

Facility: <u>Cooper Nuclear Station</u> Examination Level (circle one): RO		Date of Examination: <u>August 2002</u> Operating Test Number: <u>Cat A</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	<p>JPM: Admin JPM, PMIS Point Review (Section 12.0 of CONDUCT OF OPERATIONS PROCEDURE 2.0.2) (RO will obtain a daily listing of computer points that are “unhealthy”, print, review the points and determine if any of the points are unexpected).</p> <p>K/A: 2.1.19 (3.0/3.0)</p>
	Logs	<p>JPM: Perform RO Review of selected Daily Surveillance Logs per 6.LOG.601. (The RO will be required to enter relevant information from that provided onto 6.LOG.601 Attachment 3, Unidentified Leakage Log Sheet, and complete the associated calculations using this information. When the log sheet is completed, the RO will be required to review the information, identify the excessive leakage rate increase, enter it on a discrepancy sheet, and inform the CRS).</p> <p>K/A: 2.1.23 (3.9)</p>
A.2	Surveillance Testing	<p>JPM: Apply valve testing requirements when performing stroke timing. (The RO will be given the stroke time for the first valve/damper tested and directed to complete the applicable data sheet and determine how to proceed based upon the entry. Upon determining that the valve must be retested, the retest stroke time will be provided as a CUE. The RO will be required to enter the retest stroke time on the data sheet and determine whether or not to proceed and the associated administrative actions).</p> <p>K/A: 2.2.12 (3.0)</p>
A.3	Significant Radiation Hazards / Reduce Excessive Levels Of Radiation And Guard Against Personnel Exposure	<p>Q.1. Given an accumulated TEDE and an expected additional exposure for outage work that results in exposure above the station administrative limit determine the requirements/approvals to perform the work. CLOSED REFERENCE.</p> <p>K/A: 2.3.1 (2.6), 2.3.4 (2.5)</p>
		<p>Q.2. Given plant radiological conditions and an EOP support task that needs to be performed in the plant, evaluate the conditions and determine the maximum amount of time allowed using emergency exposure limits.</p> <p>K/A: 2.3.1 (2.6), 2.3.10 (2.9)</p>
A.4	Emergency Facilities / Communications	<p>Q.1. Determine the emergency facilities activated at the ALERT emergency classification level if this is the initial emergency classification. CLOSED REFERENCE.</p> <p>K/A: 2.4.29 (2.6), 2.4.39 (3.3)</p>
		<p>Q.2. Given the location and duties of a licensed operator in the plant, determine the evacuation requirement if an ALERT is declared and this is the initial emergency classification. CLOSED REFERENCE.</p> <p>K/A: 2.4.29 (2.6), 2.4.39 (3.3)</p>

Facility: <u>Cooper Nuclear Station</u> Examination Level (circle one): SRO		Date of Examination: <u>August 2002</u> Operating Test Number: <u>Cat A</u>
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Parameter Verification	JPM: Perform a Time To Boil Determination (Loss of SDC) per 2.4 SDC (The SRO will be required to evaluate time to boil based on plant conditions that are provided at the start of the JPM. The SRO must use the relevant information to select the appropriate figures and then apply the information to the correct figure to determine time to boil). K/A: 2.1.23 (4.0), 2.1.25 (3.1)
	Logs	JPM: Perform SRO Review of Daily Surveillance Logs per 6.LOG.601. (The SRO will be required to review 6.LOG.601 Attachment 3, Unidentified Leakage Log Sheet. This includes recognition of TS non-compliance, identification of TS ACTIONS, and other administrative actions required as a result of the excessive leakage rate increase). K/A: 2.1.23 (4.0)
A.2	Equipment Control/ LCO Tracking	JPM: Perform a log entry into the TS tracking system per 2.0.11. (The SRO will be required to make an entry for TS equipment removed from service for maintenance. Because the equipment will be restored to OPERABLE within 24 hours, the SRO will make a narrative log entry and provide documentation to the SS). K/A: 2.2.23 (3.8)
A.3	Significant Radiation Hazards / Reduce Excessive Levels Of Radiation And Guard Against Personnel Exposure	Q.1. Given a valve to be stroked by operators, considering the station administrative limits and collective/individual exposure for ALARA performance recommendations, determine if shielding should be installed and whether one or two operators should be used. (The SRO must determine if less total dose will be received by using one or 2 operators. Then he must determine if less cumulative dose will be received if shielding is installed or not.) K/A: 2.3.1 (3.0), 2.3.4 (3.1)
		Q.2. Given plant radiological conditions during an emergency, determine the emergency radiation exposure control requirements for the conditions. (The SRO will be required to determine the applicable emergency radiation exposure control requirements given plant conditions, including selection of the person to receive the emergency exposure based on descriptions of available personnel). CLOSED REFERENCE. K/A: 2.3.1 (3.0), 2.3.10 (3.3)
A.4	EAL and Classification, Communications	Q.1. Given plant conditions, determine the reporting requirement(s) per 10CFR50.72 and 10CFR50.73. K/A: 2.4.30 (3.6)
		Q.2. Given plant conditions at the completion of the scenario as the SRO, determine the emergency classification. K/A: 2.4.40 (4.0), 2.4.41 (4.1)

