

ATTACHMENT 1

Proposed Technical Specification Change

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3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A. C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A. C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network and the onsite Class IE distribution system, and
- b. Two separate and independent diesel generators:
 1. Each with a separate day tank containing a minimum of 750 gallons of fuel, and
 2. A fuel storage system containing a minimum of 45,000 gallons of fuel, and
 3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With one offsite circuit of the above 3.8.1.1.a required A. C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A. C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours sequentially on both diesel generators unless previously and successfully tested within the last seven days; restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator of the above 3.8.1.1.b required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the A.C. offsite sources by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours; restore diesel generators to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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ACTION (Continued):

- c. With one offsite circuit and one diesel generator of the above required A. C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A. C. sources by performing Surveillance Requirements 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours on the redundant diesel generator; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other AC power source (offsite circuit or diesel generator) to operable status in accordance with the provisions of Section 3.8.1.1 Action Statement a or b, as appropriate, with the time requirement of the Action Statement based on the time of initial loss of the remaining inoperable AC power source. A successful test of diesel operability per Surveillance Requirement 4.8.1.1.2.a.4 performed under this Action Statement for an OPERABLE diesel or a restored to OPERABLE diesel satisfies the subsequent requirement of Action Statement a or b.
- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of two diesel generators by sequentially performing Surveillance Requirement 4.8.1.1.2.a.4 on both diesels within 8 hours unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite source, follow Action Statement a with the time requirement of the Action Statement based on the time of initial loss of the remaining inoperable offsite AC circuit. A successful test(s) of diesel operability per Surveillance Requirement 4.8.1.1.2.a.4 performed under this Action Statement for the OPERABLE diesels satisfies the subsequent requirement of Action Statement a.
- e. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator unit, follow Action Statement b with the time requirement of the Action Statement based on the time of initial loss of the remaining inoperable diesel generator. A successful test of diesel operability per Surveillance Requirement 4.8.1.1.2.a.4 performed under this Action Statement for a restored to OPERABLE diesel satisfies the subsequent requirement of Action Statement b.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignment indicating power availability.

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SURVEILLANCE REQUIREMENTS (Continued)

- b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring the onsite Class 1E power supply from the normal circuit to the alternate circuit.

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SURVEILLANCE REQUIREMENTS (Continued)

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8.2 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the day tank.
 2. Verifying the fuel level in the fuel storage tank.
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.
 4. Verifying the diesel generator can start and gradually accelerate to synchronous speed (900 rpm) with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz. Subsequently, verifying the generator is synchronized, gradually loaded to greater than or equal to 2750 kw and operates for greater than or equal to 60 minutes. (This test should be performed in accordance with the diesel manufacturer's recommendations for routine surveillance testing, including performance of an engine prelube and any other starting warmup procedure prior to the test.)
 5. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.
- b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank obtained as a DRAIN Sample in accordance with ASTM-D270-65, is within the acceptable limits specified in Table 1 of ASTM D975-74 when checked for viscosity, water and sediment.
- c. At least once per 184 days the diesel generator shall be started from ambient conditions and accelerated to at least 900 rpm in less than or equal to 10 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal. The generator should be manually synchronized to its appropriate emergency bus, loaded to greater than or equal to 2750 kw in less than or equal to 60 seconds, and operate for greater than or equal to 60 minutes. The diesel generator shall be started for this test by using one of the following signals with startup on each signal verified on a staggered test basis.
 - a) Simulated loss of offsite power by itself.
 - b) Simulated loss of offsite power in conjunction with an ESF actuation test signal.
 - c) An ESF actuation test signal by itself.

