Level	SRO	Tier	2	Group	1	K/A#	012 2.2.25	Imp. RO	2.5	Imp. SRO	3.7

13. References available: T.S. LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation"

For corrective maintenance, power was lowered to 8% on Unit 1. In this condition, I&C had to perform SP-1198, "NIS Power Range Startup Test." At the end of the surveillance test on channel N42, the I&C Specialist informed you that the power range low setpoint reactor trip function on channel N42 was found set at 37% power. The I&C Specialist also told you the trip function setpoint could be lowered no further than 25.2% which was <u>NOT</u> within the desired range of 23.9% to 24.9% in the SP. The as left setpoint was recorded as 25.2%.

What was and what is the status of the power range low power reactor trip function?

	AS FOUND	AS LEFT
a.	OPERABLE	OPERABLE
b.	Inoperable	OPERABLE
c.	OPERABLE	Inoperable
d.	Inoperable	Inoperable

ANSWER: C

Explanation:	Distracters represent a balanced set of two options available.
	a Plausible because the "as found" setpoint is acceptable per the T.S. Allowable Value.
	b Plausible because the "As found" is outside the "desired" range of the SP.
	c Correct per T.S. bases 3.3.2 page B3.3.2-6. Note: Information is not as clear in T.S. 3.3.1 bases but same intent should be assumed.
	d Plausible because the "As found" and "As left" are outside the "desired" range of the SP.
Technical References:	T.S. LCO 3.3.1 and 3.3.2 Bases (discussion of allowable values)
Objective:	P8184L-004
KA Statement:	Equipment Control: Knowledge of bases in technical specifications for limiting conditions for operations and safety limits. (RPS)

Cog. Level:	HIGH	10CFR55.41:		10CFR55.43:	YES	New Question:	YES
Bank:		Ques. ID:		Modified:		Last NRC Exam:	

Recommend answer key be modified to accept A or C for SRO Question 13.

Prairie Island has discovered conflicting references as discussed in CAP032714 during the post-exam review of this question.

T.S. Bases page 3.3.1-10 second paragraph states: "A channel is OPERABLE with an actual setpoint value outside its calibration tolerance provided the actual setpoint 'as-found' value does not exceed its associated Allowable Value and provided the setpoint 'as-left' value is adjusted to a value within the 'as-left' calibration tolerance band." This justifies the keyed answer of C.

The surveillance used to prove operability in this question would be SP 1198 [2198], "NIS Power Range Startup Test." On Page 14, there is a graphical guideline for resolving out-of-tolerance conditions that requires an inoperable declaration if the setpoint is greater than the T.S. Allowable Value of 40%. This guideline is referenced from Precautions and Limitations, Step 3.3.

Since the T.S. Basis was not provided during the exam, the candidates had to draw on memory to make the "as-left" operability determination. Depending on the plant reference remembered, the candidates could select either choice A or C. Either could be correct depending on the plant document which was referenced.

Ref: SP 1198 [2198], NIS Power range Startup Test, Rev. 15, Pages 2 & 14
       T.S. Bases Pages B3.3.1-3, B3.3.1-7, B3.3.1-10
       CAP032714, Pages 1-3

PRAIRIE ISLAND NUCLEAR GENERATING PLANT   SURVEILLANCE PROCEDURES

SP	**NIS POWER RANGE STARTUP TEST**	NUMBER: **SP 1198 [2198]**
		REV: **15**
		Page 2 of 14

1.0   PURPOSE AND GENERAL DISCUSSION

> ### *CONTINUOUS USE*
>
> - *Continuous use of procedure required.*
> - *Read each step prior to performing.*
> - *Mark off steps as they are completed.*
> - *Procedure SHALL be at the work location.*

1.1   The purpose of this test is to answer the operability of the NIS Power Range P8, P9, and P10 permissive functions, and the 25% High Flux Low Setpoint Reactor Trip function prior to reactor startup OR within 12 hours after reducing power below P-10.

