Handout for Pre-Submittal Meeting with NRC and DC Cook Plant in March 19, 2021

Table format of the instrumentation that will discussed during this Meeting.

| | Description | Elevation | RG 1.97 | Function |
|---|---|---|---|---|
| NLA-310, NLI-311 | Containment Sump Water Level Monitors | 589’ 5” to 599’ 8” | Type B, Category 2 | Used by operators to check if the RCS is intact |
| NLI-320, NLI-321 | Containment Water Level Monitors | 599’ 3” to 614” | Type A, Category 1 | Satisfy Function 7, Containment Water Level, used by operators to check if the RCS is intact |
| NLI-330, NLI-331 | Containment Water Level Switches (lower) | 602’ 2 3/4” | Type A, Category 1 | Used by operators to verify sufficient water in containment to switch to recirculation |
| NLI-340, NLI-341 | Containment Water Level Switches (upper) | 613’ 0” | Type A, Category 1 | Used by operators to identify containment water level approaching containment flooding |

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each Function.
---

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ----------NOTE----------<br>Not applicable to Functions 14 and 23.<br>----------<br><br>One or more Functions with one required channel inoperable. | A.1 Restore required channel to OPERABLE status. | 30 days |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Initiate action in accordance with Specification 5.6.6. | Immediately |
| C. ----------NOTE----------<br>Only applicable to Functions 14 and 23.<br>----------<br><br>One or more Functions with one required channel inoperable. | C.1 Restore required channel to OPERABLE status. | 30 days |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| D. One or more Functions with two or more required channels inoperable. | D.1 | Restore all but one channel to OPERABLE status. | 7 days |
| E. Required Action and associated Completion Time of Condition C or D not met. | E.1 | Enter the Condition referenced in Table 3.3.3-1 for the channel. | Immediately |
| F. As required by Required Action E.1 and referenced in Table 3.3.3-1. | F.1<br><br>AND<br><br>F.2 | Be in MODE 3.<br><br><br><br>Be in MODE 4. | 6 hours<br><br><br><br>12 hours |
| G. As required by Required Action E.1 and referenced in Table 3.3.3-1. | G.1 | Initiate action in accordance with Specification 5.6.6. | Immediately |

SURVEILLANCE REQUIREMENTS

----------NOTE----------

These SRs apply to each PAM instrumentation Function in Table 3.3.3-1, except where identified in the SR.

---

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.3.3.1 | Perform CHANNEL CHECK for each required instrumentation channel that is normally energized. | In accordance with the Surveillance Frequency Control Program |
| SR 3.3.3.2 | Deleted. | |
| SR 3.3.3.3 | ----------NOTE----------<br>Neutron detectors are excluded from CHANNEL CALIBRATION.<br>---<br>Perform CHANNEL CALIBRATION. | In accordance with the Surveillance Frequency Control Program |

Table 3.3.3-1 (page 1 of 2)
Post Accident Monitoring Instrumentation

| | FUNCTION | REQUIRED CHANNELS | CONDITION REFERENCED FROM REQUIRED ACTION E.1 |
|---|---|---|---|
| 1. | Neutron Flux | 2 | F |
| 2. | Steam Generator Pressure (per steam generator) | 2 | F |
| 3. | Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range) | 2 | F |
| 4. | RCS Cold Leg Temperature (Wide Range) | 2 | F |
| 5. | RCS Pressure (Wide Range) | 2 | F |
| 6. | Reactor Coolant Inventory Tracking System (Reactor Vessel Level Indication) | 2 | G |
| 7. | Containment Water Level | 2 | F |
| 8. | Containment Pressure (Narrow Range) | 2 | F |
| 9. | Penetration Flow Path Containment Isolation Valve Position | 2 per penetration flow path[(a)(b)] | F |
| 10. | Containment Area Radiation (High Range) | 2 | G |
| 11. | Deleted | | |
| 12. | Pressurizer Level | 2 | F |
| 13. | Steam Generator Water Level (Wide Range) | 4 | F |
| 14. | Condensate Storage Tank Level | 1 | G |
| 15. | Core Exit Temperature - Quadrant 1 | 2[(c)] | F |
| 16. | Core Exit Temperature - Quadrant 2 | 2[(c)] | F |
| 17. | Core Exit Temperature - Quadrant 3 | 2[(c)] | F |
| 18. | Core Exit Temperature - Quadrant 4 | 2[(c)] | F |
| 19. | Secondary Heat Sink Indication (per steam generator) | 2[(d)] | F |