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SURVEILLANCE REQUIREMENTS (Continued)

This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.4, may also serve to concurrently meet those requirements as well.

d. At least once per 18 months during shutdown by:

1. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service,
2. Verifying that, on rejection of a load of greater than or equal to 610 kw the voltage and frequency are maintained with 4160 ± 420 volts and 60 ± 1.2 Hz.
3. Verifying that the load sequencing timers are OPERABLE with times within the tolerances shown in Table 4.8-1.
4. Simulating a loss of offsite power by itself, and:
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected shutdown loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency shall be maintained at 4160 ± 420 volts and 60 ± 1.2 Hz.
5. Verifying that on an ESF actuation test signal (without loss of offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes.
6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and
 - a) Verifying de-energization of the emergency busses and load shedding from the emergency busses.
 - b) Verifying the diesel starts from ambient condition on the auto-start signal, energizes the emergency busses with permanently connected loads within 10 seconds, energizes the auto-connected emergency (accident) loads through the sequencing timers and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads and maintains the steady state voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz.

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SURVEILLANCE REQUIREMENTS (Continued)

- c) Verifying that all diesel generator trips, except engine overspeed, generator differential and breaker overcurrent are automatically bypassed upon loss of voltage on the emergency bus and/or a safety injection actuation signal.
- 7. Verifying the diesel generator operates for at least 24 hours. During the first 2 hours of this test, the diesel generator shall be loaded to greater than or equal to 3025 kw and during the remaining 22 hours of this test, the diesel generator shall be loaded to greater than or equal to 2750 kw. Within 5 minutes after completing this 24-hour test, perform Specification 4.8.1.1.2.d.4.
- 8. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000 hour rating of 3000 kw.
- 9. Verifying the diesel generator's capability to:
 - a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power.
 - b) Transfer its loads to the offsite power source, and
 - c) Proceed through its shutdown sequence.
- 10. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
 - a) Remote Local Selection Switch
 - b) Emergency Stop Switch
- e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting both diesel generators simultaneously, during shutdown, and verifying that both diesel generators accelerate to at least 900 rpm in less than or equal to 10 seconds.

4.8.1.1.3 Each diesel generator 125-volt battery bank and charger shall be demonstrated OPERABLE:

- a. At least once per 7 days by verifying that:
 - 1. The electrolyte level of each pilot cell is between the minimum and maximum level indication marks,
 - 2. The pilot cell specific gravity, corrected to 77°F and full electrolyte level, is greater than or equal to 1.200,
 - 3. The pilot cell voltage is greater than or equal to 2.08 volts, and

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Table 4.8-2

DIESEL GENERATOR TEST SCHEDULE

<u>Number of Failures in Last 20 Valid Tests*</u>	<u>Number of Failures in last 100 Valid Tests*</u>	<u>Test Frequency</u>
≤1	≤4	At least once per 31 days
≥2**	≥5	At least once per 7 days

*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, Revision 1, August 1977, where the number of tests and failures is determined on a per diesel generator basis.

For the purpose of determining required test frequency, a manufacturer approved diesel overhaul including recommended post-maintenance testing and operability testing at a minimum per Surveillance Requirement 4.8.1.1.2.a.4 followed by fourteen successive and successful diesel surveillance tests, including four fast starts, per Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.2.c may be used to transvalue the failure count to zero and reinitiate application of this table as if the overhauled diesel was new.

**The associated test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to one or less.

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BASES

3/4.8.1 and 3/4.8.2 A.C. and D.C. POWER SOURCES AND DISTRIBUTION

The OPERABILITY of the A.C. and D.C. power sources and associated distribution systems during operation ensures that sufficient power will be available to supply the safety related equipment required for 1) the safe shutdown of the facility and 2) the mitigation and control of accident conditions within the facility. The minimum specified independent and redundant A.C. and D.C. power sources and distribution systems satisfy the requirements of General Design Criteria 17 of Appendix "A" to 10 CFR 50.

The ACTION requirements specified for the levels of degradation of the power sources provide restriction upon continued facility operation commensurate with the level of degradation. the OPERABILITY of the power sources are consistent with the initial condition assumptions of the accident analyses and are based upon maintaining at least one of each of the onsite A.C. and D.C. power sources and associated distribution systems OPERABLE during accident conditions coincident with an assumed loss of offsite power and single failure of the other onsite A.C. source.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status.

The Surveillance Requirements for demonstrating the OPERABILITY of the diesel generators are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies", March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants", Revision 1, August 1977 as modified by Virginia Power's exigent relief request, Serial No. 85-029 dated February 1, 1985.

