{PRIVATE }Facility: Cooper Nuclear Station Date of Examination: March 2008

Examination Level: RO Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,S	Obtain and Interpret GARDEL Periodic Case.
Conduct of Operations		Not Tested
Equipment Control	N,S	Determine the Isolation Boundary for HPCI Booster pump.
Radiation Control	D,S	Perform RW Liquid Release Rate Determination or based on DW Curie Content.
Emergency Plan	D,S	Perform Dose Assessment.

NOTE:All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria:(C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

{PRIVATE }Facility: __Cooper Nuclear Station_____ Date of Examination: _March 2008_
Examination Level: SRO Operating Test Number: _____

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	M,S	Make NRC Reportable Determination. (Modify Existing JPM)
Conduct of Operations	D,S	Review a Procedure Change Request.
Equipment Control	D,S	Determine Post Maintenance Testing Requirements.
Radiation Control	D,S	Authorize Stable Iodine Thyroid Blocking.
Emergency Plan	N,S	EAL/PAR Table Top (Determine EAL/PAR following scenario)

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.

* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom
(D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes)
(N)ew or (M)odified from bank (≥ 1)
(P)revious 2 exams (≤ 1; randomly selected)

{PRIVATE }Facility: _Cooper Nuclear Station_____ Date of Examination: _____

Exam Level: RO Operating Test No.: _____

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Withdraw Control Rod Group (Alternate path failure to latch and full insertion of control rod.)(New JPM)	N,A,S	1
b. Transfer of 4160V Bus 1G from DG2 to Emergency Transformer (SKL0342131)	D,S,L	6
c. Inject w/RCIC for level control (Alt. Path Controller failure)(New JPM)	N,A,S	4
d. Perform REC Restoration Following a Loss of Power. (2.2.65.1)	N,S,L	8
e. Raise DEH Pressure Setpoint (SKL03420102)	D,S	3
f. Place the second RFPT in service.(SKL0342072)	D,S	2
g. Verify Group 2 isolation (TIP ball valve fails to close) (SKL0342166)	D,A,S	5
h. Perform an APRM GAF (SKL0342018)	D,S	7

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Operate the Diesel Fire Pump Manually (SKL0341010)	D,A,E	8
j. Place a hydraulic control unit in service (SKL0344026)	D,R,	1
k. Emergency Makeup to the Fuel Pool Using the Fire Protection System.(New JPM)	N,R,E	9

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / **Shutdown**	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

{PRIVATE }Facility: _Cooper Nuclear Station_____ Date of Examination: _____

Exam Level: SRO-U Operating Test No.: _____

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
c. Inject with RCIC for level control (Alternate Path Controller failure)	N,A,S	4
b. Transfer of 4160V Bus 1G from DG2 to Emergency Transformer (SKL0342131)	D,S,L	6
g. Verify Group 2 isolation (TIP ball valve fails to close) (SKL0342166)	D,A,S	5

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

j. Place a hydraulic control unit in service (SKL0344026)	D,R,	1
k. Emergency Makeup to the Fuel Pool Using the Fire Protection System.(New JPM)	N,R,E	9

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / **Shutdown**	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

{PRIVATE }Facility: _Cooper Nuclear Station_____ Date of Examination: _____

Exam Level: SRO-I Operating Test No.: _____

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. Withdraw Control Rod Group (Control Rod Collet Failure and full insertion of control rod.)(New JPM)	N,A,S	1
b. Transfer of 4160V Bus 1G from DG2 to Emergency Transformer (SKL0342131)	D,S,L	6
c. Inject with RCIC for level control (Alternate Path Controller failure)	N,A,S	4
d. Perform REC Restoration Following a Loss of Power. (2.2.65.1)	N,S,L	8
e. Raise DEH Pressure Setpoint (SKL03420102)	D,S	3
f. Place the second RFPT in service.(SKL0342072)	D,S	2
g. Verify Group 2 isolation (TIP ball valve fails to close) (SKL0342166)	D,A,S	5

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Operate the Diesel Fire Pump Manually (SKL0341010)	D,A,E	8
j. Place a hydraulic control unit in service (SKL0344026)	D,R,	1
k. Emergency Makeup to the Fuel Pool Using the Fire Protection System.(New JPM)	N,R,E	9

@All control room (and in-plant) systems must be different and serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power / **Shutdown**	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

{PRIVATE }Facility: Cooper Nuclear Station Scenario No.: NRC 1 Op-Test No.:

Examiners: _____ Operators: _____
IC-211

Initial Conditions: The plant is operating at approximately 85% power with RCIC out of service to replace the shaft coupling. IRM A is out of service and bypassed due to failing upscale last shift.