(a) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) A channel consists of one core exit thermocouple (CET).

(d) Any combination of two instruments per steam generator, including Steam Generator Water Level (Narrow Range) and Auxiliary Feedwater Flow, can be used to satisfy Function 19 OPERABILITY requirements.

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

| | FUNCTION | REQUIRED CHANNELS | CONDITION REFERENCED FROM REQUIRED ACTION E.1 |
|---|---|---|---|
| 20. | Emergency Core Cooling System Flow (per train) | 2[(e)] | F |
| 21. | Containment Pressure (Wide Range) | 2 | F |
| 22. | Refueling Water Storage Tank Level | 2 | F |
| 23. | RCS Subcooling Margin Monitor | 1[(f)] | F |
| 24. | Component Cooling Water Pump Circuit Breaker Status | 2 | G |
| 25. | Containment Recirculation Sump Water Level | 2 | F |

(e) Any combination of two instruments per train, including Centrifugal Charging Pump Flow, Safety Injection Pump Flow, Centrifugal Charging Pump Circuit Breaker Status, and Safety Injection Pump Circuit Breaker Status, can be used to satisfy Function 20 OPERABILITY requirements.

(f) An OPERABLE plant process computer (PPC) subcooling margin readout can be used as a substitute for an inoperable Function 23, RCS Subcooling Margin Monitor.

B 3.3 INSTRUMENTATION

B 3.3.3 Post Accident Monitoring (PAM) Instrumentation

BASES

BACKGROUND

The primary purpose of the PAM instrumentation is to display unit variables that provide information required by the control room operators during accident situations. This information provides the necessary support for the operator to take the manual actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for Design Basis Accidents (DBAs).

The OPERABILITY of the accident monitoring instrumentation ensures that there is sufficient information available on selected unit parameters to monitor and to assess unit status and behavior following an accident.

The availability of accident monitoring instrumentation is important so that responses to corrective actions can be observed and the need for, and magnitude of, further actions can be determined. These essential instruments are identified in References 1, 2, and 5 addressing the recommendations of Regulatory Guide 1.97 (Ref. 3) as required by Supplement 1 to NUREG-0737 (Ref. 4).

The instrument channels required to be OPERABLE by this LCO include two classes of parameters identified during unit specific implementation of Regulatory Guide 1.97 as Type A and Category 1 variables.

These key variables are identified by the unit specific Regulatory Guide 1.97 analyses (Ref. 1, 2, and 5). These analyses identify the unit specific Type A and Category 1 variables and provide justification for deviating from the NRC guidance in Reference 3.

The specific instrument Functions listed in Table 3.3.3-1 are discussed in the LCO section.

APPLICABLE SAFETY ANALYSES

The PAM instrumentation LCO ensures the OPERABILITY of Regulatory Guide 1.97 Type A variables so that the control room operating staff can:

- Perform the diagnosis specified in the emergency operating procedures (these variables are restricted to preplanned actions for the primary success path of DBAs), e.g., loss of coolant accident (LOCA); and

- Take the specified, pre-planned, manually controlled actions, for which no automatic control is provided, and that are required for safety systems to accomplish their safety function.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The PAM Instrumentation LCO also ensures the OPERABILITY of Category 1, non-Type A, variables so the control room staff can:

- Determine whether systems important to safety are performing their intended functions;
- Determine the likelihood of a gross breach of the barriers to radioactivity release;
- Determine if a gross breach of a barrier has occurred; and
- Initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

PAM instrumentation that meets the definition of Type A in Regulatory Guide 1.97 satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). Category 1, non-Type A, instrumentation must be retained in TS because it is intended to assist operators in minimizing the consequences of accidents. Therefore, Category 1, non-Type A, variables are important for reducing public risk.