Containment electrical penetrations and penetration conductors are protected by either de-energizing circuits not required during reactor operation or by demonstrating the OPERABILITY of primary and backup overcurrent protection circuit breakers during periodic surveillance.

The surveillance frequency applicable to molded case circuit breakers and/or fuses provides assurance of breaker and/or fuse reliability by testing at least one representative sample of each manufacturers brand of circuit breaker and/or fuse. Each manufacturer's molded case circuit breakers and/or fuses are grouped into representative samples which are then tested on a rotating basis to ensure that all breakers and/or fuses are tested. If a wide

ATTACHMENT 2

Discussion of Proposed Changes

Discussion of Proposed Changes

Background

North Anna Unit 2 Emergency Diesel Generators have recently experienced several failures which are currently being investigated to identify the root cause(s). Preliminary findings of this investigation have identified three items within the existing Technical Specifications for Unit 2 which are likely contributors to diesel failure: a) fast starts from ambient conditions, b) rapid electrical loading and c) frequency of surveillance testing. The diesel manufacturer, Colt Industries, concurs in this assessment.

The present Unit 2 Technical Specifications require the diesels to accelerate to synchronous speed within 10 seconds and be loaded to greater than or equal to 2750 kw in less than 60 seconds for routine surveillance tests. This requirement routinely subjects critical parts of the diesel to severe thermal transients, which when repeated excessively, is believed to lead to the types of failures experienced at North Anna Unit 2. Our investigation revealed that Unit 1, which does not have a similar 60 second loading requirement or accelerated test frequency, has not experienced similar failures.

Unit 2 Emergency Diesel Generators have been subjected in the past to more frequent starts than the Unit 1 diesels. These additional starts are due to the Unit 2 Technical Specification requirement that increases the frequency of surveillance tests upon experiencing failures in the last 100 valid tests for both diesels. Further, the Unit 2 diesels have a high number of starts due to operability testing every eight hours when the redundant diesel has been removed from service for maintenance or declared inoperable. Most of these operability tests have included the current Technical Specification requirement for loading the diesel in 60 seconds for routine surveillance testing.

Evaluation

This section will cover each proposed change to the Unit 2 Technical Specifications and the basis for the change.

Proposed 3.8.1.1. Action Statement a.

This action statement covers the appropriate responses when declaring one offsite circuit inoperable. Making this a separate action statement for an inoperable offsite power source is merely an administrative change. There are also three substantive technical items included within this proposed action statement:

The performance of Surveillance Requirement 4.8.1.1.2.a.4, demonstration of diesel operability, will be done once within 24 hours of declaring the offsite circuit inoperable unless previously tested in the last seven days. The present requirement is to perform 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter regardless of the time at which the last test was performed.

Basis:

The reason to perform diesel operability tests following the loss of one offsite circuit is to ensure that the backup power source will be available and capable of starting as designed. The present action statement requires verification of diesel starting within one hour and then once every eight hours thereafter. Demonstration of diesel starting capability within one hour of a loss of an offsite power source and subsequent testing every eight hours thereafter is both excessive and unwarranted.

If the diesel has been surveillance tested within the previous seven days, an operability test provides little further assurance of diesel availability than what already had been provided by the preceding surveillance test. This is apparent since diesel reliability is not suspect due to a loss of an offsite circuit. Put another way, loss of one offsite power source does not suggest that either diesel has become less reliable. Consistent with manufacturer's recommendations for a maximum surveillance test frequency of seven days, previous coverage within the surveillance frequency is an appropriate deferral time. Following expiration of the seven day deferral time, Surveillance Requirement 4.8.1.1.2.a.4 should be performed on the subject diesel within the allotted twenty-four hours consistent with the Action Statement unless otherwise tested per routine surveillance testing or unless otherwise placing the plant in shutdown per the LCO.

Consistent with the above argument, operability testing within 24 hours, when no previous surveillance testing applies, is more reasonable than testing within one hour. Diesel testing within the first 24 hours will provide assurance that no starting problems exist and also provides additional time for inspection prior to testing. Furthermore, 24 hours permits sequential testing of the diesels rather than simultaneous testing of both. The 24 hour requirement is also consistent with Generic Letter 84-15.

