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May 25, 2000

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Subject: McGuire Nuclear Station
May 19, 2000 Initial Written Licensing Examination Comments
50-369/2000-301 and 50-370-2000-301

The enclosed initial written examination comments are provided in accordance with NUREG 1021, Section 402. These formal comments are associated with the May 19, 2000 McGuire Nuclear Station initial written licensing examination.

The following attachments are also provided:

1) Lesson Plan OP-MC-IC-ENB pages 25, 27, 49 and 81 of 117
2) McGuire Technical Specification 3.6.1, Containment, page 3.6.1-1
3) McGuire Technical Specification 1.3, Completion Times
4) McGuire Technical Specification Reference Manual, Section VI, page 18

Questions or comments should be directed to Mr. Alan Orton, Manager – Operations Training at (704) 875-5397.

Very truly yours,

Bryan J. Dolan

for H. B. Barron, Vice President
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U. S. Nuclear Regulatory Commission
May 25, 2000

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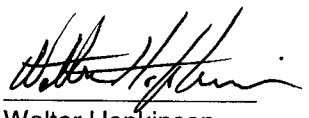
Date: May 25, 2000

To: Brew Barron

From: Walter Hopkinson

As a McGuire Operations facility representative I have reviewed the NRC written examination grading. I have determined that the grading is accurate per the answer key. I have also reviewed the questions for training deficiencies. This review is done per NUREG 1021, Revision 8 section 403. This review is documented on ES-403-1, Written Examination Grading Quality Checklist.



Walter Hopkinson

cc: Alan Orton
Ed Roberts

RO Exam Question 7 / SRO Question 7 (Bank Question #152)

This question was semantically misleading to ten of twelve candidates, who selected B as the answer (the remaining two candidates chose C as the answer). Recommend changing the answer from C to both B and C based on post-exam comments and a better understanding of the interpretation of the stem of the question.

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1 Pt(s) The operators are conducting a reactor startup.

Given the following indications on the source range (SR) and intermediate range (IR) excore nuclear instruments:

Time	0200	0205	0210	0215
SR "A" (cps)	$1.5x10^{4}$	$2.5x10^{4}$	$2.8x10^{4}$	$1.0x10^{5}$
SR "B" (cps)	$1.4x10^{4}$	$2.3x10^{4}$	$2.7x10^{4}$	$9.8x10^{4}$
IR "A" (amps)	$7.6x10^{-11}$	$1.1x10^{-10}$	$1.5x10^{-10}$	$7.0x10^{-10}$
IR "B" (amps)	$7.9x10^{-11}$	$9.0x10^{-11}$	$1.1x10^{-10}$	$7.5x10^{-10}$

What is the earliest time that the operators may block the source range nuclear instruments?

A. 0200

B. 0205

C. 0210

D. 0215

Comment: The intent of the question was to test the student's knowledge of the procedural requirements for blocking S/R instrument's during plant startup. If the student understood the intent of the question to be procedurally driven, then the correct response is 'C'.

If the student understood the intent of the question to be a function of plant hardware capabilities, then the correct answer is 'B'. Ten of 12 candidates answered the question as to when the P6 interlock could be physically blocked – that is, when the various logics and conditions would be satisfied such that the SR block switches would function. The stem of the question asks:

"What is the earliest time that the operators may block the source range nuclear instruments?"

The use of the word "*may*" was not sufficient to provide the student with enough understanding that the question was testing procedural requirements (1-decade overlap with P-6 interlock) instead of simple hardware logic (P-6 interlock).

Recommendation: Accept <u>both</u> answers B and C.

Supporting References:

1. OP-MC-IC-ENB (Rev. #17) pages 25, 27, 49, 81 (attached)
2. Technical Specification Manual, Section VI, page 18 (attached)

SRO Exam Question # 9 (Bank Question #207) (SRO Only)

The original identified exam answer to this question was technically incorrect. The original answer was "B". The correct answer should be "C".

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1 Pt(s) Unit 1 is preparing for a reactor start up following a refueling outage. Given the following conditions:

- T_{avg} = 515 °F
- Plant heatup in progress using NCPs

At 0200, a Station Engineer reports that a mistake had been made in analyzing the containment Appendix J Leak Rate Test results that were conducted prior to exceeding 200 °F. Reanalysis indicated that the combined containment leak rate (Type A) had exceeded 1.0 L_a.