Facility: <u>Cooper Nuclear Station</u>		Date of Examination: _____	
Exam Level (circle one): RO / SROU / SROI			
B.1 Control Room Systems			
System / JPM Title		Type Code*	Safety Function
<i>PLANT AT POWER, CORE FLOW <40 LBM/HR, JPMs 1-1 AND 1-2 ARE CONCURRENT.</i>			
1-1	Start and Load the Diesel Generator (SKL034-21-42) K/A 264000 A4.04 (3.7/3.7) ALTERNATE PATH: Respond to a DG trouble once loaded, requiring DG shutdown.	M, S, A	6
1-2	Respond to One RFP in Track and Hold (SKL034-21-43) K/A 259001 A4.05 (4.0/3.9) ALTERNATE PATH: Subsequent malfunction while recovering from Track and Hold requires tripping RFP A. SRO UPGRADE	N, S, A	2
<i>NORMAL RPV WATER LEVEL AFTER A SCRAM WITH MSIVS CLOSED. JPMs 1-3 & 1-4 ARE CONCURRENT.</i>			
1-3	Perform SBTG System Decay Heat Removal (SKL034-20-70) K/A 261000 A4.07 (3.1/3.2)	D, S Last NRC	9
1-4	Operate HPCI in Pressure Control (Hard Card) (SKL034-21-45) K/A 206000 K3.02 (3.8/3.8) and A4.01 (3.8/3.7) ALTERNATE PATH: HPCI controller will fail in automatic requiring the candidate to take manual control of HPCI.	D, S, A	4
<i>THREE CONTROL RODS [26-27, 30-23, 22-23] FAIL TO INSERT. JPMs 1-5 & 1-6 ARE CONCURRENT.</i>			
1-5	Separation of REC Critical Loops (SKL34-21-44) K/A 295018 AA1.03 (3.3/3.4), K/A 295018 AK3.07 (3.1/3.2) ALTERNATE PATH: When first pump is started, it will trip, requiring starting of alternate pump. SRO UPGRADE	N, S, A	8
1-6	Perform Alternate Control Rod Insertion Using Individual Rod Scram Switches per 5.8.3, ATT 1 (SKL034-21-41). K/A 201001 A2.04 (3.8/3.9) SRO UPGRADE	N, S, L	1

System / JPM Title	Type Code*	Safety Function
<i>LOCA CONDITIONS. JPM 1-7 WILL BE SIMULATED IN THE CONTROL ROOM. THE SIMULATOR DOES NOT SUPPORT THIS TASK.</i>		
1-7 Transfer H2/O2 Monitoring System from Standby to Operation (SKL34-21-01) K/A 223001 A4.04 (3.5/3.6), K/A 223001 A4.05 (3.6/3.6)	D, C	5
B.2 Facility Walk-Through		
2-1 Transfer an MCC to the Alternate Power Supply (SKL034-40-28) K/A 262001 A1.05 (3.2/3.5) <i>SRO UPGRADE</i>	D	6
2-2 Install and Remove PTMs (PTM #41 AND #42) K/A 295031 EA1.05 (4.3/4.3) <i>SRO UPGRADE</i>	D	7
2-3 Conduct Alternate Rod Insertion (Vent Scram Air Header) (SKL034-10-65) K/A 295032 EA1.05(3.9/4.0)	D, R	2
Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA		