Turnover: Raise power when requested by the load dispatcher and facilitate the return of RCIC to operability. Maintenance will call early during the shift and request the swapping of the "B" and "D" SW Pumps for monitoring.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R	Raise power to 95%
2	N/A	N	Swap SW pumps for maintenance
3	3	C	CRD Flow Controller Failure
4	4	I	APRM A fails upscale with failure of rod block to occur
5	5	C	HPCI inadvertent initiation
6	6	M	HPCI un-isolable steam line break.
7	7	C	SGT failure to automatically initiate/Manual initiation of SGT.
8	N/A	M	Depressurize the RPV Due to 2 areas > Max Safe Temp.
9	9	C	ADS valve failure/opening of SRV valves

*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario Objective

When two areas in Secondary Containment reach max safe operating temperatures the crew emergency depressurizes the Reactor to limit release of steam into the Reactor Building.

Scenario Summary

Initial Conditions:
- The plant is operating at approximately 85% power
- RCIC out of service to replace shaft coupling and is under a 14 Day LCO.
- It is a red light day because record grid loads are expected.

Events:
- Raise power to 95%
- Swap SW pumps for maintenance
- CRD Flow Controller Failure
- APRM A fails upscale with failure of rod block to occur
- HPCI inadvertent initiation
- HPCI un-isolable steam line break.
- SGT failure to automatically initiate/Manual initiation of SGT.
- Depressurize the RPV Due to 2 areas > Max Safe Temp.
- ADS valve failure/opening of SRV valves

Scenario Sequence

- Raise power to 95% using Recirc Flow only.
- Swap SW pumps for maintenance; Start “B” and secure “D”.
- CRD Flow Controller Failure; recognize the failure and respond in accordance with the Annunciator Procedures and 2.4CRD.
- APRM A fails upscale with failure of rod block to occur; this results in APRM A being declared inoperable.
- HPCI inadvertent initiation results in a small amount of fuel failure.
- HPCI un-isolable steam line break; starts small and increases causing temperatures and radiation levels to rise in the reactor building. The control switch malfunctions for the inboard isolation and the outboard valve starts closing but trips in the throttled position.
- SGT failure to automatically initiate/Manual initiation of SGT.
- Depressurize the RPV Due to 2 areas > Max Safe Temp.
- ADS valve failure/opening of SRV valves. Three valves fail to open requiring the operator to place other valves to open.

Event One: Raise Power to 95%

Malfunction Required:
No malfunction required, this is a normal reactivity manipulation for the RO.

Objective:
The RO adjust Reactor Recirc Pump flows to make power increase from ~85% to ~95%.

Success Path:
Both Reactor Recirc Pump's speeds are raised from ~65 to ~80, maintaining them within the required 5% allowed by Tech Specs, and it is done in accordance with Procedure 2.1.10.

Event Two: Swap SW Pumps

Malfunction Required:
No malfunction required, this is a normal manipulation for the BOP.

Objective:
The BOP operator starts SW Pump "B" and Secures Pump "D" in accordance with Procedure 2.2.71 Section 13.

Success Path:
The CRS directs the BOP to start the "B" SW pump and secure the "D" pump, after maintenance calls requesting the swap. The B pump must be started before D is secured to maintain Loop pressure in the green band. The Mode Selector Switches need to be realigned so that there is no white light illuminated above the switches.

Event Three: CRD Controller Failure

Malfunction Required:
Override 03A35A1 CRD-FC-301 CRD System Flow Control – Setpoint; Event 3 Final value 0.

Objective:
The in-service CRD flow controller fails low in Auto. The crew diagnoses the failure and takes manual control of the CRD Flow Controller and re-establishes CRD parameters in accordance with Abnormal Procedure 2.4CRD.

Success Path:
CRD parameters are re-established to their normal values by manually controlling the CRD Flow Controller.

Event Four: APRM Fails Upscale

Malfunction Required:
Malfunction NM09A APRM Signal Failure Channel A; Event 4 Final value 100.