1.2   This test fulfills Technical Specification surveillance requirements T.S. SR 3.1.8.1 and T.S. SR 3.3.1.8 for Table 3.3.1-1, Function 2b, and T.S. SR 3.3.1.13 for Table 3.3.1-1, Functions 16b1, 16c, 16d and 16e.

1.3   The acceptance criteria are satisfied by the successful completion of the procedure steps.

2.0   REFERENCES

Tech Spec Table 3.3.1-1, Functions 2b, 16c, 16d and 16e.
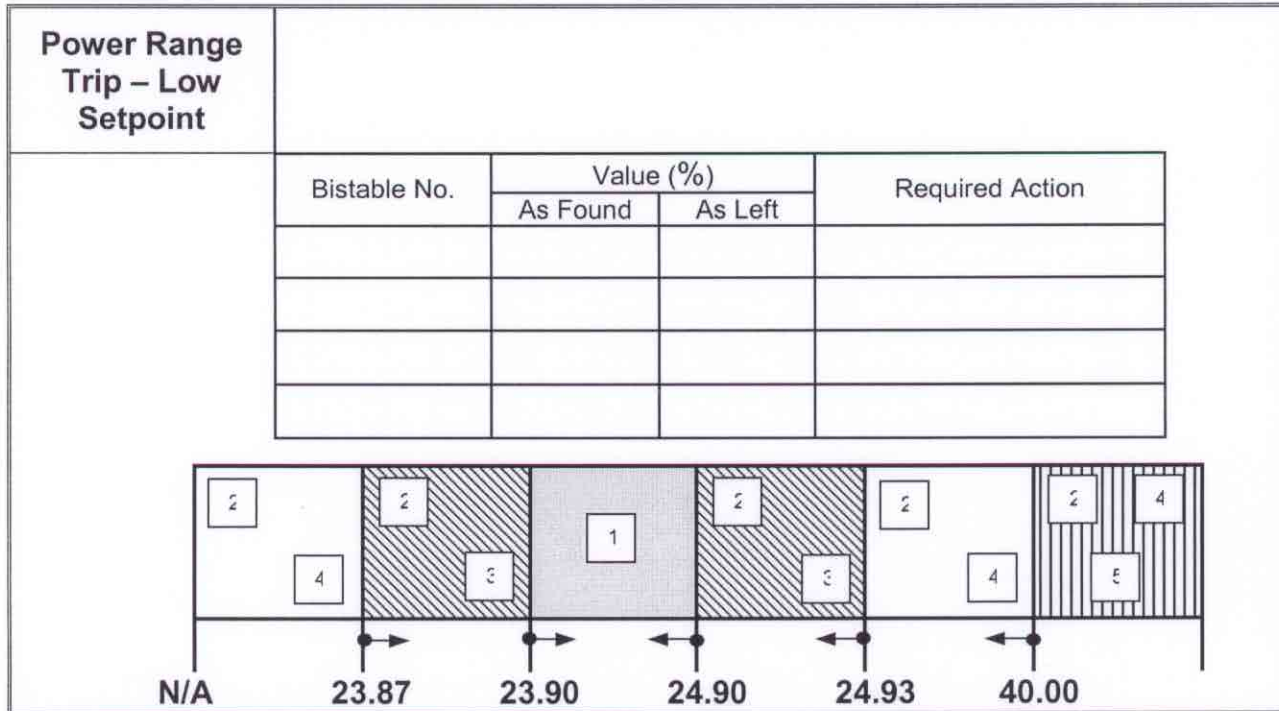
3.0   PRECAUTIONS AND LIMITATIONS

3.1   This test may be performed on only one of the Nuclear Instrument System channels at a time.

3.2   All steps in this procedure are to be performed in sequence. The procedure must be completed for the individual channel prior to testing another channel.

3.3   Notify the Shift Supervisor whenever unresolvable problems are encountered OR Acceptance Values are not met. Criteria designated "ACCEPTABLE VALUES" are directly related to Technical Specifications. Refer to Appendix A for guidance when these are not met. "Desired Value" criteria are not directly related to Tech Specs unless the channel is definitely inoperable.

