 hour

AND

E.2

~~-----NOTE-----
The cross-tie between the DG Starting Air Systems may be intermittently opened under administrative control to achieve and maintain the inoperable Starting Air System air receiver banks pressure \geq 200 psig.
-----~~

Verify pressure in both air receiver banks is \geq 200 psig for the associated DG.

1 hour

AND

E.3

Restore inoperable air compressor to OPERABLE status.

48 hours

④ **INSERT 1**

When one DG's Starting Air System is inoperable due to an inoperable air compressor, the associated required air receiver bank pressure is not capable of being maintained by the DG's air compressor. However, as long as both air receiver banks (primary and reserve) for the associated DG are in service and the air pressure in the two air receiver banks is ≥ 200 psig, there is adequate capacity for at least one start and the DG can be operated for at least 48 hours after the start. Therefore, the DG can be considered OPERABLE. These compensatory actions (Required Actions E.1 and E.2) must be met within 1 hour. Provided the compensatory measures are met, a period of 48 hours is allowed to restore the air compressor to OPERABLE status. If at any time during the 48 hours Required Action E.1 or E.2 is not met, ACTION F must be entered. The 48 hours is acceptable based on an analysis that shows that with both air receiver banks in service and at a pressure of 200 psig, sufficient air remains to start the DG and operate it for at least 48 hours. ~~In addition, the capability exists to cross-tie the other DG's Starting Air System and recharge the inoperable air compressor's associated air receiver banks.~~ Furthermore, the probability of an event requiring operation of the DGs during this period is low.

~~Required Action E.2 is modified by a Note that allows the cross-tie between the DG Starting Air Systems to be intermittently opened under administrative control to achieve and maintain the inoperable Starting Air System air receiver banks within the pressure limit of the Required Action. These administrative controls consist of stationing a dedicated operator at the DG Starting Air System cross-connect valve for the OPERABLE DG, who is in continuous communication with the control room. In this way, the OPERABLE Starting Air System can be isolated from the inoperable Starting Air System if a need for isolation is indicated. Furthermore, for the OPERABLE DG, only the cross-connect valve for the isolated air receiver bank should be opened. The time the cross-connect valves are opened should be minimized.~~

Licensee Response/NRC Response/NRC Question Closure

Id **3041**

NRC
Question Number **GMW-004**

Select Application **Licensee Response**

Response Date/Time **5/18/2010 9:00 AM**

Closure Statement

Response Statement **After further review and informal discussions with the NRC, KPS has determined that current licensing basis will be maintained with respect to diesel starting air. Therefore, the starting air requirements, including the air compressor and the air receiver pressure, will be removed from the ITS submittal. A draft markup regarding this change is attached and supersedes the markup provided in the second response to this RAI. This change will be reflected in the supplement to this section of the ITS conversion amendment.**

Question Closure Date

Attachment 1 **GMW-004 Markup, Rev. 1.pdf (1MB)**

Attachment 2

Notification **NRC/LICENSEE Supervision
Victor Cusumano
Jerry Jones
Bryan Kays
Ray Schiele
Gerald Waig
Robert Wolfgang**

Added By **Robert Hanley**

Date Added **5/18/2010 9:01 AM**

Modified By

Date Modified

3.7 AUXILIARY ELECTRICAL SYSTEMS

APPLICABILITY

Applies to the availability of electrical power for the operation of plant auxiliaries.

OBJECTIVE

To define those conditions of electrical power availability necessary to provide 1) safe reactor operation and 2) continuing availability of engineered safety features.

SPECIFICATION

Applicability

a. The reactor shall not be made **critical** unless all of the following requirements are satisfied:

M01

1. The reserve auxiliary transformer is fully operational and energized to supply power to the 4160-V buses.
2. A second external source of power is fully operational and energized to supply power to emergency buses 1-5 and 1-6.

See ITS 3.8.1

3. The 4160-V buses 1-5 and 1-6 are both energized.
4. The 480-V buses 1-52 and 1-62 and their MCC's are both energized from their respective station service transformers.
5. The 480-V buses 1-51 and 1-61 are both energized from their respective station service transformers.

See ITS 3.8.9

6. Both station batteries and both DC systems are OPERABLE, except during testing and surveillance as described in TS 4.6.b.