Objective:
APRM A fails upscale resulting in a half scram, but no control rod block. The crew bypasses the failed APRM, resets the half scram and addresses Technical Specifications for the failed APRM and the failure of the APRM upscale to generate a rod block.

Success Path:
APRM A is bypassed, the half scram is reset, recognizes that the Rod Block failed to come in, and the CRS initiates a potential LCO on APRM A in accordance with Technical Specifications 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2 and TRM 3.3.1 (Rod Block Instrumentation) Table 3.3.1-1 Function 3.

Event Five: HPCI Inadvertent Initiation

Malfunction Required:
Malfunction HP05 HPCI Inadvertent Initiation, Event 5 Final TRUE.

Objective:
The HPCI system inadvertently initiates. The crew enters 2.4CSCS and secures the HPCI system. The CRS evaluates Technical Specifications for HPCI and RCIC out of service. The cold water injected by the HPCI system results in a small fuel element failure.

Success Path:
HPCI is secured and the Auxiliary Oil Pump is placed in the pull to lock position. The CRS recognizes that both HPCI and RCIC are inoperable and addresses Technical Specifications 3.5.1 and 3.5.3. With both inop, the plant is required to shutdown and be in Mode 3 in 12 hours.

Event Six: HPCI Steam Line Break

Malfunction Required:
Malfunction HP06 HPCI Steam Line Break, Event 6 Final value is 40 ramped in over a five minute period.

Objective:
The Crew recognizes a steam leak in the reactor building and then diagnoses that it is coming from the HPCI system and attempts to isolate it. There are entry conditions into EOP 5A Secondary Containment, and the CRS enters the EOP and starts directing the

crews actions.

Success Path:
Enters EOP 5A and attempts to isolate the HPCI Steam Line. Also recognizes that the steam line is not isolated and takes appropriate actions to limit the release of steam into the reactor building.

Event Seven: Failure of SBGT to start.

Malfunction Required:
Malfunctions PC18A and PC18B SGT Fan A and B Auto Start Failures, Active from start of scenario.
Also Malfunction RD02 ATWS in at the beginning of the scenario, Final Value is 100.

Objective:
When the group 6 isolation occurs the SGT system fails to initiate resulting in reactor building pressure going positive and the radiation release is unfiltered and unmonitored. The crew manually starts SGT to restore reactor building pressure.

Success Path:
The crew manually starts SGT to restore reactor building pressure. Also the crew manually scrams the reactor (All auto scrams and ARI functions have failed. This malfunction is transparent to the crew if they manually scram the reactor when the first area reaches max safe.)

Event Eight: Two (2) Areas above Max Safe Operating Limits

Malfunction Required:
None

Objective:
Two areas reach max safe operating temperature (295ºF) requiring the crew to emergency depressurize the Reactor to limit the release of radioactive steam into the Reactor Building.

Success Path:
When the second area reaches 295ºF the Crew will recognize it and initiate an Emergency Depressurization of the Reactor. The second area should not be above 295ºF for more than 5 minutes before it is recognized.

Event Nine: Three ADS Valves fail to open

Malfunction Required:
Malfunctions AD06B, AD06E, AD06G, Reactor Pressure Relief Valve complete, Active from the beginning of the scenario set to a final value of 0. Also Malfunctions TC07A, B,

C Bypass Valve #1,#2, #3 Failure active from the beginning of the scenario final value set at 0.

Objective:
If the crew attempts to use the BPVs to depressurize the BPV faile to respond to operator inputs. When the crew attempts to Emergency Depressurize and only 3 ADS valves open requiring the crew to open additional SRVs.

Success Path:
Crew recognizes that the Bypass valves are not working and that three ADS valves are malfunctioning. The Crew opens additional SRVs to establish the greatest amount of blowdown that they can achieve.

Scenario Termination:

When the reactor is depressurized (50 psig above Torus pressure) and level is being maintained between +3” to +54” and the lead examiner has seen enough the scenario may be terminated.

{PRIVATE}Facility: Cooper Nuclear Station Scenario No.: NRC 2 Op-Test No.:

Examiners: _____ Operators: _____
IC-212

Initial Conditions: The plant is operating at 100% power with Circ Water Pump C out of service for maintenance.