4.0   PERSONNEL AND SPECIAL EQUIPMENT REQUIREMENTS

Manpower: One I&C Specialist

SP	NIS POWER RANGE STARTUP TEST	NUMBER: SP 1198 [2198]
		REV: 15
		Page 14 of 14

Appendix A - Guidelines for Resolving Out-Of-Tolerance Conditions

Power Range Trip – Low Setpoint				
	Bistable No.	Value (%)		Required Action
		As Found	As Left	

N/A   23.87   23.90   24.90   24.93   40.00

Required Actions:

1 = No Action
2 = Readjust Setpoint
3 = Initiate AR to "Trend" data
4 = Initiate AR to "Evaluate" data
5 = Declare inoperable, contact Shift Supervisor

BASES

BACKGROUND
(continued)

function and the only corrective action required would be to reset the device to the trip setpoint to account for further drift during the next surveillance interval.

Use of the trip setpoint to define "as-found" OPERABILITY and its designation as the LSSS under the expected circumstances described above would result in actions required by both the rule and technical specifications that are clearly not warranted. However, there is also some point beyond which the device would have not been able to perform its function due, for example, to greater than expected drift. This value needs to be specified in the technical specifications in order to define OPERABILITY of the devices and is designated as the Allowable Value which, as stated above, is the same as the LSSS.

The Allowable Value specified in Table 3.3.1-1 serves as the LSSS such that a channel is OPERABLE if the actual setting is found not to exceed the Allowable Value during the CHANNEL OPERATIONAL TEST (COT). As such, the Allowable Value differs from the trip setpoint by an amount primarily equal to the expected instrument loop uncertainties, such as drift, during the surveillance interval. In this manner, the actual setting of the device will still meet the LSSS definition and ensure that a safety limit is not exceeded at any given point of time as long as the device has not drifted beyond that expected during the surveillance interval. Note that, although the channel is "OPERABLE" under these circumstances, the trip setpoint should be left adjusted to a value within the established trip setpoint calibration tolerance band, in accordance with uncertainty assumptions stated in the referenced setpoint methodology (as-left criteria), and confirmed to be operating within the statistical allowances of the uncertainty terms assigned. If the actual setting of the device is found to have exceeded the Allowable Value the device would be considered inoperable from a technical specification perspective. This requires corrective action including those actions required by 10CFR50.36 when automatic protective devices do not function as required.

BASES

BACKGROUND	<u>Allowable Values and RTS Setpoints</u> (continued)

tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49, the Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservative with respect to the analytical limits. A detailed description of the methodology used to calculate the Allowable Values and trip setpoints, including their explicit uncertainties, is provided in the plant specific setpoint methodology study (Ref. 5) which incorporates all of the known uncertainties applicable to each channel. The magnitudes of these uncertainties are factored into the determination of each trip setpoint and corresponding Allowable Value. The trip setpoint entered into the bistable is more conservative than that specified by the Allowable Value (LSSS) to account for measurement errors detectable by the COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

The trip setpoint is the value at which the bistable is set and is the expected value to be achieved during calibration. The trip setpoint value ensures the LSSS and the safety analysis limits are met for the surveillance interval selected when a channel is adjusted based on stated channel uncertainties. Any bistable is considered to be properly adjusted when the "as-left" setpoint value is within the band for CHANNEL CALIBRATION uncertainty allowance (i.e., $\pm$ rack calibration + bistable setting uncertainties).

Trip setpoints consistent with the requirements of the Allowable Value ensure that SLs and DNBR limits are not violated during AOOs (and that the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed).

Each required instrument channel can be tested on line to verify that the signal or setpoint accuracy is within the specified allowance
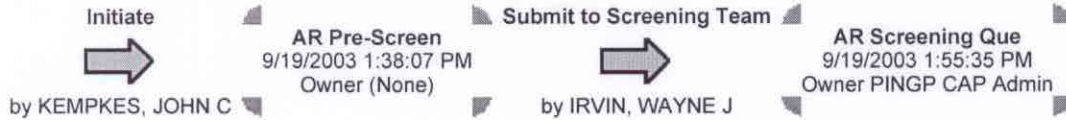
BASES

APPLICABLE
SAFETY
ANALYSES,
LCO, and
APPLICABILITY
(continued)

conditions that do not require dynamic transient analysis. They may also serve as backups to RTS trip Functions that were credited in the accident analysis.