See ITS 3.8.4, 3.8.6, and 3.8.9

7. Both diesel generators are OPERABLE and each diesel generator shall have:

Add proposed LCO 3.8.3 fuel oil requirement

A02

A. Day tanks containing a minimum volume of 1000 gallons;

See ITS 3.8.1

LCO 3.8.3

B. An underground storage tank and corresponding day tanks containing a minimum volume of 32,888 gallons of useable fuel;

SR 3.8.3.1

C. An OPERABLE diesel fuel oil transfer pump.

See ITS 3.8.1

8. At least one pair of physically independent transmission lines serving the substation is OPERABLE. The three pairs of physically independent transmission lines are:

See ITS 3.8.1

- A. R-304 and Q-303
- B. F-84 and Y-51
- C. R-304 and Y-51

Add proposed ACTIONS Note

M02

Add proposed ACTIONS A and F

L01

Add proposed lube oil requirements (LCO 3.8.3, ACTIONS B and E, and SR 3.8.3.2)

M02

Add proposed fuel oil properties requirements (LCO 3.8.3, ACTIONS C, D and F, and SR 3.8.3.3)

M02

Add proposed Starting Air System LCO 3.8.3

A05

Amendment No. 203

02/06/2009

L03

TS 3.7-1

4.1 OPERATIONAL SAFETY REVIEW

APPLICABILITY

Applies to items directly related to safety limits and LIMITING CONDITIONS FOR OPERATION.

OBJECTIVE

To assure that instrumentation shall be checked, tested, and calibrated, and that equipment and sampling tests shall be conducted at sufficiently frequent intervals to ensure safe operation.

SPECIFICATION

a. Calibration, testing, and checking of protective instrumentation channels and testing of logic channels shall be performed as specified in Table TS 4.1-1.

See other ITS

SR 3.8.3.1

b. Equipment and sampling tests shall be conducted as specified in Table TS 4.1-2 and TS 4.1-3.

See other ITS

c. Deleted

d. Deleted

e. Deleted

M03

Add proposed SR 3.8.3.4, SR 3.8.3.5, and SR 3.8.3.5



Header fix is to all DOC
Pages

DISCUSSION OF CHANGES

ITS 3.8.3, DIESEL FUEL OIL LUBE OIL ~~AND STARTING AIR~~

AND

associated DG is required to be OPERABLE. This changes the CTS by removing a potential conflict between two CTS statements.

This change is acceptable because the potential conflict within the CTS would be resolved by applying the requirements of CTS 4.0.a. CTS 4.0.a requires surveillance requirements to be met during the operational MODES specified in the LCO. The diesel fuel oil system is a support system for each DG. The CTS and ITS maintain this relationship between the DGs and the diesel fuel oil system without any changes in the technical requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

- A05 ~~CTS 3.7.a.7 requires the DGs to be OPERABLE. However, no specific requirements are specified in the CTS for the DG Starting Air Systems. ITS LCO 3.8.3, in part, requires the Starting Air System for each DG to be OPERABLE. The Applicability for this requirement is when the associated DG is required to be OPERABLE. This changes the CTS by explicitly stating that the Starting Air System for each DG is required to be OPERABLE.~~

~~The purpose of the Starting Air System is to support OPERABILITY of the associated DG. The air receiver banks are required to be within the pressure limit to provide the necessary starting air to crank the DG when required. The air compressors are required to ensure air is available in the air receiver banks to operate certain ventilation dampers in the DG rooms. These ventilation dampers ensure the DG room air temperature is maintained such that the DG can perform its required function during the accident. Currently, the CTS definition of OPERABLE, as it is applied to the DGs, requires the air receiver bank pressure to be within limit and the air compressor to be capable of automatically recharging the associated air receiver bank. Therefore, the addition of this specific LCO statement is acceptable and is designated as administrative since it does not result in a technical change to the CTS. The specific Surveillance Requirements and ACTIONS to take when the Starting Air System is inoperable is discussed in DOCs M03 and L03.~~

MORE RESTRICTIVE CHANGES

- M01 CTS 3.7.a requires the diesel generators (specified in CTS 3.7.a.7), and hence, the combined underground storage tank and corresponding day tanks level to be within the limits and be tested in accordance with Table TS 4.1-3 Equipment Test 9 when the reactor is critical. ITS LCO 3.8.3 requires the stored diesel fuel oil to be within limits "when associated DG is required to be OPERABLE." ITS 3.8.1 requires both DGs to be OPERABLE in MODES 1, 2, 3, and 4 and ITS 3.8.2 requires one of the DGs to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies. This changes the CTS by adding requirements specifying the stored diesel fuel oil limit to be met for both DGs in MODES 3 and 4 and in MODE 2 when the reactor is not critical and for one DG in MODES 5 and 6 and during movement of irradiated fuel assemblies.