Which one of the following actions is required by Tech Specs in response to this situation?

REFERENCES PROVIDED

A. Commence a plant cooldown to reach Mode 5 within 30 hours.

B. Commence a plant cooldown to reach Mode 5 within 36 hours.

C. Commence a plant cooldown to reach Mode 5 within 37 hours.

D. Commence a plant cooldown to reach Mode 5 within 43 hours.

Comment: The allowable completion time for LCO 3.6.1 condition B starts only after the required action and associated completion time for condition A has not been met. Condition B is entered after the one-hour has elapsed under condition A. Therefore the allowable completion times of conditions A and B are summed, contrary to the general rule stated in Tech Spec section 1.3, 'Completion Times' which does not apply in this specific case. The specific example given in Tech Specs is found on page 1.3-4.

Recommendation: Change the answer from B to C.

Supporting References:

1. Tech Spec 3.6.1 (Containment) page 1 (attached)
2. Tech Spec 1.3 (Allowable Completion Times) pages 1 – 13, specifically page 1.3-4. (attached)

2.2.2 Over Compensation And Under Compensation

Objective # 7

Reference **Figure 7.7.** With the inner chamber voltage set properly, inner chamber gamma current will exactly match outer chamber gamma current and the two will cancel leaving only the neutron current. With inner chamber voltage set too high, inner chamber current will exceed outer chamber gamma current canceling all gamma current plus some of the neutron current. This is "over-compensation". The following are consequences of **over-compensation**:

- The indicated power level will read lower than the actual power level.
- The intermediate range instrument will "come on scale" at a higher source range level producing less overlap between the two ranges.
- During startup, the P-6 permissive will be received later, at a higher actual neutron flux level and the source range will be closer to the 10^5 cps, Hi Level Trip setpoint.
- After a Reactor Trip, power will decay to the P-6 reset sooner than normal.
- Initially, indicated SUR will be higher than actual SUR.

The effects of improper compensation are much more pronounced at low power and become a non-factor prior to taking critical data at 10^{-8} amps.

With inner chamber voltage set too low, inner chamber current will be less than outer chamber gamma current, canceling only a portion of the gamma current. This is "under-compensation". The following are consequences of **under-compensation**:

- The indicated power level will read higher than the actual power level.
- The intermediate range instrument will "come on scale" at a lower source range level producing more overlap between the two ranges.
- During startup, the P-6 permissive will be received earlier, at a lower actual neutron flux level.
- After a Reactor Trip, power will decay to the P-6 reset later than normal and may prevent automatic re-energizing of the source range detectors.
- Initially, indicated SUR will be lower than actual SUR.

2.2.3 Intermediate Range Circuitry

Objective # 4

Reference **Figure 7.8.** The Intermediate Range should normally start to indicate power at a Source Range power level of 10^3 cps and the Source Range should be blocked by the time level is 10^4 cps and Intermediate level is at 10^{-10} amps. The indicating range for the Intermediate Range instrument is 10^{-11} to 10^{-3} amps, which overlaps the entire power range.

The current flow from the intermediate range detectors is too low to be used directly for control purposes so the output feeds a log level amplifier (log amp) for conversion to a usable voltage. The log level amplifier also converts the detector signal to a logarithmic output and drives the bistables, indicators and other circuits.

Bistable Relay Drivers provide the **"P-6 Permissive,"** the **"Low Power Rod Stop"** and the **"Reactor Trip"** whenever the intermediate range amps exceed the setpoint. An isolation amplifier feeds the OAC, SUR Circuitry, Control Board Meter, and the NR-45 Chart Recorder.

2.2.4 Intermediate Range Outputs

Both Intermediate range channels read out on the Control Board with a range of 10^{-11} to 10^{-3} amps. The Intermediate Range level can be monitored on the NR-45 Control Room Chart Recorder. In addition to counts per second, Intermediate Range Start-Up Rate (SUR) is indicated for each channel in decades per minute (-0.5 to 5.0 DPM).

The **P-6 Source Range Block Permissive** actuates when **"1-out-of-2" (1/2) IR channels exceeds 10^{-10} amps.**

The **Low Power Rod Stop** prevents outward motion of the rods in Auto and Manual when **1/2 IR channels exceeds amps equivalent to 20% reactor power.**

The **Low Power Reactor Trip** protects the core from startup accidents when **1/2 IR channels exceeds amps equivalent to 25% reactor power.**

2.2.5 Intermediate Range Drawer Panel (Reference **Figure 7.9**).

Objective # 8

Ampere Neutron Level Meter - Indicates current output of detector in amps with a range of eight decades (10^{-11} to 10^{-3} amps)

Instrument Power "ON" Lamp - 118 volt AC instrument power is applied to drawer.

