SRM/IRM Overlap Verification and SRM Detector Withdrawal during Reactor Startup

Job Position(s): ☒ RO ☒ SRO

Source: ☒ New ☐ Bank ☐ Modified _____ (Facility ID No. for Bank or Modified)

K/A Reference: 215004.A4, Ability to manually operate and/or monitor in the Control Room.

Method of testing: ☐ Simulated/Walk-thru Performance [Classroom/Plant]

☒ Actual Performance [Simulator/Lab]

Type: (Check all that apply)

☐ Administrative Topics	☒ Control Room Systems	☐ In-Plant Systems
☐ Alternate Path	☐ Emergency/Abnormal	☐ ESF
☒ Low-Power/Shutdown	☐ Time Critical	

Task Standard: SRM detectors are fully withdrawn after completing SRM/IRM overlap verification and without generating an automatic reactor trip.

Validation Time: 15 Minutes

Simulator Setup:

Establish conditions such that the reactor just critical with a 300-400 second period, SRMs reading between 1 X 10^3 and 1 X 10^4 CPS, and IRMs downscale.

Place SRM and IRM Recorders to HI SPEED.

Simulator operator may need to manipulate control rods to maintain reactor period.

Required Materials:

Rod pull sheet and reactivity maneuver plan.

GOP 22.000.02, Plant Startup To 25% Power, marked up with the exception of applicable SRM related steps.

23.602, Source Range Monitoring System

24.603.02, SRM/IRM/APRM Overlap Verification, completed through step 5.1.2.

General References:

GOP 22.000.02, Plant Startup To 25% Power

23.602, Source Range Monitoring System

24.603.02, SRM/IRM/APRM Overlap Verification

Initial Conditions:

Reactor Startup is in progress per GOP 22.000.02, Plant Startup To 25% Power.

Step 53 on the Control Rod pull sheet.

The Reactor is critical with a 300-400 second period.

Initiating Cue:

Verify SRM/IRM overlap per 24.603.02, SRM/IRM/APRM Overlap Verification, and then fully withdraw SRM detectors.

Performance Information

Critical Steps are annotated by an "**c**" and italicized text.

	ELEMENTS	STANDARDS
	NOTE TO EVALUATOR: The following steps are continuous action steps from GOP 22.000.02, Plant Startup To 25% Power and are provided for reference purposes. Simulator operator may range IRMs as needed.	
	5.2.12 Commence withdrawing the SRM Detectors as necessary to maintain count rate between 1 x 10^2 to 1 x 10^5 cps in accordance with 23.602, "Source Range Monitoring System."	SRM count rate maintained between 1 x 10^2 cps and 1 x 10^5 cps.
	5.2.18 Verify SRM/IRM Overlap in accordance with 24.603.02, "SRM/IRM/APRM Overlap Verification," prior to fully withdrawing the SRM detectors.	SRM/IRM Overlap verified prior to fully withdrawing the SRM detectors.
	5.2.19 Adjust IRM Range Switches to maintain indication normally between 25 to 75 of scale on 0 to 125 scale and 8 to 24 of scale on 0 to 40 of scale.	No automatic SCRAM on high flux.
	NOTE TO EVALUATOR: The following steps are taken from surveillance test procedure 24.603.02, SRM/IRM/APRM Overlap Verification and must be completed prior to fully withdrawing SRM detectors.	
c	5.1.3 *Verify at least a 1/2 decade overlap between all operable IRM and operable SRM channels, prior to fully withdrawing SRMs from the core,* by verifying the following conditions are met:	*NO SRM detectors have been fully withdrawn, AND*
	1. All operable SRM Channels read below 3 X 10^4 CPS	*1. All operable SRM Channels read below 3 X 10^4 CPS*
	2. All operable IRM Channels show increasing FLUX level.	*2. All operable IRM Channels show increasing FLUX level.*
	3. All operable IRM Channels are above the downscale trip.	*3. All operable IRM Channels are above the downscale trip.*

	ELEMENTS	STANDARDS
5.1.4	Record test personnel.	Records name in 24.603.02

NOTE TO EVALUATOR: The following steps are taken from procedure 23.602, Source Range Monitoring System
NOTE TO EVALUATOR: It is possible to move all four SRM Detectors in one direction simultaneously, but preferred method is to move a maximum of two detectors at one time.

Power On switch should already be ON.

5.2.1	Depress and release Power On switch.	Green power ON pushbutton illuminates.

NOTE TO EVALUATOR: Step 5.2.4 of 23.602 is not applicable due to plant conditions.

Steps 5.2.2 through 5.2.8 will be repeated as necessary to maintain SRM count rate until SRM detectors are fully withdrawn.

c	*5.2.2*	*Select SRM Detectors to be moved by depressing and releasing respective SRM Select switch and monitor count rate on other detectors.*	*No more than two SRMs selected at a time.* *Associated White SELECT pushbutton illuminates.*
	5.2.3	Verify Retract Permit lights for desired SRMs, are ON.	Green RETRACT PERMIT light remains illuminated.

NOTE TO EVALUATOR: Steps 5.2.5 and 5.2.6 have been incorporated into one JPM step.

c	*Positions SRM detectors as needed to maintain SRM count rate between 1 x 10^2 cps and 1 x 10^5 cps:*		*Maintains SRM count rate between 1 x 10^2 cps and 1 x 10^5 cps:*
	5.2.5	To withdraw SRM Detectors, depress and hold DRIVE OUT pushbutton until desired SRM position is reached.	Associated pushbutton (DRIVE OUT or DRIVE IN) is illuminated when depressed. White IN light extinguishes when detector is not fully inserted.
	5.2.6	To insert SRM Detectors, depress DRIVE IN pushbutton. When desired SRM Position is reached, depress DRIVE IN pushbutton to stop SRM drive motion.	White OUT light illuminates when detector is fully withdrawn.

		ELEMENTS	STANDARDS
c	*5.2.7*	*Depress and release SRM Select switch for SRM Detectors that were moved.*	*Associated White SELECT pushbutton extinguishes.*
	5.2.8	Prior to moving other SRM Detectors, monitor log count rate for detectors that were moved and ensure indication has steadied out with respect to position of detector and power level at that position.	Indication steadily increasing on a 300-400 second period until Point of Adding Heat is achieved when detector is not in motion.

Terminating cue: JPM may be terminated when the first pair of SRM detectors has been fully withdrawn.

EXAMINEE CUE SHEET

Initial Conditions:

Reactor Startup is in progress per GOP 22.000.02, Plant Startup To 25% Power.

Step 53 on the Control Rod pull sheet.

The Reactor is critical with a 300-400 second period.

Initiating Cue:

Verify SRM/IRM overlap per 24.603.02, SRM/IRM/APRM Overlap Verification, and then fully withdraw SRM detectors.