The purpose of CTS 3.7.a, in part, is to ensure the DGs are OPERABLE to mitigate the consequences of a transient or design basis accident. In ITS, the DGs are required to be OPERABLE in MODES 1, 2, 3, and 4 when an accident

DISCUSSION OF CHANGES

ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR

within limits. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the stored fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

The purpose of the lube oil inventory requirement in ITS LCO 3.8.3 and SR 3.8.3.2 is to ensure a 7 day lube oil inventory for each DG is maintained. The proposed ITS SR 3.8.3.2 value, ≥ 504 gallons, will ensure the 7 day inventory requirement is met, based upon vendor recommendations. In addition, ITS 3.8.3 ACTION B will allow the 7 day limit to not be met for each DG for up to 48 hours provided sufficient lube oil inventory is available for 6 days. If the lube oil inventory is not restored within 48 hours, or if the 6 day limit is not met, then the associated DG is required to be declared inoperable immediately. Furthermore, as stated in the ITS 3.8.3 ACTIONS Note, ITS 3.8.3 ACTION B is allowed to be separately entered for each DG. Therefore, this change is acceptable.

These changes are designated as more restrictive because explicit requirements are included in the Technical Specifications for stored diesel fuel oil total particulates, new diesel fuel oil properties and lube oil inventory limits.

M03 ~~The CTS does not provide any specific testing requirements to check the DG air receiver banks or to verify proper operation of the DG starting air compressors. ITS SR 3.8.3.4 and SR 3.8.3.5 require these verifications every 31 days. The CTS also does not provide any specific testing requirements to check for or remove accumulated water from the fuel oil storage tanks. ITS SR 3.8.3.6 requires this verification every 92 days. This changes the CTS by requiring new Surveillance Requirements to ensure the Starting Air System is OPERABLE and to check for and remove accumulated water from the fuel oil storage tanks.~~ 4 a

~~The purpose of ITS SR 3.8.3.4 and SR 3.8.3.5 is to ensure the Starting Air System for each DG is Operable. SR 3.8.3.4 ensures adequate air pressure in the required air start receiver bank to start the DG one time. SR 3.8.3.5 ensures each DG air compressor can operate automatically to recharge the required air start receiver bank. This change is acceptable because the SRs provide additional assurance that the Starting Air System for each DG can perform its required function~~

~~The purpose of ITS SR 3.8.3.6 is to ensure that an environment conducive to microbiological fouling does not exist. This change is acceptable because it provides additional assurance that accumulated water is removed on a regular basis to ensure an environment conducive to microbiological fouling does not exist in the fuel oil storage tanks.~~ 4 an

This change is ~~These changes are~~ designated as more restrictive because explicit Surveillance Requirements ~~have been added to the CTS.~~ an

has

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR**REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

- L01 *(Category 4 – Relaxation of Required Action)* CTS 3.7.a.7 does not provide explicit compensatory actions if the volume of fuel oil in a storage tank and corresponding day tanks is less than the specified limit. Thus, if the minimum required volume is not met, the associated DG must be declared inoperable and CTS 3.7.b.7 must be entered. ITS 3.8.3 ACTION A allows the unit to not declare the associated DG inoperable as long as the usable volume of stored fuel oil is greater than a six day limit (i.e., > 27,961 gallons). In this situation, ITS 3.8.3 Required Action A.1 allows 48 hours to restore the fuel oil volume to within limits. As stated in the ACTIONS Note, a separate entry into this new ACTION is allowed for each DG. If this Required Action and associated Completion Time are not met or if the fuel oil storage tank usable volume is < 27,961 gallons, the associated DG must be declared inoperable immediately (ITS 3.8.3 ACTION ~~F~~^E). This changes the CTS by allowing the DGs to not be declared inoperable with the fuel oil storage tank and corresponding day tanks volume not within the specified Surveillance limit as long as the associated DG has enough fuel oil for 6 days of operation at rated load.

The purpose of ITS 3.8.3 ACTION A is to allow time to restore the stored diesel fuel oil volume to within the specified limit for a given DG. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to a degraded condition in order to minimize risk associated with continued operation while providing time to restore inventory. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The addition of ITS 3.8.3 ACTION A will allow each DG to not be declared inoperable with the associated stored diesel fuel oil volume not within the specified Surveillance limit as long as the DG has enough fuel oil for 6 days of operation at rated load. In this Condition, the 7 day fuel oil supply for the DG is not available. However, the Condition is restricted to fuel oil volume reductions that maintain at least a 6 day supply. These circumstances may be caused by events such as full load operation required after an inadvertent start while at minimum required fuel oil level, or feed and bleed operations, which may be necessary due to increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required volume prior to declaring the associated DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period. This

DISCUSSION OF CHANGES**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR**

change is designated as less restrictive since less stringent Required Actions are being applied in the ITS than were applied in the CTS.