LCO

The PAM instrumentation LCO provides OPERABILITY requirements for Regulatory Guide 1.97 Type A monitors, which provide information required by the control room operators to perform certain manual actions specified in the unit Emergency Operating Procedures. These manual actions ensure that a system can accomplish its safety function, and are credited in the safety analyses. Additionally, this LCO addresses Regulatory Guide 1.97 instruments that have been designated Category 1, non-Type A.

The OPERABILITY of the PAM instrumentation ensures there is sufficient information available on selected unit parameters to monitor and assess unit status following an accident. This capability is consistent with the recommendations of Reference 3.

LCO 3.3.3 requires two OPERABLE channels for most Functions. Two OPERABLE channels ensure no single failure prevents operators from getting the information necessary for them to determine the safety status of the unit, and to bring the unit to and maintain it in a safe condition following an accident.

Furthermore, OPERABILITY of two channels allows a CHANNEL CHECK during the post accident phase to confirm the validity of displayed information.

BASES

LCO (continued)

One exception to the two channel requirement is Containment Isolation Valve (CIV) Position. In this case, the important information is the status of the containment penetrations. The LCO requires one position indicator for each active CIV. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active valve and prior knowledge of a passive valve, or via system boundary status. If a normally active CIV is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE.

Type A and Category 1 variables meet Regulatory Guide 1.97 Category 1 (Ref. 3) design and qualification requirements for seismic and environmental qualification, single failure criterion, utilization of emergency standby power, immediately accessible display, continuous readout, and recording of display, except for approved deviations, as described in References 1 and 2.

Listed below are discussions of the specified instrument Functions listed in Table 3.3.3-1. For all applicable Functions, the recorder or indicator may be used as the qualified instrument.

1. Neutron Flux

   Neutron Flux (NRI-21 and NRI-23) is a Category 1 variable provided to verify reactor shutdown. The range of each of the two neutron flux instruments (10E-8 to 200% power) covers the full range of flux that may occur post accident.

2. Steam Generator (SG) Pressure (per SG)

   Steam Generator Pressure is a Type A, Category 1 variable provided for determination of required core exit temperature. Three steam generator pressure channels per steam generator are provided (MPP-210, MPP-211, MPP-212, MPP-220, MPP-221, MPP-222, MPP-230, MPP-231, MPP-232, MPP-240, MPP-241, and MPP-242). Each channel has a range of 0 psig to 1200 psig. However, only two steam generator pressure channels per steam generator are required to satisfy the guidance in Reference 3. Each steam generator is treated separately and each steam generator is considered a separate Function. Therefore, separate Condition entry is allowed for each steam generator. This is acceptable since each steam generator has two channels and the channels of one steam generator are independent from the channels of the other steam generators.

BASES

LCO (continued)

3, 4. Reactor Coolant System (RCS) Hot and Cold Leg Temperatures (Wide Range)

RCS Hot and Cold Leg Temperatures are Type A, Category 1 variables provided for verification of core cooling and long term surveillance. RCS hot and cold leg temperatures are used to determine RCS subcooling margin.

The RCS hot leg and RCS cold leg channels each receive input from one resistance temperature detector (RTD). In each of RCS loops 1 and 3, there is one RCS hot leg RTD (NTR-110 with MR-9, and NTR-130 with MR-11) and one RCS cold leg RTD (NTR-210 with MR-9, and NTR-230 with MR-11) that satisfy the guidance of Reference 3. The channels provide indication over a range of 0°F to 700°F.