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 in the accompanying LCO, to be OPERABLE. A channel is OPERABLE with an actual setpoint value outside its calibration tolerance provided the actual setpoint "as-found" value does not exceed its associated Allowable Value and provided the setpoint "as-left" value is adjusted to a value within the "as-left" calibration tolerance band. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions.

The LCO generally requires OPERABILITY of two, three, or four channels in each instrumentation Function, two channels of Manual Reactor Trip and two trains in each Automatic Trip Logic Function. Four OPERABLE instrumentation channels in a two-out-of-four configuration are required when RTS channels are also used as control system inputs and there is a possibility of the shared channel failing in such a manner that it creates a transient that requires RTS action. In this case, the RTS will still provide protection, even with random failure of one of the other three protection channels. Three OPERABLE instrumentation channels in a two-out-of-three configuration are generally required when there is no potential for control system and protection system interaction that could simultaneously create a need for RTS trip and disable one RTS channel. The two-out-of-three and two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing a reactor trip. Specific exceptions to the above general philosophy exist and are discussed below.

STATE CHANGE HISTORY

Initiate
by KEMPKES, JOHN C

AR Pre-Screen
9/19/2003 1:38:07 PM
Owner (None)

Submit to Screening Team
by IRVIN, WAYNE J

AR Screening Que
9/19/2003 1:55:35 PM
Owner PINGP CAP Admin

SECTION 1

Activity Request Id:	CAP032714
Activity Type:	CAP

		Submit Date: 9/19/2003 1:38:07 PM

One Line Description: I&C Calibration Surveillances found not to fully implement ITS bases

Detailed Description:
9/19/2003 1:38:07 PM - KEMPKES, JOHN C:
During a review of the 2003 NRC Initial License Exam, it was discovered that I&C surveillance procedure appendix in SP 1198(2198) for resolving out of tolerance conditions do not address all requirements of ITS bases.

The question involved was a surveillance where the "as-found" value was outside the allowable value but within TS LSSS value, and the "as-left" value was unable to be adjusted to within the calibration tolerance. Per ITS bases p. 3.3.10 second paragraph, "A channel is OPERABLE with an actual setpoint value outside its calibration tolerance provided the actual setpoint 'as-found' value does not exceed its associated Allowable Value and provided the setpoint 'as-left' value is adjusted to a value within the 'as-left' calibration tolerance band." The Appendix A guidelines for resolving out of tolerance conditions meet the first criteria but contain no guidance for the second condition, i.e. what to do if the 'as-left' cannot be adjusted within calibration tolerance.

This guidance is not present in the appendices for any of the ITS related I&C surveillances.

Initiator:	KEMPKES, JOHN C	**Initiator Department:**	PO4 Operations Crew 4 PI
Date/Time of Discovery:	9/19/2003 1:02:09 PM	**Date/Time of Occurrence:**	9/19/2003 1:02:09 PM
Identified By:	Site-identified	**System:**	RP PI
Equipment # (1st):	(None)	**Equipment Type (1st):**	(None)
Equipment # (2nd):	(None)	**Equipment Type (2nd):**	(None)
Equipment # (3rd):	(None)	**Equipment Type (3rd):**	(None)
Site/Unit:	Prairie Island - Common		

Why did this occur?:
9/19/2003 1:38:07 PM - KEMPKES, JOHN C:
An inability to restore a setpoint to within an allowable value is not a common problem with I&C surveillances. The I&C action in this situation would be to initiate a CAP item for evaluation and readjust setpoint. However, the SRO reviewing the surveillance would be put in the error likely situation of a procedure that does not call as-left operability into question and a technical specifications basis that would require it to be declared inoperable.