- L02 *(Category 7 - Relaxation of Surveillance Frequency)* CTS Table TS 4.1-3 Equipment Test 9 requires the diesel fuel oil inventory to be verified within limits weekly (every 7 days). ITS SR 3.8.3.1 requires the verification to be performed every 31 days. This changes the CTS by extending the Surveillance interval from 7 days to 31 days.

The purpose of the Surveillance is to verify that there is sufficient diesel fuel oil to operate the associated DG for 7 days. The change is acceptable since the DG is normally only required to be run every 31 days. Therefore, the 31 day check of the diesel fuel oil level is sufficient. Furthermore, a low level alarm is provided and the operators would be aware of any large use of diesel fuel oil during this period. This change is designated as less restrictive because a Surveillance will be performed less frequently under the ITS than under the CTS.

- L03 ~~*(Category 4 - Relaxation of Required Action)* CTS 3.7.a.7 requires the DGs to be OPERABLE. However, no explicit requirements are specified in the CTS for the DG Starting Air Systems. Thus, if a DG Starting Air System is inoperable, the associated DG would be inoperable and the associated actions of CTS 3.7.b would be taken. ITS LCO 3.8.3, in part, requires the Starting Air System for each DG to be OPERABLE. This is discussed in DOC A05. ITS 3.8.3 ACTION E provides the actions when a DG air compressor is inoperable and ITS 3.8.3 ACTION F provides the actions if the requirements of ACTION E are not met or if the required air receiver bank for one or more DGs is not within limits. This changes the CTS by adding specific actions for when a DG Starting Air System is inoperable.~~

~~The purpose of the air receiver bank pressure requirement is to ensure adequate starting air is available for OPERABILITY of the DGs. For KPS, the DGs are also dependent upon air for operation of the DG room ventilation system. This dependency for operation requires a sufficient volume of air at a pressure greater than 13 psig for operation. Under normal operations, the emergency powered air compressors maintain the air receiver banks, from which the operating air is also provided, pressurized (220-240 psig).~~

~~The Kewaunee design consists of two primary air receiver banks normally aligned (one for each DG) and two reserve air receiver banks normally isolated (one for each DG). Each air receiver bank includes two air receivers. The KPS design allows the primary air receiver bank and its associated reserve air receiver bank to be in service simultaneously. In the event of an air compressor failure or required maintenance on the air compressor, both air receiver banks (primary and reserve) can be placed in service and the opposite DGs air compressor is available to recharge the air receiver banks to the normal band (i.e., a cross tie between the DG Starting Air Systems is provided).~~

~~KPS has performed an analysis for an operating condition where a start demand for a DG occurs with both the primary and reserve air receiver banks in service and at a pressure of 197 psig (which accounts for 200 psig low pressure alarm and instrument tolerances), and analyzes for or includes assumptions for:~~

DISCUSSION OF CHANGES**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL AND STARTING AIR**

- ~~• The mass of air consumed by a six second start (i.e., worse case start and meet accident response time), from a reduced air receiver banks pressure of 197 psig. The assumed 197 psig pressure accounts for a low air receiver bank pressure alarm at 200 psig, and accounts for instrument tolerances.~~
- ~~• The mass of air consumed during ventilation damper operations.~~
- ~~• The mass of air consumed in the tubing which supports the ventilation damper operations.~~
- ~~• Leakage within the Starting Air System while in the alignment described above (primary and reserve air receiver banks in service).~~

~~With these conservative assumptions, the analysis demonstrates that the combined capacity of the primary and reserve air receiver banks supply greater than 48 hours of operating air for the associated DG. While the capability exists to cross-tie the air receiver banks of one DG to the other, this is not assumed in the analysis.~~