Finally, repetitive operability testing every eight hours is both unwarranted and counterproductive in providing assurance of diesel starting capability. In as much as fast starts has been identified by the manufacturer (and the NRC Staff in Generic Letter 84-15) as contributing to premature diesel engine degradation, repetitive testing is counterproductive to the stated purpose of providing continued assurance of starting capability. The recent failures at North Anna exemplify this concern. Two of the three failures in December were during repetitive operability tests. Within the existing requirements, nine operability tests may be required during the 72 hour action statement. In the past two years, approximately 30% of all diesel starts on Unit 2 were due to operability testing. This is in contrast to approximately 30% of the testing due to routine surveillance and 40% due to maintenance and repairs. This feature of the technical specification clearly plays a significant part in total start requirements and hence diesel wear. Consistent with Generic Letter 84-15, one operability start per diesel provides sufficient assurance of start capability in the event of a loss of an offsite power circuit.

Proposed 3.8.1.1 Action Statement b.

This action statement covers the appropriate responses when declaring one Emergency Diesel Generator inoperable. Making this a separate action statement for an inoperable EDG is merely an administrative change. There are also two substantive technical items included within this proposed action statement:

The performance of Surveillance Requirement 4.8.1.1.2.a.4, demonstration of the diesels operability, will be done once within 24 hours of declaring the offsite circuit inoperable. The present requirement is to perform 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter.

Basis:

The reason to perform a diesel operability test following the loss of the other diesel is to ensure that the remaining diesel will be available and capable of starting as designed. Specifically, an operability test of the remaining diesel provides assurance that the remaining operable diesel is not subject to the same failure (i.e. common mode failure). Rather than relying on previous surveillance testing, operability testing within 24 hours is proposed consistent with Generic Letter 84-15.

As discussed in Item 3.8.1.1.a above, repetitive operability testing every eight hours following the initial confirmation of diesel availability is unwarranted and counterproductive. Fast starts contribute to premature engine wear and as such repetitive operability tests within the 72 hour action statement are counterproductive to continued assurance of starting capability. As previously discussed, the recent failures at North Anna exemplify this point. To be consistent with the philosophy of reducing excessive testing and thereby enhancing diesel reliability, only one operability start is proposed as confirmation of the remaining diesel's availability. Testing within twenty four hours provides timely assurance of starting capability while providing the additional time for inspection prior to testing.

Proposed 3.8.1.1 Action Statement c

This action statement covers the appropriate responses when declaring one offsite circuit and one diesel generator inoperable. In the existing Technical Specifications this is action statement b. The proposed action statement has two substantive changes:

The performance of Surveillance Requirement 4.8.1.1.2.a.4, demonstration of diesel operability, will be done once within 8 hours of declaring both sources inoperable. The present requirement is to perform 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter.

Basis:

Consistent with the proposed changes to Action Statements a and b, the proposed changes to action statement c provide adequate assurance of diesel availability by one time testing while eliminating unnecessary extra fast starts. Additionally, performance of the test within eight hours provides the requisite assurance while also providing added time for inspection prior to test. These changes are also consistent with Generic Letter 84-15.

Proposed 3.8.1.1. Action Statement d

This action statement covers the appropriate responses when two offsite power circuits are declared inoperable. This is action statement c in the existing Technical Specifications. Only two substantive changes are being proposed:

The performance of Surveillance Requirement 4.8.1.1.2.a.4, demonstration of diesel operability, will be done once within 8 hours of declaring the offsite circuits inoperable. The present requirement is to perform 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter.

Basis:

The proposed change is consistent with those made for action statements a, b, and c above. As noted in the discussion for action statement "a", loss of an offsite circuit does not suggest that either diesel has become less reliable than noted by its previous surveillance test. Given the significance of losing both offsite circuits, one operability test per diesel within eight hours provides adequate assurance of diesel reliability. This change is also consistent with Generic Letter 84-15.

Proposed 3.8.1.1 Action Statement e

This action statement covers the appropriate responses when declaring both emergency diesel generators inoperable. In the existing Technical Specifications this is action d. There are no substantive changes proposed only clarification of the required action upon restoration of one diesel generator unit.