*NOTE: RO and SRO(I) perform all 10 JPMS.
SRO(U) performs JPM 1-2, 1-5, 1-6, 1-8, and 1-9 as indicated.*

Cooper Station	Scenario No. 1	Operating Test No. 1	
Examiners:		Candidates:	
<p>Objectives</p> <p>The crew assumes the shift with the plant operating at 70% power with all systems operable except the Emergency Transformer and the "A" CRD Pump. The crew will perform a routine shifting of RBHVAC Fans. Shortly after the fan swap the "B" REC Pump will trip. This will require entry into 2.4REC and T.S. 3.7.3. After conditions are stabilized the load dispatcher will request raising main generator load 100 Mwe which requires raising reactor power with recirc flow. While raising load the "A" Average Power Range Monitor (APRM) will fail high, initiating a half scram. This will require resetting RPS, bypassing the APRM, and checking Technical Specifications (Tracking LCO only). Main Condenser vacuum will decrease as air in-leakage rises. Lowering condenser vacuum will result in a turbine trip and reactor scram. When a reactor scram is attempted, an ATWS requires entry into EOPs 1A, 6A and 7A. ARI will fail to insert Control Rods. When Vacuum lowers to the MSIV isolation setpoint, the MSIVs will fail to close and must be manually closed. Some Control Rods will insert on the first manual scram after the ATWS. A second manual scram will insert more Control Rods, and the third manual scram will insert the remaining Control Rods.</p> <p>PRA: ATWS</p>			
<p>Initial Conditions: 70% Full Power Operation, (EOC) (IC-20) with all systems operable except the Emergency Transformer and "A" CRD Pump</p>			
<p>Turnover: The plant has just completed a rod pattern adjustment, continue at current power level, until Reactor Engineering has completed a plan for returning to 100% power. The "A" CRD Pump is inoperable because of a severe oil leak on the speed increaser. Maintenance is putting together a work package. The station is in Day 1 of 7 day LCO (3.8.1, condition A) due to Emergency Transformer being OOS for planned maintenance on 69KV line by OPPD. After assuming the shift, the crew will perform shifting of the RBHVAC fans.</p>			
Event No.	Malf. No.	Type	Event Description
1	N/A	N	Shift RB HVAC Fans
2	SW11B	C	REC Pump Trip.
3	N/A	R	Scheduled power increase
4	NM9A (100%)	I	(RO/SRO) "A" APRM fails high.

5	MC01	C	(SRO/RO/BOP) Loss of vacuum (High air in-leakage)
6	RD02 (90%)	M	(Crew) ATWS (Hydraulic Lock on HCUs).
7	MS07	C	(SRO/BOP) MSIVs fail to close following loss of vacuum. MSIVs must be manually CLOSED.