~~The proposed ITS 3.8.3 ACTION E will ensure the two primary assumptions of the analysis are met. When one air compressor is inoperable, ITS 3.8.3 Required Action E.1 requires the two air receiver banks (primary and reserve) to be aligned to the associated DG (i.e., both placed in service) within 1 hour. ITS 3.8.3 Required Action E.2 will require the pressure in the in-service air receiver banks to be \geq 200 psig. Also, the Note to the Required Action will allow the other DG's Starting Air System to be intermittently cross-tied to the inoperable DG's Starting Air System to maintain this pressure. If these two requirements are met, ITS 3.8.3 Required Action E.3 will allow 48 hours to restore the inoperable air compressor to OPERABLE status. During this 48 hour period, ITS 3.8.3 Required Actions E.1 and E.2 are required to be met. If either one of these Required Actions (Required Action E.1 or E.2) are not met, then ITS 3.8.3 ACTION F will require the associated DG to be immediately declared inoperable. This ensures that, at all times during the 48 hour restoration time, the DG has sufficient air in the air receiver banks to start and operate for 48 hours. In addition, if the other DG's air compressor becomes inoperable during this time, ITS 3.8.3 ACTION F would require both DGs to be immediately declared inoperable. Thus, the proposed ACTIONS E and F only allow one air compressor to be inoperable at a time.~~

~~Periodic testing is also conducted to ensure the leakage of the system assumed in the analysis continues to be valid. The ITS also includes routine testing of the air compressors and the required air receiver banks, as discussed in DOC M03.~~

~~These changes are designated as less restrictive because a new allowance is included in the Technical Specifications to allow one DG's Starting Air System air compressor to be inoperable for up to 48 hours prior to declaring the associated DG inoperable.~~

CTS

Diesel Fuel Oil, Lube Oil, and Starting Air
3.8.3

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

3.7.a.7, DOCs A02, A05, and M02

LCO 3.8.3

The stored diesel fuel oil, lube oil, and starting air subsystem shall be within limits for each required diesel generator (DG).

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and the Starting Air System shall be OPERABLE

3.7.a APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

NOTE

DOC M02, DOC L01

Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>DOC L01 A. One or more DGs with fuel level < [33,000] gal and > [28,285] gal in storage tank.</p> <p>usable combined storage and day tanks</p> <p>32,888</p> <p>27,961</p>	A.1 Restore fuel oil level to within limits.	48 hours
<p>DOC M02 B. One or more DGs with lube oil inventory < [500] gal and > [425] gal.</p> <p>504</p> <p>432</p>	B.1 Restore lube oil inventory to within limits.	48 hours
<p>DOC M02 C. One or more DGs with stored fuel oil total particulates not within limit.</p>	C.1 Restore fuel oil total particulates to within limits.	7 days
<p>DOC M02 D. One or more DGs with new fuel oil properties not within limits.</p>	D.1 Restore stored fuel oil properties to within limits.	30 days
<p>DOC L03 E. One or more DGs with starting air receiver pressure < [225] psig and ≥ [125] psig.</p>	E.1 Restore starting air receiver pressure to ≥ [225] psig.	48 hours

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INSERT 4

CTS

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INSERT 1~~DOC L03~~~~E. One DG with Starting Air System inoperable due to inoperable air compressor.~~~~E.1~~~~Align both air receiver banks to the associated DG.~~~~1 hour~~AND~~E.2~~~~NOTE~~~~The cross tie between the DG Starting Air Systems may be intermittently opened under administrative control to achieve and maintain the inoperable Starting Air System air receiver banks pressure \geq 200 psig.~~~~Verify pressure in both air receiver banks is \geq 200 psig for the associated DG.~~~~1 hour~~AND~~E.3~~~~Restore inoperable air compressor to OPERABLE status.~~~~48 hours~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>DOCs M02, L01, and L03</p> <p>E Required Action and associated Completion Time not met.</p> <p>OR</p> <p>One or more DGs with diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than Condition A, B, C, D, or E.</p> <p>OR</p> <p>One or more DGs with required air receiver bank pressure not within limits.</p> <p>OR</p> <p>Both DGs with Starting Air System inoperable due to inoperable air compressor.</p>	<p>E.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
3.7.a.7, Table 4.1-3, #9	SR 3.8.3.1 Verify each fuel oil storage tank ^{and associated day tanks} contains \geq [33,000] gal of fuel. _{[32,888] usable}	31 days
DOC M02	SR 3.8.3.2 Verify lubricating oil inventory is \geq [500] gal. _{504 for each DG}	31 days
DOC M02	SR 3.8.3.3 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
DOC M02	SR 3.8.3.4 Verify each DG air start receiver pressure is \geq [225] psig. _{required 200 bank}	31 days
DOC M03	SR 3.8.3.5 Check for and remove accumulated water from each fuel oil storage tank. ₄	[31] days ₉₂
DOC M02	SR 3.8.3.5 Verify each Starting Air System air compressor operates to automatically recharge the required air receiver bank. _{31 days}	