5. RCS Pressure (Wide Range)

RCS wide range pressure is a Type A, Category 1 variable provided for verification of core cooling and RCS integrity long term surveillance.

RCS wide range pressure is used as criteria to manually trip the reactor coolant pumps.

In addition, RCS wide range pressure is used for determining RCS subcooling margin.

Two RCS Pressure (Wide Range) channels are provided (NPS-110 and NPS-111, with MR-13), each with a range of 0 psig to 3000 psig.

6. Reactor Coolant Inventory Tracking System (Reactor Vessel Level Indication)

Reactor coolant inventory is a Category 1 variable provided for verification and long term surveillance of core cooling.

The Reactor Coolant Inventory Tracking System consists of two channels of instrumentation (NLI-110, NLI-111, NLI-120, NLI-121, NLI-130, and NLI-131). Each channel is capable of measuring upper plenum level, narrow range level, and dynamic head (i.e., wide range level). The Reactor Coolant Inventory Tracking System provides a direct measurement of the collapsed liquid level above the fuel alignment plate. The collapsed level represents the amount of liquid mass that is in the reactor vessel above the core. Measurement of

BASES

LCO (continued)

the collapsed water level is selected because it is a direct indication of the water inventory.

7. Containment Water Level

Containment Water Level is a Type A, Category 1 variable provided for determination of adverse containment conditions. Two containment water level channels are provided (NLI-320 and NLI-321). Each channel is capable of measuring from 599' 3" elevation to 614' elevation (containment floor level to maximum flood level). Additionally, each channel is supplemented by two level switches. Each level switch will provide indication in the control room when the containment water level has exceeded its associated setpoint. One level switch actuates at a containment level of 602' 2 3/4" (NLI-330 and NLI-340) while the other level switch actuates when the containment level reaches 613' 0" (NLI-331 and NLI-341). The low switch provides a decision point associated with Type A use (switch the Emergency Core Cooling System (ECCS) suction source from the refueling water storage tank to the containment recirculation sump) while the high switch confirms whether or not the containment water level has exceeded its design basis value.

8. Containment Pressure (Narrow Range)

Containment Pressure (Narrow Range) is a Type A, Category 1 variable used as criteria to manually establish or trip containment spray. Four containment pressure (narrow range) channels are provided (PPP-300, PPP-301, PPP-302, and PPP-303). Each channel has a range of -5 psig to +12 psig. However, only two of containment pressure (narrow range) channels are required to satisfy the guidance in Reference 3.

9. Penetration Flow Path Containment Isolation Valve Position

Containment Isolation Valve (CIV) (excluding check valves) Position is a Category 1 variable provided for verification of Containment OPERABILITY, and Phase A and Phase B isolation.

In the case of CIV position, the important information is the isolation status of the containment penetrations (UFSAR Table 5.4-1). The LCO requires one channel of valve position indication in the control room to be OPERABLE for each active CIV in a containment penetration flow path, i.e., two total channels of CIV position indication for a penetration flow path with two active valves requiring

BASES

LCO (continued)

post-accident valve position indication. For containment penetrations with only one active CIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration either via indicated status of the active valve, as applicable, and prior knowledge of a passive valve, or via system boundary status. If a penetration flow path is isolated, position indication for the CIVs is not needed to determine status. Therefore, the position indication for valves in an isolated penetration flow path is not required to be OPERABLE. Note (a) to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path.

10. Containment Area Radiation (High Range)

Containment Area Radiation (High Range) is a Type A, Category 1 variable provided for determination of adverse containment conditions. Two containment area radiation channels are provided (VRA-1310 and VRA-1410). Each channel is capable of monitoring from 1 R/hr to 10E7 R/hr.

11. Deleted

12. Pressurizer Level

Pressurizer Level is a Type A, Category 1 variable used to determine whether to manually reduce ECCS flow. Three pressurizer level channels are provided (NLP-151, NLP-152, and NLP-153). Each channel has a range of 0 to 100% (96% of indicated volume). However, only two pressurizer level channels are required to satisfy the guidance in Reference 3.