Turnover: Today is a red light day. Maintain full power, conduct CS surveillance and facilitate the return of CW pump C when called by maintenance later in the shift.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Conduct CS Subsystem "A" Surveillance (Pump Fails to develop required flow)
2	2	C	Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
3	3	C	CW pump Trip
4	N/A	R	Emergency Power Reduction
5	5	C	Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
6	6	C	Reactor Recirc pump runaway
7	7	M	Small Earthquake
8	8	C	Suppression Pool Leak / Reactor Scram
9	9	C	LOOP Failure of DG to Tie to automatically tie to bus.
10	10	M	Emergency Depressurize on Low SP level

Scenario Objective

When Torus level can no longer be maintained greater than 9.6 feet, the Reactor is depressurized to ensure long-term containment integrity.

Scenario Summary

Initial Conditions:
- The plant is operating at approximately 100% power
- Circ Water Pump C is out of service following maintenance.
- Core Spray Surveillance 6.2CS.101 is in progress.
- It is a red light day because record grid loads are expected.

Events:
- Complete CS Subsystem “A” Surveillance (Pump Fails to develop required flow)
- Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
- CW pump Trip
- Emergency Power Reduction
- Start Standby CW pump
- Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
- Reactor Recirc pump runaway/scoop Tube Lockout.
- Earthquake (minor)
- Suppression Pool Leak/Reactor Scram
- LOOP Failure of DG to automatically tie to bus.
- Emergency Depressurize on Low SP level

Scenario Sequence

- Complete CS Subsystem “A” Surveillance (Pump Fails to develop required flow)
- Grid Instabilities Shift Voltage Regulator to Manual and Adjust VARS.
- CW pump Trip
- Emergency Power Reduction
- Start Standby CW pump
- Inadvertent Group 3 Isolation with failure of one valve to close (Address Technical Specifications for INOP Group 3)
- Reactor Recirc pump runaway/scoop Tube Lockout.
- Earthquake (minor)
- Suppression Pool Leak/Reactor Scram
- LOOP Failure of DG to automatically tie to bus.
- Emergency Depressurize on Low SP level

Event One: Core Spray Surveillance

Malfunction Required:
01DS321 CS Suction Valve 14-7B, final value 75, active.
CS Suction valve 7B red light on. ?
Remote Required:
CS10B CS-MO-7B Manual Position, final value 75.
CS10A CS-MO-7B Power Control, De-energized.

Objective:
The crew continues scheduled surveillance 6.2CS.101 Core Spray Test Mode Surveillance Operation (IST) (DIV2) while flow is being adjusted the crew recognizes that the Core Spray Pump does not develop sufficient flow in accordance with the surveillance and declares the pump inoperable in accordance with Technical Specifications 3.5.1, Action A; Seven Day LCO.

Success Path:
The crew recognizes insufficient system flow and addresses TS for the CS pump being inoperable.

Event Two: Grid instabilities

Malfunction Required:
ED20 MAPP Grid Instability, final value 15%.

Objective:
The crew recognizes Grid Instabilities and takes appropriate actions to stabilize the grid.

Success Path:
The crew takes the appropriate actions to stabilize the grid. The voltage swings experienced, are reduced.

Event Three: Circulating Water Pump Trip

Malfunction Required:
MC05B Circulating Water Pump Trip 1B, True.

Objective:
The crew responds to a CW pump trip. This will require an emergency power reduction to prevent loss of condenser vacuum.

Success Path:
Condenser vacuum is restored to within an inch of hg vacuum from the onset of the transient.

Event Four: Circulating Water Pump Start-up

Malfunction Required:
None

Objective:
Maintenance availability is expedited and crew starts Circulating Water Pump 1C.

Success Path:
Three Circulating Water Pumps are running allowing vacuum to be stabilized.

Event Five: Inadvertent Group Three

Malfunction Required:
RP12 RWCU Group 3 Failure, True
RP10A RWCU Spurious Group 3, True
RP10B RWCU Spurious Group 3, True
ZDIPCISSWS18[1], Close
ZDIPCISSWS15[1], Open

Objective:
The crew responds to a loss of Reactor Water Cleanup due to an inadvertent Group 3 isolation.

Success Path:
Crew verifies the Group 3 isolation and identifies that the inboard PCIV valve failed to close and declares PCIV Inoperable in accordance with Technical Specifications 3.6.1.3 PCIVs, Action A, Isolate within 4 hours.