JUSTIFICATION FOR DEVIATIONS**ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR**

1. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.
3. These corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.ii.
4. ISTS SR 3.8.3.5 requires a check for and removal of accumulated water from each fuel oil storage tank every 31 days, and the 31 day Frequency is bracketed. This check would normally be performed when the fuel oil storage tank particulate check required by ISTS 5.5.13.c is performed. As described in the JFDs for ITS Section 5.5, this 31 day particulate check has been changed to 92 days in the KPS ITS (ITS 5.5.11.c). Furthermore, Regulatory Guide 1.137 states that a quarterly Frequency is acceptable if the ground water table is below the bottom of the tank. The bottoms of the KPS fuel oil storage tanks are above the ground water level. Therefore, the 31 day water check required by ISTS SR 3.8.3.5 has also been extended to 92 days.

5. ~~ISTS 3.8.3 includes requirements for the starting air subsystem for each DG. In the ISTS, the starting air subsystem only includes the air receiver pressure. The required pressure in ISTS SR 3.8.3.4 is the design pressure (nominally the 5 start pressure), not the pressure needed for one start. The ISTS 3.8.3 ACTION E includes an allowance for a 48 hour restoration time when the design pressure limit is not met, provided the one start pressure is met. This is explained in the ISTS Bases.~~

ISTS LCO 3.8.3 includes requirements for the starting air subsystem to be within limits for each DG. This requirement is not being added into the KPS ITS. The KPS CTS does not provide any requirements for the starting air receiver pressure. This limit is maintained outside of the CTS and under KPS control. KPS procedurally ensures that starting air pressure is adequate to maintain the DG OPERABLE (i.e., provide adequate starting air pressure to meet the accident analysis assumptions related to DG starting requirements). In addition, the specific ACTION (ISTS ACTION E) and SR (ISTS SR 3.8.3.4) have also been deleted. Subsequent ACTIONS and SRs have been renumbered due to these deletions.

~~The KPS CTS does not include any requirements for the Starting Air Systems. Thus, as long as enough air is in each required air start receiver bank to start the DG one time, the pressure is acceptable. KPS has maintained this requirement in the ITS. The SR 3.8.3.4 pressure ensures that the DG can be started at least one time. If this limit is not met, then the DG will be immediately declared inoperable as required by ITS 3.8.3 ACTION E (See the third Condition of ITS 3.8.3 ACTION F). Therefore, ISTS 3.8.3 ACTION E is not necessary for the KPS ITS and has not been included. In addition, for KPS, the DGs are also dependent upon air for operation of the ventilation system. The air compressors are required to ensure air is available in the air receiver banks to operate certain ventilation dampers in the DG rooms. Thus, the LCO statement has been modified to reflect that the Starting Air System for each DG (which includes the air receiver bank pressure and the air compressor) must be OPERABLE. Furthermore, ITS 3.8.3 ACTION E has been added to provide actions for when one DG's air compressor is inoperable. The discussion and justification for this new ACTION is provided in Discussion of Change L03. Lastly, a new Surveillance has been added (ITS SR 3.8.3.5) to periodically verify the air compressors automatically operate to recharge the associated required air receiver bank. This is discussed and justified in Discussion of Change M03.~~

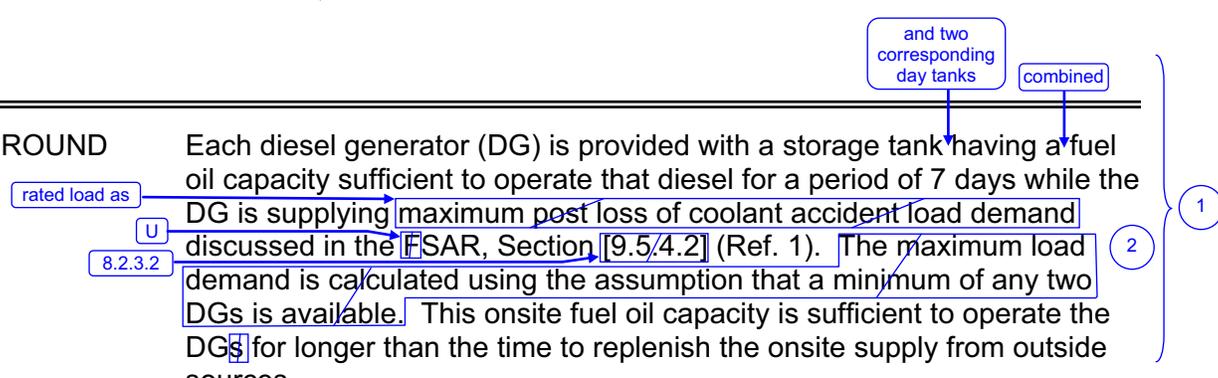
B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