Proposed Surveillance Requirement 4.8.1.1.2.a.4

This surveillance requirement covers the starting of the diesels and the parameters that must be met during the startup testing. The existing Technical Specifications requires the diesel to accelerate to at least 900 rpm, 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds. The proposed changes modify the test requirement to permit more gradual starting and require gradual loading of the diesel during routine surveillance and action statement operability testing. Consequentially, the present Surveillance Requirements 4.8.1.1.2.a.4 and 5 have been combined.

Basis:

To reduce wear and minimize the severity of thermal transients on the diesel generators, the manufacturer has recommended increasing the start time and gradually loading the diesels to greater than 60% rated load any time the diesel is routinely operated. Fast starts are considered abusive to the engine and contribute to premature failures. Reaching rated speed and voltage in the presently specified 10 seconds is based on FSAR analysis assumptions for a design base Loss of Coolant Accident (LOCA) concurrent with loss of offsite power. Requiring the diesel to be routinely tested to design base conditions is excessive and unwarranted. First, the design base verification test is performed every eighteen months besides the present routine surveillance test requirement and

consistent with Generic Letter 84-15, proposed Surveillance Requirement 4.8.1.1.2.c has been added to require semiannual verification of the FSAR specified ten second start. It is our position that semiannual testing to verify design base capability is adequate given the severity of the test on the diesels. Secondly, diesel reliability is not determined by fast starts of the diesel. Rather, the assurance of continued and reliable diesel performance is provided by trending critical parameters while the diesel is loaded and after those parameters have stabilized following the start. The design capability of the air start system would be confirmed semiannually, but routine surveillance testing without fast starting would still be adequate to establish trends in starting times which would be indicative of a need to initiate subsequent preventative maintenance activities.

It is for the above reasons as well as to minimize the degradation to the diesels that the manufacturer has recommended gradual starting and loading as well as maintaining load for at least sixty minutes. The manufacturer has specifically recommended that routine surveillance testing include: 1) a two minute prelubrication period prior to starting; 2) a one to two minute gradual ramping to synchronous speed; 3) a five minute warmup unloaded for preconditioning while synchronizing to the appropriate bus; 4) a five to ten minute gradual ramping to approximately fully rated load; 5) one to two hours at load; and 6) a five to ten minute gradual ramp down in load prior to terminating the test.

In as much as routine surveillance is both verification of design capability and maintenance checking to manufacturer's specifications, abusive fast starts should be kept as low as practicable while still verifying design capability. Considering the extremely low probability of a DBA LOCA concurrent with loss of offsite power, routine testing of ten second starts is excessive as well as unnecessarily abusive to the engines.

Proposed Surveillance Requirement 4.8.1.1.2.a.5

This surveillance test addresses the loading requirements of the diesel during routine testing. The existing Technical Specification requires loading the diesel to at least 2750 kw in less than 60 seconds and operating for at least 1 hour. The proposed change modifies this loading requirement by removing the time limit to reach rated load and combining the item with Surveillance Requirement 4.8.1.1.2.a.4.

Basis:

As noted in Surveillance Requirement 4.8.1.1.2.a.4 above, the bases for loading to design rating within sixty seconds is verification testing of diesel capability for the concurrent occurrence of a loss of offsite AC power and design base LOCA. This test is performed every eighteen months as well as the presently proposed semiannual test in proposed item 4.8.1.1.2.c. Considering the extremely low probability of these events occurring concurrently, routine testing for this capability is excessive.

Furthermore, the diesel manufacturer has recommended more gradual loading during routine surveillance/maintenance situations as a means of engine preconditioning and to avoid subjecting the machine to the severe thermal transients which result from fast loading. We consider that routine surveillance is meant to implement manufacturer's recommended testing and to verify load handling capability, not accident simulation testing. Accordingly, the proposed technical specifications have eliminated the sixty second loading requirement from routine surveillance tests.

We note that several of the recent diesel failures on Unit 2 are symptomatic of severe thermal transients. As such, diesel loading requirements for routine surveillance testing is suspected. We also note that Unit 1, which does not have this sixty second loading requirement has experienced no failures to date.