Control Power "ON" Lamp - 118 volt AC control power is applied to driver assembly control circuits.

Channel On Test Lamp - Indicates Operation Selector switch is in a position other than "NORMAL".

Level Trip Bypass Lamp - Indicates Level Trip switch in "BYPASS" position.

High Level Trip Lamp - ON when neutron flux in IR exceeds current equivalent to 25% full power. (Approximately 2×10^{-5} amp).

High Level Rod Stop lamp - ON when IR current equivalent to 20% full power.

Power Above Permissive P-6 Lamp - Lights when IR reaches 10^{-10} amps. **Allows blocking Source Range Instruments.**

Loss of Detector Volt Lamp - Indicates low or loss of high voltage to detector.

Loss of Comp. Volt Lamp - Indicates loss of compensating voltage to detector.

AC Inst. Power Fuses - Overcurrent protection for instrument power.

AC Control Power Fuses - Overcurrent protection for control power.

NOTE (Reference **Figure 7.21**)**:** If either instrument or control power fuses are removed, the bistables will trip. Level Trip Bypass will prevent bistable trip for Instrument Power fuses only.

3.1.3 Alternative Indications of Power

Objective # 18

To ensure the accuracy of nuclear instrumentation, alternate indications of power level must be used to verify the validity of nuclear instruments and power level indications. Nuclear instrumentation can be inaccurate/miscalibrated either high or low, especially after work on or replacement of NI's during outages. Diverse indications of reactor power must be monitored. Examples of alternate power level indications include the following:

- Core delta temperature (100% power ≅ 57°F).
- First stage turbine pressure (100% power ≅ 720 psig).
- Generator electrical output

  Use of this parameter must take into account the variability of plant efficiency with power changes.

  Environmental conditions must also be taken into consideration. (100% Power ≅ 1200 Rated MWE).
- Condensate and feedwater system performance parameters, such as CFPT suction flow rates (100% Power ≅ CFPT flow rate of 15,000 to 16,000 gpm per pump).
- The power level at which the reactor begins to add heat (100% Power ≅ 2 decades above POAH on Intermediate Range Detectors - 4×10^{-4} Amps).
- Primary Heat Balance.
- Secondary Heat Balance.

3.1.4 Typical Plant Startup

Prior to startup, select highest reading Source Range and Intermediate Range channel to record on NR-45.

Defeat "Source Range High Flux at Shutdown" (One per channel).

Select NR-45 to high speed.

Announce "Commencing Reactor Startup".