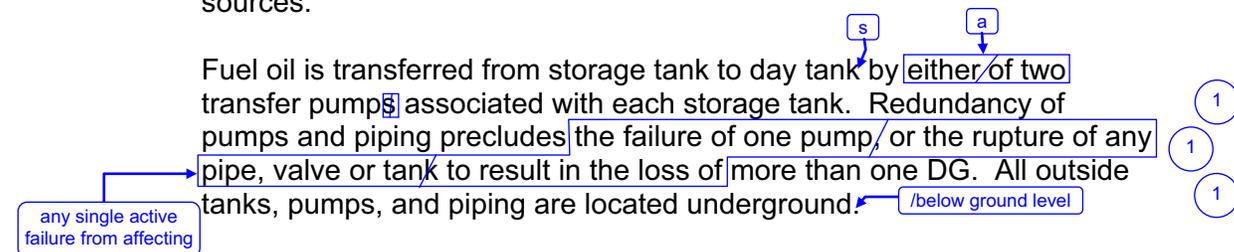
BASES

BACKGROUND

Each diesel generator (DG) is provided with a storage tank having a fuel oil capacity sufficient to operate that diesel for a period of 7 days while the DG is supplying maximum post loss of coolant accident load demand discussed in the FSAR, Section [9.5.4.2] (Ref. 1). The maximum load demand is calculated using the assumption that a minimum of any two DGs is available. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.



Fuel oil is transferred from storage tank to day tank by either of two transfer pumps associated with each storage tank. Redundancy of pumps and piping precludes the failure of one pump, or the rupture of any pipe, valve or tank to result in the loss of more than one DG. All outside tanks, pumps, and piping are located underground.



For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Regulatory Guide 1.137 (Ref. 2) addresses the recommended fuel oil practices as supplemented by ANSI N195 (Ref. 3). The fuel oil properties governed by these SRs are the water and sediment content, the kinematic viscosity, specific gravity (or API gravity), and impurity level.

The DG lubrication system is designed to provide sufficient lubrication to permit proper operation of its associated DG under all loading conditions. The system is required to circulate the lube oil to the diesel engine working surfaces and to remove excess heat generated by friction during operation. Each engine oil sump contains an inventory capable of supporting a minimum of [7] days of operation. The onsite storage in addition to the engine oil sump is sufficient to ensure 7 days of continuous operation. This supply is sufficient to allow the operator to replenish lube oil from outside sources.

Each DG has an air start system with adequate capacity for five successive start attempts on the DG without recharging the air start receiver(s).

~~Each DG has a Starting Air System that includes primary and reserve air receiver banks and an air compressor. Each primary and reserve air receiver bank has the capacity to start the DG and provide air to operate the DG room ventilation dampers. Normally, the primary air receiver bank is in service and the reserve air receiver bank is isolated. The air compressor operates to automatically maintain air receiver bank pressure above the limit. The air compressors ensure that sufficient pressure is maintained in the air receiver banks to operate the DGs.~~

BASES

APPLICABLE SAFETY ANALYSES

^U The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 6 (Ref. 4), and in the FSAR, Chapter 15 (Ref. 5), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

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Since diesel fuel oil, lube oil, and the starting air subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

3

LCO

^{for each DG} Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation. It is also required to meet specific standards for quality. Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for 7 days. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

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^{each DG at rated}

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The Starting Air System for each DG is required to have a capacity to start and operate the DG. Thus, the air compressor is required to be OPERABLE, as well as one of the two air receiver banks is required to be OPERABLE and within the pressure limit.

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The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

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APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, lube oil, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, lube oil, and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required

BASES

ACTIONS (continued)

contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

D.1

With the new fuel oil properties defined in the Bases for SR 3.8.3.4 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

~~E.2 and E.3~~~~E.1~~

INSERT 4

With starting air receiver pressure < [225] psig, sufficient capacity for five successive DG start attempts does not exist. However, as long as the receiver pressure is > [125] psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.