Cooper Station	Scenario No. 2	Operating Test No. 1	
Examiners:		Candidates:	
<p>Objectives:</p> <p>The crew assumes the shift with the plant operating at 100% power with all systems operable except the Emergency Transformer and "A" CRD Pump. The crew will start the "A" CRD Pump and place it in service. After the CRD system is operating normally, Doniphan will notify Cooper that the south interface load has exceeded 1190 MVA and that Cooper must lower load 100 MWe immediately. After a sufficient power change is observed, the DEH oil pressure pilot valve spring will fail, causing DEH pressure oscillation, this will require stopping the power reduction. When conditions have stabilized, a 20% spurious runback signal will force the reactor into the Stability Exclusion Region and power oscillations will occur. Since these are large power oscillations with the auto scram function defeated, the crew must manually scram the reactor. When the reactor scrams off-site power will be lost and a small break will start on the B Recirc Loop discharge line. The DGs will start and provide power to emergency buses. A failure of the HPCI Auxiliary Oil Pump will prevent operation of HPCI. RCIC will fail to automatically start and must be manually started. After its started it will trip. It may be restarted, but will continue to trip. When RPV water level cannot be maintained, the crew must Emergency Depressurize and restore RPV water level with low pressure ECCS systems with power supplied by the DGs.</p> <p><i>PRA Station Blackout and LOCA</i></p>			
<p>Initial Conditions: 100% Full Power Operation (EOC) (IC-20). All systems operable except the Emergency Transformer and "A" CRD Pump.</p>			
<p>Turnover: Continue power operations. All systems are operable except the Emergency Transformer and the "A" CRD Pump. The station is in day 1 of 7 day LCO (3.8.1, condition A) due to Emergency Transformer being OOS for planned maintenance on 69KV line by OPPD. The "A" CRD Pump had been out of service for an oil leak and has been repaired. Maintenance is standing by for the crew to start the pump and place it in service.</p>			
Event No.	Malf. No.	Type	Event Description
1	N/A	N	(SRO/BOP) Start the "A" CRD pump and place it in service. Secure the "B" CRD Pump.
2	N/A	R	(SRO/RO) Power reduction to lower load on the south interface.
3	TC04	I	(SRO/BOP) DEH Oil System Pressure Oscillation requires shifting DEH Pumps.

4	RR12A RR12BC R04	I	(SRO/RO) Recirculation Pump Runback to 20% with power oscillations.
5	ED05 ED07 ED15	C	(Crew) Loss of all off-site power.
6	RR20B HP10	M	(Crew) Small break LOCA with a failure of the HPCI Auxiliary Oil Pump, resulting in an inability to restore RPV water level, requiring Emergency Depressurization.
7	RC02	C	(SRO/BOP) RCIC fails to start then trips on high exhaust pressure after it is manually started.

Cooper Station	Scenario No. 3	Operating Test No. 1
Examiners:		Candidates:
<p>Objectives:</p> <p>The crew assumes the shift with the plant operating at 100% power. Core Spray Pump "B" is tagged out for maintenance while replacing the pump seal. SGT "B" was started earlier for the system engineer who requested a vibration measurement. The measurement was completed all data has been taken. The crew is to shutdown SGT "B" and place it in a standby lineup. When SGT is secured and in a standby lineup, the 125 VDC Panel AA3 will fail, requiring entry into 5.3DC125. The loss of this panel results in:</p> <ul style="list-style-type: none"> • Trip of the "A" Recirculation Pump • Loss of trip capability for the "A" CRD Pump and "A" Air Compressor. • Loss of control of the "A" and "C" SW Pumps. • Inoperability of CS "A", RCIC, DG-1, RHR Subsystems "A" and "B" RHR SW Pumps "A" and "C" and SW Pumps "A" and "C". <p>The loss of AA3 will require the crew to enter T.S. 3.0.3 and determine a plant shutdown is required. When Cooper management is notified they will direct an immediate shutdown.</p> <p>After the initial portion of the power reduction is completed, the Master Feedwater Controller will fail low. If the operator catches the failure, operation in manual is possible. After controlling feedwater in manual, if a decision to manually scram is not reached, then the feedwater pumps will trip. This will result in a loss of Feedwater and a Reactor Scram. HPCI will initiate (or be manually initiated) and must be shutdown manually. Group 6 will fail to automatically isolate and must be diagnosed and manually isolated. EOP-1A must be entered. During the HPCI initiation, HPCI will develop a steam line break and fail to isolate. EOP-5A must be entered. As Reactor Building temperatures rise, the crew will rapidly depressurize using the Turbine Bypass Valves and/or the SRVs, EOP-1A and/or 2A. In either case, the first method attempted will partially fail (up to five SRVs do not open or the Turbine Bypass valves fail closed). Alternate steps for emergency de-pressurization must be taken.</p> <p><i>PRA Loss of Containment</i></p>		
<p>Initial Conditions: 100% Full Power Operation (EOC) (IC-20). Core Spray Pump "B" is out of service.</p>		
<p>Turnover: Continue power operations. Core Spray Pump "B" is tagged out for maintenance while replacing the pump seal. SGT "B" was started earlier for the system engineer who requested a vibration measurement. The measurement was completed all data has been taken. The crew is to shutdown SGT "B" and place it in a standby lineup.</p>		