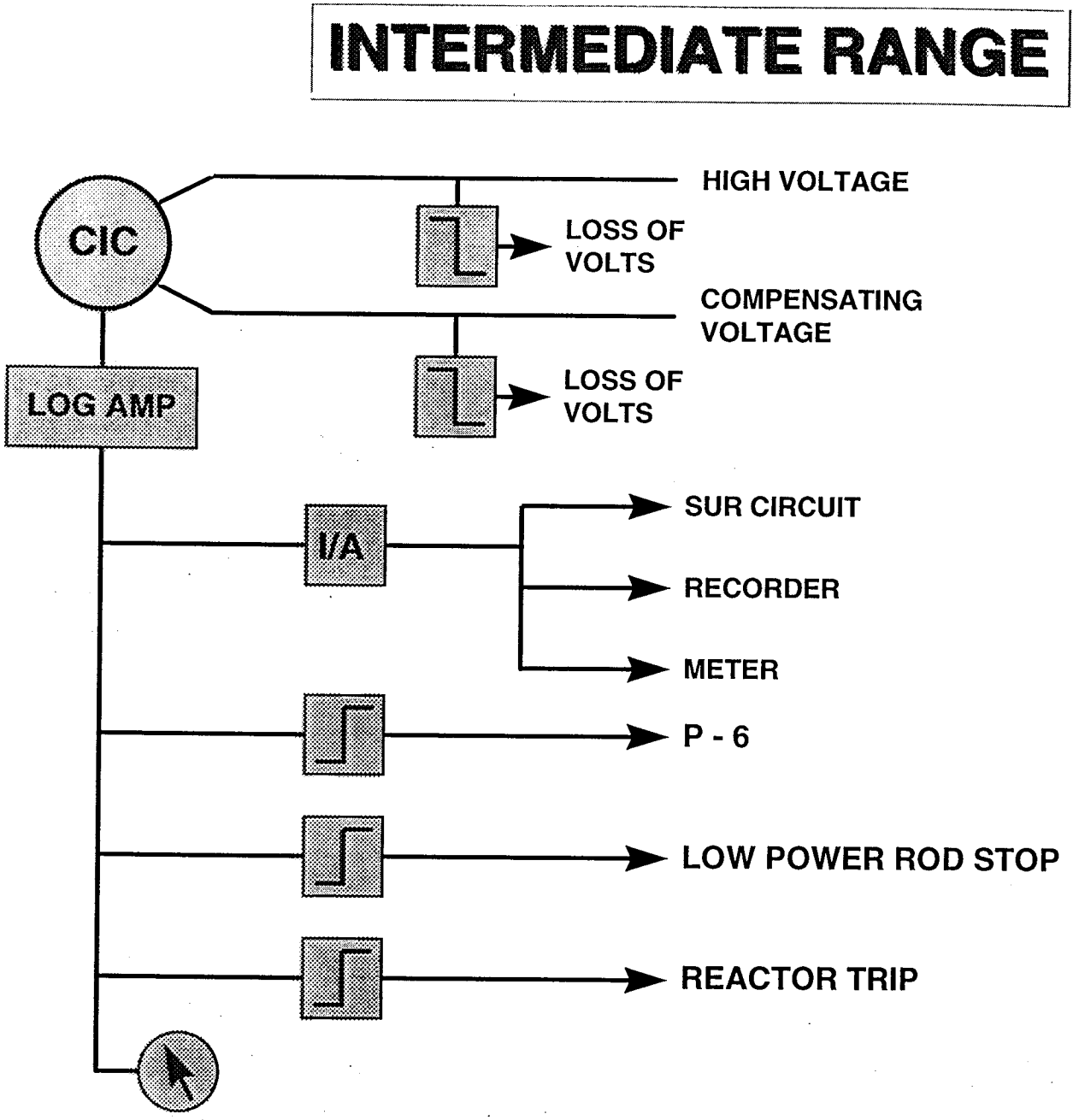
At 1×10^{-10} amps on IR channels.

- Verify P-6 SR block permissive (one per channel).
- Block SRD high level trips and deenergize SRD's by turning switch to "Block".
- Verify SRD block status light on.
- Select both IR channels to record on NR-45.

At 1×10^{-8} Amps

- Level reactor power.
- Record Critical Data: Rod Position, T_{ave}, and Boron Concentration.
- Select a power range to record on NR-45 and return recorder to slow speed

7.8 Intermediate Range Circuit(03/20/97)



3.6 CONTAINMENT SYSTEMS

3.6.1 Containment

LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.1 ----------NOTE---------- The space between each dual ply bellows assembly on penetrations between the containment building and annulus shall be vented to the annulus during Type A tests. ---------- Perform required visual examinations and Type A leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program

(continued)

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE

The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.

BACKGROUND

Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).

DESCRIPTION

The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.

If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.

Once a Condition has been entered, subsequent trains, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition, unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition.

However, when a subsequent train, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this

(continued)

1.3 Completion Times

DESCRIPTION (continued)

Completion Time extension, two criteria must first be met. The subsequent inoperability:

a. Must exist concurrent with the first inoperability; and

b. Must remain inoperable or not within limits after the first inoperability is resolved.

The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:

a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or

b. The stated Completion Time as measured from discovery of the subsequent inoperability.

The above Completion Time extensions do not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each train, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.