~~When one DG's Starting Air System is inoperable due to an inoperable air compressor, the associated required air receiver bank pressure is not capable of being maintained by the DG's air compressor. However, as long as both air receiver banks (primary and reserve) for the associated DG are in service and the air pressure in the two air receiver banks is ≥ 200 psig, there is adequate capacity for at least one start and the DG can be operated for at least 48 hours after the start. Therefore, the DG can be considered OPERABLE. These compensatory actions (Required Actions E.1 and E.2) must be met within 1 hour. Provided the compensatory measures are met, a period of 48 hours is allowed to restore the air compressor to OPERABLE status. If at any time during the 48 hours Required Action E.1 or E.2 is not met, ACTION F must be entered. The 48 hours is acceptable based on an analysis that shows that with both air receiver banks in service and at a pressure of 200 psig, sufficient air remains to start the DG and operate it for at least 48 hours. In addition, the capability exists to cross-tie the other DG's Starting Air System and recharge the inoperable air compressor's associated air receiver banks. Furthermore, the probability of an event requiring operation of the DGs during this period is low.~~

~~Required Action E.2 is modified by a Note that allows the cross-tie between the DG Starting Air Systems to be intermittently opened under administrative control to achieve and maintain the inoperable Starting Air System air receiver banks within the pressure limit of the Required Action. These administrative controls consist of stationing a dedicated operator at the DG Starting Air System cross-connect valve for the OPERABLE DG, who is in continuous communication with the control room. In this way, the OPERABLE Starting Air System can be isolated from the inoperable Starting Air System if a need for isolation is indicated. Furthermore, for the OPERABLE DG, only the cross-connect valve for the isolated air receiver bank should be opened. The time the cross-connect valves are opened should be minimized.~~

BASES

ACTIONS (continued)

F.1 E

either

or With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through D, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

one or more DGs with required air receiver bank pressure not within limits, or both DGs with Starting Air System inoperable due to an inoperable air compressor

4

SURVEILLANCE REQUIREMENTS SR 3.8.3.1

associated This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks, to support each DG's operation for 7 days at full load.

and corresponding day tanks (combined) The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

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SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load operation for each DG. The 500 gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level.

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.

504
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SR 3.8.3.3

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for

BASES

SURVEILLANCE REQUIREMENTS (continued)

6217-98 Particulate concentrations should be determined in accordance with ASTM D5452-⁵ (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. [For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks, each tank must be considered and tested separately.]

fuel oil storage

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.4

20 seconds of starting air from each of the two air receiver banks (primary and reserve)

~~This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of [five] engine start cycles without recharging. [A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.] The pressure specified in this SR is intended to reflect the lowest value at which the [five] starts can be accomplished.~~

only the pressure to start the DG one time is required to meet the OPERABILITY requirements (since the accident analysis assumes the DG starts on the first attempt)

one

bound with one air receiver bank

~~The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.~~

SR 3.8.3.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may

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SR 3.8.3.5

~~This Surveillance ensures that the air compressor operates automatically to recharge the required air receiver bank. This is required to support continuous operation of the associated DG. This Surveillance provides assurance that the air compressor is OPERABLE, the piping to the air receiver banks is intact, the air delivery piping is not obstructed, and the controls and control systems for automatic air compressor operation are OPERABLE.~~

~~The Frequency of this SR is 31 days, since the air compressor will normally operate during or following DG testing to recharge the air receiver banks.~~

JUSTIFICATION FOR DEVIATIONS

ITS 3.8.3 BASES, DIESEL FUEL OIL, ~~LUBE OIL, AND STARTING AIR~~

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the generic specific information/value is revised to reflect the current plant design.
3. Changes made to be consistent with the name of the Specification.
4. Changes made to be consistent with changes made to the Specification.
5. Typographical error corrected.
6. Changes are made to be consistent with similar statements in other places in the Bases.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

ITS 3.8.3, DIESEL FUEL OIL, LUBE OIL, AND STARTING AIR

There are no specific NSHC discussions for this Specification.

Licensee Response/NRC Response/NRC Question Closure

Id **3121**

NRC Question Number **GMW-004**

Select Application **NRC Question Closure**

Response Date/Time

Closure Statement **This question is closed and no further information is required at this time to draft the Safety Evaluation.**

Response Statement

Question Closure Date **5/20/2010**

Attachment 1

Attachment 2

Notification **NRC/LICENSEE Supervision**

Added By **Gerald Waig**

Date Added **5/20/2010 3:57 PM**

Modified By

Date Modified