BASES

LCO (continued)

13. Steam Generator Water Level (Wide Range)

SG Water Level is a Category 1 variable provided to monitor operation of decay heat removal via the SGs. Four steam generator level (wide range) channels (one per steam generator) are provided (BLI-110, BLI-120, BLI-130, and BLI-140). Each channel is capable of monitoring from 12 inches above the steam generator tube sheet to the separators.

14. Condensate Storage Tank (CST) Level

CST Level is a Category 1 variable provided to ensure water supply for auxiliary feedwater (AFW). The CST provides the qualified water supply for the AFW System. Inventory is monitored from essentially the top of the CST to the bottom of the CST (95% total volume) by a single channel provided to satisfy the guidance of Reference 3, as described in Reference 1. CST Level is displayed on a control room indicator (CLI-114).

15, 16, 17, 18. Core Exit Temperature

Core Exit Temperature is a Type A, Category 1 variable used to determine whether to manually reduce ECCS flow. This variable is also provided for verification and long term surveillance of core cooling. In addition, core exit temperature is used for determining RCS subcooling margin.

Two OPERABLE channels of Core Exit Temperature, with one core exit thermocouple per channel, are required in each quadrant to provide indication of radial distribution of the coolant temperature rise across representative regions of the core. Two core exit temperature channels per quadrant ensure a single failure will not disable the ability to determine the radial temperature gradient. Each core exit temperature channel (SG-30 and SG-31 for TC 1 through 65) has a range of 200°F to 2300°F.

19. Secondary Heat Sink Indication (per SG)

Secondary Heat Sink Indication is a Type A, Category 1 variable used to determine whether to manually reduce ECCS flow. This variable is also provided to monitor operation of decay heat removal via the SGs.

As stated in Note (d) to Table 3.3.3-1, the requirements for this variable are met by any combination of two instruments per SG,

BASES

LCO (continued)

including Steam Generator Water Level (Narrow Range) and Auxiliary Feedwater Flow. One auxiliary feedwater flow channel per SG is provided (FFI-210, FFI-220, FFI-230, and FFI-240). Each channel is capable of measuring from 0 lbm/hr to 250,000 lbm/hr. Three steam generator water level (narrow range) channels per SG are provided (BLP-110, BLP-111, BLP-112, BLP-120, BLP-121, BLP-122, BLP-130, BLP-131, BLP-132, BLP-140, BLP-141, and BLP-142). Each channel is capable of measuring from below the first stage separator to the second stage separator. Thus, there are four available channels of Secondary Heat Sink Indication for each steam generator. Each Steam generator is treated separately and each steam generator is considered a separate Function. Therefore, separate Condition entry is allowed for each steam generator. This is acceptable since each steam generator has two required channels and the channels of one steam generator are independent from the channels of the other steam generators.

20. Emergency Core Cooling System Flow (per train)

Emergency Core Cooling System Flow is a Type A, Category 1 variable used as criteria to manually trip the reactor coolant pumps. As stated in Note (e) to Table 3.3.3-1, the requirements for this variable are met by any combination of two instruments per train, including Centrifugal Charging Pump Flow, Safety Injection Pump Flow, Centrifugal Charging Pump Circuit Breaker Status, and Safety Injection Pump Circuit Breaker Status. Four Centrifugal Charging Pump Flow channels (two channels per train) are provided (IFI-51, IFI-52, IFI-53, and IFI-54). Each channel is capable of measuring from 0 gpm to 200 gpm. Two Safety Injection Pump Flow channels (one channel per train) are provided (IFI-260 and IFI-266). Each channel is capable of measuring from 0 gpm to 500 gpm. Two Centrifugal Charging Pump Circuit Breaker Status channels (one channel per train) are provided. Each channel is capable of indicating circuit breaker position (open or closed). Two Safety Injection Pump Circuit Breaker Status channels (one channel per train) are provided. Each channel is capable of indicating circuit breaker position (open or closed). One train consists of the Train A Safety Injection and Centrifugal Charging Pumps Breaker Status channels, the south Safety Injection Pump Flow channel, and the Loops 1 and 2 Centrifugal Charging Pump Flow channels, while the other train consists of the Train B Safety Injection and Centrifugal Charging Pumps Breaker Status channels, the north Safety Injection Pump Flow channel, and the Loops 3 and 4