Semiannual testing of the design base condition is considered an adequate test frequency for this improbable event.

Proposed Surveillance Requirement 4.8.1.1.2.c

This new surveillance test covers the semiannual requirement to perform a 10 second start (900 rpm, 4160 ± 420 volts 60 ± 1.2 Hz) from ambient conditions and a 60 second loading to 2750 kw.

Basis:

Refer to Items 4.8.1.1.2a.4 and 5 above. As previously noted, this Surveillance Requirement has been added to verify diesel capability to perform during worst case design base accident conditions (i.e. LOCA concurrent with loss of offsite power). Given the low likelihood of occurrence, this test frequency is deemed acceptable. It is also consistent with Generic Letter 84-15.

As a matter of practicality, the sixty second loading time is initiated after synchronization, following breaker closure. This time is necessary for personnel to synchronize the diesel with the appropriate bus and log all the critical start parameters to verify a valid start. It is proposed to maintain this practice in the new Surveillance Requirement.

Table 4.8-2

This table addresses diesel generator surveillance testing frequency. The existing Technical Specification testing frequency is based on the number of valid failures experienced in the last 100 valid tests per nuclear unit per Regulatory Guide 1.108, Revision 1. The proposed Technical Specifications testing frequency is based on a matrix of the number of valid failures in the last 20 and 100 valid tests on a per diesel generator basis. In addition, the proposed change provides for a restart in counting failures provided successful corrective actions have been taken.

Basis:

The present Unit 2 Technical Specifications for the emergency diesels require accelerated surveillance testing based on past failures per Regulatory Guide 1.108, Revision 1. This test schedule is based on a reactor unit basis rather than diesel basis. The test frequency proceeds from 31 days for one failure to 3 days for four or more failures.

The Company proposes a different test schedule adapting the general criteria of Regulatory Guide 1.108 and Generic Letter 84-15 with the exception that a transvaluation in number of failures is permitted following a complete diesel overhaul and successful post-maintenance, operability verification and subsequent surveillance testing per Table 4.8-2. Post-maintenance testing will be established on a case specific basis dependent on the extensiveness of the overhaul (i.e. it is anticipated if replacement of major parts is needed that a more extensive test program including a break-in run of the diesel and power run to re-baseline trending parameters would be required). Operability testing will remain per common practice (Surveillance Requirement 4.8.1.1.2.a.4). The concept of transvaluation is included to encourage corrective actions which enhance reliability rather than maintain a punitive testing schedule following corrective action, which in actuality is counterproductive to diesel reliability. The 100 valid test criteria has also been revised to reflect the Generic Letter 84-15 concept of reliability goals. Specifically, five failures or more in the last 100 tests per diesel require increased surveillance to ensure the minimum desired level (i.e. 95%) for diesel reliability is maintained. With less failures than that, monthly testing per manufacturer recommendations is specified.

Although the diesel manufacturer disagrees with the concept of accelerated surveillance testing, he has concurred with the proposed approach as a more reasonable test schedule. Specifically, Colt Industries has stated that monthly surveillance is an acceptable routine test frequency given the prelubrication and keep-warm system modifications made at North Anna. Prior to these modifications, Colt had recommended routine testing more frequently than monthly. Colt still insists that a three day frequency is excessive and will not enhance diesel reliability, but rather contribute to diesel wear.

The contrast in failure experience between Unit 1 and Unit 2 supports the proposed changes in routine surveillance test frequency. As noted before, Unit 1 and Unit 2 routine testing is similar except for rate of loading and test frequency. Unit 1 diesels do not require an accelerated testing based on failures. Although Unit 1 has been in commercial operation over two years longer than Unit 2, Unit 2 diesels have been operated more often than Unit 1. In the last two years Unit 2 diesels have been started over 40% more than Unit 1 diesels. Since Unit 1 has experienced no diesel failures, it would appear that there exists a significant correlation between the number of tests (i.e. test frequency) and diesel failures.