Event No.	Mal. No.	Type	Event Description
1	N/A	N	(SRO/BOP) Shutdown SGT "B" and place it in a standby lineup.
2	ED19	C	(SRO/BOP/RO) 125 VDC Panel AA3 failure (Instrument power supplies).
3	N/A	R	(SRO/RO) Power reduction for T.S. 3.0.3 required shutdown.
4	FW09	I	(SRO/BOP/RO) Loss of Feedwater Master Controller, slowly failing low, requiring manual control of feedwater.
5	HP06 (5% over 20 Min) HP09	M	(CREW) HPCI un-isolatable steam line leak (and trip of running feedwater pumps).
6	RP09	I	(CRS/RO) Failure of the auto isolation of Group 6
7	AD06 (A,C,D,E, H) TC07 (A, B, C)	C	(SRO/BOP) Failure of the Turbine Bypass Valves to remain open and/or failure of up to five SRVs to open.

Cooper Station	Alternate Scenario (Scenario 4)	Operating Test No. 1	
Examiners:		Candidates:	
<p>Objectives:</p> <p>The crew assumes the shift with the plant operating at 100% power with all systems operable except the "A" CRD Pump. The crew will perform a routine shifting of SW Pumps after maintenance has completed a breaker inspection on the "B" SW Pump Breaker. During this pump swap several Tech. Specs. considerations should be made. After the SW Pump swap the load dispatcher will request lowering main generator load 100 Mwe which requires lowering reactor power with recirc flow. While lowering load the "D" Main Steam Line Flow Transmitter will fail upscale. This will require stabilizing RPV water level, taking manual control of water level and placing feedwater in single element. After the actions are completed a steam leak will develop in the Drywell. Drywell pressure will rise and the crew will manually scram the reactor (If they don't the reactor will scram on high drywell pressure). After the reactor is scrammed the "B" Feedwater Pump will fail to trip on high level, additionally HPCI will initiate on high drywell pressure. These two large pumps injecting will cause a rapid level rise which will require the crew to close the MSIVs and/or trip the pumps. As Drywell pressure rises the "A" RHR loop containment spray valves will fail. When the "B" loop is used the containment spray switch will fail. At some time into the LOCA a downcomer will fail preventing the pressure suppression chamber from working. This failure will cause a rapid rise in drywell temperatures and pressures. Drywell pressure will reach PSP (Drywell temperature will also rise rapidly) requiring an Emergency Depressurization. After the reactor is depressurized. I & C will restore the "B" RHR loop containment spray and the crew will spray the torus and drywell. Drywell temperatures will be high enough to warrant determining that RPV water level instruments are operable.</p> <p><i>PRA: Loss of Containment Heat Sink</i></p>			
<p>Initial Conditions: 100% Power Operation (EOC) (IC-20) power with all systems operable except the "A" CRD Pump.</p>			
<p>Turnover: Continue power operations. The "A" CRD Pump is inoperable because of a severe oil leak on the speed increaser. The crew is to perform a routine shift the Service Water Pumps.</p>			
Event No.	Malf. No.	Type	Event Description
1	N/A	N	(CRS/BOP) Shift Service Water Pumps
2	N/A	R	(CRS/RO) Scheduled power reduction of 100 Mwe
3	FW13D	I	(CRS/RO) Failure of the "D" Steam Line Flow Transmitter
4	FW01A	C	(CRS/BOP) "A" Feedwater Pump Trips

5	MS01D 50% 10 Min Ramp	M	(Crew) Steam leak in the Drywell
6	FW28B	I	(CRS/RO) Failure of the "B" Feedwater Pump High Level Trip.
7	ZDIRHRS WS17A & B PC12	I/C	(Crew) Failure of Containment Spray with torus downcomer failure.