BASES

LCO (continued)

Centrifugal Charging Pump Flow channels. Thus, there are five instrument channels per train that can be used to meet the LCO. The selection of which train the instruments are associated with is based upon the instrumentation power supply. Each train is treated separately and each train is considered a separate Function. Therefore, separate Condition entry is allowed for each train. This is acceptable since each train has two required channels and the channels of one train are independent from the channels of the other train.

21. Containment Pressure (Wide Range)

Containment Pressure (Wide Range) is a Category 1 variable provided for verification of RCS and containment OPERABILITY. Two containment pressure (wide range) channels are provided (PPA-310 and PPA-312). Each channel is capable of monitoring from -5 psig to +36 psig.

22. Refueling Water Storage Tank Level

Refueling Water Storage Tank Level is a Type A, Category 1 variable provided for determination of when the manual transfer to cold leg recirculation is required, based on low Refueling Water Storage Tank level. Two refueling water storage tank water level channels are provided (ILS-950 with MR-36, and ILS-951). Each channel is capable of monitoring from essentially the top of the tank (bottom of the tank overflow) to the bottom of the tank (bottom of the safety injection suction pipe).

23. RCS Subcooling Margin Monitor

RCS Subcooling Margin Monitor is a Type A variable provided for the determination of when to manually trip or when to reduce pressurizer spray and ECCS flow. This variable is also provided for verification of core cooling. The RCS Subcooling Margin Monitor calculates the margin to saturation for the RCS from inputs for RCS Pressure (Wide Range), Core Exit Temperature, RCS Hot Leg Temperature (Wide Range) and RCS Cold Leg Temperature (Wide Range). The RCS Subcooling Margin Monitor is capable of measuring from 425°F subcooling to 75°F superheat. The output of the RCS Subcooling Margin Monitor is indicated in the control room. As stated in Note (f) to Table 3.3.3-1, the plant process computer subcooling margin readout can also be used in place of the RCS Subcooling Margin Monitor indicator in the control room.

BASES

LCO (continued)

24. Component Cooling Water Pump Circuit Breaker Status

Component Cooling Water Pump Circuit Breaker Status is a Type A, Category 1 variable provided for verification of component cooling water flow to Engineered Safety Feature Systems. Two component cooling water pump circuit breaker status channels (one channel per component cooling water pump) are provided. Each channel is capable of indicating circuit breaker position (open or closed).

25. Containment Recirculation Sump Water Level

Containment Recirculation Sump Water Level is a Type A, Category 1 variable provided for diagnosis of excessive fouling or blockage of the sump strainers. Two containment recirculation sump level channels are provided (NLI-300 and NLI-301). These instruments provide indication and alarm functions in the control room if the water level in the sump drops to an undesirable level. The level switch setpoint of 601'-9" provides advance warning of potential air entrainment due to vortexing, which is a more limiting factor than the loss of NPSH to the ECCS/CTS pumps.

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Condition of this Specification may be entered independently for each Function listed on Table 3.3.3-1. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

A.1

Condition A applies when one or more Functions (except Functions 14 and 23) have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel or remaining isolation barrier in the case of containment penetrations with only one CIV, the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and

BASES

ACTIONS (continued)

the low probability of an event requiring PAM instrumentation during this interval.