Immediate Action Taken: 9/19/2003 1:38:07 PM - KEMPKES, JOHN C:
Discussed question and interpretations with several SRO's. Verified with I&C supervisor and technician that in the instance used in the procedure they would not notify the SS to declare the channel inoperable and would only initiate a CAP, and that this table and actions are common throughout I&C surveillances.

Recommendations:
9/19/2003 1:38:07 PM - KEMPKES, JOHN C:
Consider adding a note to the "Required Actions" section of each page of Appendix A- Guidelines for Resolving Out-of-Tolerance Conditions in all I&C surveillances:
Note: IF as-left value is not within the as-left calibration tolerance band, THEN notify the Shift Supervisor to declare the channel INOPERABLE.

Notify Me During Eval?:	N	**SRO Review Required?:**	N

SECTION 2

Operability Status:	NA	**Compensatory Actions:**	N
Basis for Operability:	9/19/2003 1:55:35 PM - IRVIN, WAYNE J:		

procedure issues

❷ Unplanned TSAC Entry:	N	❷ External Notification:	N

SECTION 3

Screened?:	Y	❷ Significance Level:	C
INPO OE Reqd?:	N	Potential MRFF?:	N
❷ QA/Nuclear Oversight?:	N	❷ Licensing Review?:	N
Good Catch/Well Doc'd?:	NA		

SECTION 4

Inappropriate Action:			
Process:	DM - Document Mgmt	Activity:	DP - Document Prep/Revision
Human Error Type:	RB - Rule Based	Human Perf Fail Mode:	(None)
Equip Failure Mode:	(None)	Process Fail Mode:	(None)
Org/Mgt Failure Mode:	(None)	❷ Group Causing Prob:	PO Operations PI
Hot Buttons:	(None)		

SECTION 5

CAP Admin:	PINGP CAP Admin	Prescreener:	(None)
❷ Project:	Corrective Action Process (CAP)		
❷ State:	AR Screening Que	❷ Active/Inactive:	Active
❷ Submitter:	KEMPKES, JOHN C ✉	❷ Owner:	PINGP CAP Admin
AR Type:	Parent	❷ Last Modified Date:	9/22/2003 11:54:35 AM
❷ Last Modifier:	HALL, MICHAEL E ✉	❷ Last State Change Date:	9/19/2003 1:55:35 PM
❷ Last State Changer:	IRVIN, WAYNE J ✉	❷ Close Date:	
NUTRK ID:			
# of Children:	0		
References:			
Update:			
Prescreen Comments:			
Import Memo Field:			
OPR Completed?:	N		
OLD_ACTION_NUM:			
sub_tsid:	0	original_project_id:	9
original_issue_id:	032714		
Site:	Prairie Island		
Cartridge and Frame:			

ATTACHMENTS AND PARENT/CHILD LINKS

⬚ Principal to CA007025: I&C Calibration Surveillance's found not to fully implement ITS bases

CHANGE HISTORY

9/20/2003 12:31:11 PM by SIENCZAK, FRANK A
Last Modified Date Changed From 9/19/2003 1:55:35 PM To 9/20/2003 12:31:11 PM
Last Modifier Changed From IRVIN, WAYNE J To SIENCZAK, FRANK A

9/20/2003 12:31:17 PM by SIENCZAK, FRANK A
Last Modified Date Changed From 9/20/2003 12:31:11 PM To 9/20/2003 12:31:17 PM
original_project_id Changed From 0 To 9
original_issue_id Changed From '' To '032714'

9/20/2003 12:43:36 PM by SIENCZAK, FRANK A
Last Modified Date Changed From 9/20/2003 12:31:17 PM To 9/20/2003 12:43:36 PM
Attachment Added: Principal to CA007025: I&C Calibration Surveillances found not to fully implement ITS bases

9/22/2003 11:54:35 AM by HALL, MICHAEL E
Last Modified Date Changed From 9/20/2003 12:43:36 PM To 9/22/2003 11:54:35 AM
Last Modifier Changed From SIENCZAK, FRANK A To HALL, MICHAEL E
Attachment Updated: Principal to CA007025: I&C Calibration Surveillance's found not to fully implement ITS bases