The proposed test schedule is based on a per diesel rather than per reactor unit basis consistent with Generic Letter 84-15. We consider that testing of a redundant diesel based on failures experienced on another diesel to be excessive and not technically justifiable. Such testing adversely affects the continued performance and reliability of the other diesel. Changing the specification to a per diesel basis addresses individual diesel reliability and enhances overall reliability by requiring remedial actions only on diesel generators which are experiencing failures.

50.59 and Significant Hazards Review

Pursuant to 10 CFR 50.59, we have reviewed the proposed Technical Specification changes and have concluded that no unreviewed safety question exists: (i) the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report is not increased. Reducing the test frequency and modifying starting and loading requirements consistent with the diesel manufacturer's recommendations is intended to enhance diesel reliability by minimizing severe test conditions which can lead to premature failures. In this respect, the proposed changes should serve to enhance overall safety, (ii) the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report is not created. The proposed change affects testing frequency, starting and loading practices only and has no actual impact on any accident analysis; (iii) the margin of safety as defined in the basis for any Technical Specification is not reduced. The changes in the testing requirements do not affect the capability of the diesels to perform their function. Rather, the purpose of the changes are to increase overall diesel reliability.

Conclusion

The above proposed changes to North Anna Unit 2 Technical Specifications have been made considering recommendations by the diesel generator manufacturer and are compatible with the recommendations of Generic Letter 84-15. These changes are meant to redress immediate diesel reliability concerns identified as a result of the failures experienced on Unit 2. They do not represent a final optimization of testing requirements, however, these proposals will provide positive improvements to diesel generator reliability. Following implementation and experience through our reliability improvement program, we intend to reassess the related specifications for both units and propose specifications which programatically address diesel reliability.

ATTACHMENT 3

Basis For Exigent Request

BASIS FOR EXIGENT REQUEST

10CFR50.91(a)(6) provides for handling proposed amendment requests where exigent circumstances exist and time does not permit the NRC to publish a Federal Register notice allowing thirty days for prior public comment. One subsection, paragraph (iv), requires the licensee to provide a reason for the exigency and why the licensee cannot avoid it. Where the NRC determines that the licensee has failed to use its best efforts to make a timely application in order to create the exigency and to take advantage of this procedure, the NRC will use its routine public notice and comment procedures.

The proposed change to the Technical Specification 8.4.1 originated as the result of ongoing diesel reliability assessments following the recent failures on Unit 2 diesels. These investigations were initiated immediately following the three diesel failures in December 1984. The implications of this reliability review are that the very test requirements to determine and ensure operability are in fact contributors to future diesel failure. This assessment was affirmed in the ACRS review of the recent incidents during the full committee meeting on January 10, 1985. The most recent diesel failure of January 13, 1985, may be a case in point.

The diesel manufacturer has suggested that the existing testing requirements can be detrimental to sustained engine reliability. Specifically, the testing methodology is inconsistent with good diesel starting and loading practices. Secondly, the accelerated surveillance and operability test schedule is excessive with respect to providing reasonable assurance of the diesel's capability to start and provide emergency power. Each start wears critical moving parts. Rapid loading causes large internal thermal stresses. The combination of these appears to be a significant contributor to the premature diesel failures experienced at North Anna.

With the most recent diesel failure of January 13, 1985, Unit 2 diesels are now required to be tested once every three days. This only exacerbates the situation, making it all the more likely that additional diesel degradation will occur with the corresponding likelihood of premature failure and plant shutdown per the Technical Specification action statement. We note that subsequent diesel failure during repetitive operability testing is exactly what occurred during the December 1984 failures. Accordingly, we seek emergency relief to prevent such reoccurrence.

As this reliability assessment and its determinations only recently have been initiated and the most recent consequence of excessive testing realized in the January 13, 1985 failure, it is clear that Vepco never intended to create and take advantage of this exigent situation. We would prefer to handle the proposed change in a routine manner, but consider the likelihood of subsequent diesel failures due to the accelerated surveillance and operability testing presently specified to be too substantial to wait for the more ordered approach. We are convinced that the proposed Technical Specification change is warranted and cannot be avoided if we are to correct and maintain reliable diesel operation at North Anna. Therefore, we request that the Commission process the proposed amendment on an exigent basis.