B.1

Condition B applies when the Required Action and associated Completion Time for Condition A are not met. This Required Action specifies immediate initiation of actions in Specification 5.6.6, which requires a written report to be submitted to the NRC. This report discusses the results of the evaluation into the cause of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

C.1

Condition C applies when either Function 14 or 23 (or both) have one required channel that is inoperable. Required Action C.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account other non-Regulatory Guide 1.97 instrument channels to monitor the Function, the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

D.1

Condition D applies when one or more Functions have two or more inoperable required channels (i.e., two or more channels inoperable in the same Function). Required Action D.1 requires restoring all but one channel in the Function(s) to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Continuous operation with two or more required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of all but one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur.

BASES

ACTIONS (continued)

E.1

Condition E applies when the Required Action and associated Completion Time of Condition C or D is not met. Required Action E.1 requires entering the appropriate Condition referenced in Table 3.3.3-1 for the channel immediately. The applicable Condition referenced in the Table is Function dependent. Each time an inoperable channel has not met the Required Action of Condition C or D, and the associated Completion Time has expired, Condition E is entered for that channel and provides for transfer to the appropriate subsequent Condition.

F.1 and F.2

If the Required Action and associated Completion Time of Condition C or D is not met and Table 3.3.3-1 directs entry into Condition F, the unit must be brought to a MODE where the requirements of this LCO do not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and MODE 4 within 12 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems

G.1

At this unit, alternate means of monitoring Reactor Vessel Water Level, Containment Area Radiation, Condensate Storage Tank Level, and Component Cooling Water Flow have been developed and tested. These alternate means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. If these alternate means are used, the Required Action is not to shut down the unit but rather to follow the directions of Specification 5.6.6, in the Administrative Controls section of the TS. The report provided to the NRC should discuss the alternate means used, describe the degree to which the alternate means are equivalent to the installed PAM channels,

BASES

ACTIONS (continued)

justify the areas in which they are not equivalent, and provide a schedule for restoring the normal PAM channels.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the following SRs apply to each PAM instrumentation Function in Table 3.3.3-1, except where identified in the SR.

SR 3.3.3.1

Performance of the CHANNEL CHECK ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The Containment Area Radiation (High Range) instrumentation should be compared to similar unit instruments located throughout the unit. When only one channel of the Reactor Coolant Inventory Tracking System is OPERABLE, the RCS Subcooling Margin Monitor and Core Exit Temperature channels may be used for performance of the CHANNEL CHECK of the OPERABLE Reactor Coolant Inventory Tracking System channel.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

As specified in the SR, a CHANNEL CHECK is only required for those channels that are normally energized.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.2 Deleted

SR 3.3.3.3

CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. This SR is modified by a Note that excludes neutron detectors. For Function 9, the CHANNEL CALIBRATION shall consist of verifying that the position indication conforms to actual valve position. For Functions 15, 16, 17, and 18, whenever a sensing element is replaced, the next required CHANNEL CALIBRATION of the Core Exit Temperature thermocouple sensors is accomplished by an inplace cross calibration that compares the other sensing elements with the recently installed sensing elements. For Functions 20 (Circuit Breaker Status channels) and 24, the CHANNEL CALIBRATION shall consist of verifying that the position indication conforms to actual circuit breaker position. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. NRC letter, T. G. Colburn (NRC) to M. P. Alexich (Indiana Michigan Power Company), "Emergency Response Capability – Conformance to Regulatory Guide 1.97 Revision 3 for the D. C. Cook Nuclear Plant, Units 1 and 2," dated December 14, 1990.

2. UFSAR, Table 7.8-1.

3. Regulatory Guide 1.97, Revision 3, May 1983.

4. NUREG-0737, Supplement 1, "TMI Action Items."

5. NRC letter, P. S. Tam (NRC), to M. K. Nazar, (Indiana Michigan Power Company), "Donald C. Cook Nuclear Plant, Units 1 & 2 (DCCNP-1 AND DCCNP-2) - Issuance of Amendments Re: Containment Sump Modifications per Generic Letter 2004-02 (TAC Nos. MD5901 AND MD5902)," dated October 18, 2007.