The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery . . ." Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

(continued)

1.3 Completion Times (continued)

EXAMPLES The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to be in MODE 3 within 6 hours AND in MODE 5 within 36 hours. A total of 6 hours is allowed for reaching MODE 3 and a total of 36 hours (not 42 hours) is allowed for reaching MODE 5 from the time that Condition B was entered. If MODE 3 is reached within 3 hours, the time allowed for reaching MODE 5 is the next 33 hours because the total time allowed for reaching MODE 5 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 5 is the next 36 hours.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One pump inoperable.	A.1	Restore pump to OPERABLE status.	7 days
B.	Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	36 hours

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Condition A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after LCO 3.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition A.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired,

(continued)

EXAMPLES

EXAMPLE 1.3-2 (continued)

LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Function X train inoperable.	A.1 Restore Function X train to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. One Function Y train inoperable.	B.1 Restore Function Y train to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO
C. One Function X train inoperable. AND One Function Y train inoperable.	C.1 Restore Function X train to OPERABLE status. OR C.2 Restore Function Y train to OPERABLE status.	72 hours 72 hours

(continued)

EXAMPLES

EXAMPLE 1.3-3 (continued)

When one Function X train and one Function Y train are inoperable, Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each train starting from the time each train was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second train was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected train was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock". In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-4

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more valves inoperable.	A.1	Restore valve(s) to OPERABLE status.	4 hours
B.	Required Action and associated Completion Time not met.	B.1 AND B.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (including the extension) expires while one or more valves are still inoperable, Condition B is entered.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-5

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each inoperable valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-5 (continued)

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

EXAMPLE 1.3-6

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One channel inoperable.	A.1	Perform SR 3.x.x.x.	Once per 8 hours
		OR		
		A.2	Reduce THERMAL POWER to $\leq$ 50% RTP.	8 hours
B.	Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours

(continued)

EXAMPLES

EXAMPLE 1.3-6 (continued)

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be complete within the first 8 hour interval. If Required Action A.1 is followed, and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met, Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

(continued)

EXAMPLES (continued)

EXAMPLE 1.3-7

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One subsystem inoperable.	A.1 Verify affected subsystem isolated. AND A.2 Restore subsystem to OPERABLE status.	1 hour AND Once per 8 hours thereafter 72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time

(continued)

1.3 Completion Times

EXAMPLES

EXAMPLE 1.3-7 (continued)

Condition A was initially entered. If Required Action A.1 is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.

IMMEDIATE COMPLETION TIME

When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

CAUTION: This section is for Operations Reference use only. The drawings are simplified and are not adequate for IAE troubleshooting.

LOGIC	INTERLOCKS	FUNCTION
P-4	Train A or B Reactor Trip	•TURBINE TRIP •FEEDWATER ISOLATION < LOW Tavg •ALLOWS BLOCK OF SAFETY INJECTION SIGNAL AFTER 60 SEC. TIME DELAY
P-6	1/2 I.R. > 10^{-10} amps	ALLOWS BLOCK OF S.R. REACTOR TRIP
P-7	2/4 P.R. > 10% FP (P-10) or 1/2 impulse pressure> 10% (P-13)	UNBLOCKS "AT POWER" REACTOR TRIPS •PZR HIGH LEVEL •PZR LOW PRESSURE •LOW NC FLOW 2/4 LOOPS •NCP UNDERVOLTAGE •NCP UNDERFREQUENCY
P-8	2/4 P.R. > 48% FP	UNBLOCKS THE 1/4 LOOPS LOSS OF FLOW REACTOR TRIP UNBLOCKS REACTOR TRIP ON TURBINE TRIP
P-10	2/4 P.R. > 10% FP	(1) ALLOWS BLOCK OF P.R. HIGH FLUX LOW SETPOINT REACTOR TRIP. (2) ALLOWS BLOCK OF I.R. HIGH FLUX ROD STOP (C-1) AND REACTOR TRIP. (3) BLOCKS MANUAL RESET OF S.R. (ACTUALLY ALLOWS MANUAL REINSTATEMENT OF S.R. INDICATION AND PROTECTIVE FUNCTION BELOW P-10 IF NOT AUTOMATICALLY REINSTATED BY P-6). (4) INPUT TO P-7.
P-11	2/3 PZR PRESS. < 1955	ALLOWS MANUAL BLOCK OF LOW PZR PRESSURE S.I. AND LOW STEAM PRESSURE STEAM LINE ISOLATION AND CA PUMP AUTO START
P-12	2/4 LO-LO Tavg $\leq$ 553•F	BLOCKS STEAM DUMPS
P-13	1/2 IMPULSE PRESSURE $\geq$ 10%	INPUT TO P-7
P-14	2/3 LEVEL ON 1/4 SG HI-HI LEVEL $\geq$ 83%	•TURBINE TRIP •FWPT TRIP •FEEDWATER ISOLATION

"P" INTERLOCKS

REVISION 4
REVIEWED BY: 10-5-99