Event Six: Reactor Recirc Pump runaway / scoop tube lock

Malfunction Required:
02A8M1 RRP A Percent Speed Demand, Final Value 100, Ramp over 2 Minutes.

Objective:
The crew responds to one of the Reactor Recirc pumps running away (speed increase) requiring entry into Abnormal 2.4RR and a locking of the scoop tube to prevent total increase in speed.

Success Path:
The crew notices the Reactor Recirc Pump runaway and locks the scoop tube to limit speed increase.

Event Seven: Minor Earthquake

Malfunction Required:
HV02A Minor Earthquake Simulation, Final Value 20.

Objective:
The crew responds to the earthquake in accordance with 5.3QUAKE and monitors plant.

Success Path:
The crew responds to the minor earthquake and monitors the plant.

Event Eight: Suppression Pool Leak – Reactor Scram

Malfunction Required:
PC08 Suppression Pool Water Leak, final value 20, ramp over 4 minutes.

Objective:
The crew responds to a lowering torus level iaw EOP 3A and rising Reactor Building Quad level iaw EOP 5A.

Success Path:
The crew notices the Suppression Pool level loss and increase in Reactor Building Quad levels and scrams the reactor before level drops to 9.6 feet.

Event Nine: Loss of Off-site Power

Malfunction Required:
ED05 Loss of Power (Startup Transformer), True
ED06 Loss of Power (Emergency Transformer), True
ED07 Loss of Power (Normal Transformer), True
DG01A Diesel Generator Fails To Start DG1, True, Active
DG03B Diesel Generator Breaker Fails to Close, True, Active

Objective:
The crew responds to a loss of off-site power and notices that DG 1 failed to Start and DG 2 failed to automatically tie to its respective emergency bus.

Success Path:
The crew manually starts and ties the DGs to their busses and restores emergency power to the station.

Event Ten: Emergency Depressurization on low Suppression Pool Level

Malfunction Required:

Objective:
The crew responds to a lowering torus level and Emergency Depressurizes the Reactor on low Suppression Pool Level of 9.6 feet. During the depressurization a small tailpipe leak develops, causing a slow rise in Drywell pressure to above the 1.84 scram and auto start signals for ECCS.

Success Path:
The crew Emergency Depressurizes the reactor when Suppression Pool level reaches 9.6 feet.

Scenario Description

The plant is operating at 100 with 1C Circulating Water Pump out of service for maintenance. It is a red light day because record grid loads are expected.

After taking the watch the crew continues the Core Spray surveillance. During the Surveillance the CS pump fails to develop the required flow. The crew addresses TS for the INOP CS pump.

After TS are addressed for the INOP Core Spray grid instabilities required the crew ot enter the appropriate Abnormal Procedure and take manual control of the Main Generator Voltage regulator. When the crew has transferred voltage control to manual the load dispatcher directs that MVARs be raised, both these actions stabilize the instabilities in the grid. After these actions are complete the B CW pump trips requiring the crew to conduct an emergency power reduction to prevent loss of condenser vacuum. After power is reduced and conditions stabilize the crew starts a standby CW pump.

After the CW pump is started, an inadvertent group 3 isolation occurs. Both logics actuate but the RWCU inboard isolation valve does not close. The crew addresses TS for the failed PCIS logic.

After the TS are addressed for PCIS an unisolable leak occurs on the CS pump suction pipe. The crew raises takes action per EOP-3A and EOP-5A and attempts to refill the SP. All actions are inadequate and SP level continues to lower. Before SP level lowers to 11 ft. the crew stops and prevent HPCI. The crew scrams the reactor and when SP level approaches 9.6 feet. Shortly after the reactor scram offsite power is lost. DG-1 fails to start and DG-2 starts but fails to automatically tie to its respective bus. The crew manually ties DG-2 to its bus and restores power. The restoration of power also restores sources of injection to the reactor. Eventually an ED is required when level cannot be maintained greater than 9.6 ft. When the crew emergency depressurizes a very small leak is present on the tail pipe of one ADS valves that elevates DW pressure slightly above 2 psig. (Note: If the crew fails to terminate HPCI, the HPCI system actuates at 2 psig drywell pressure and HPCI exhaust pressurizes containment.)

When the reactor is depressurized and level is being maintained at 3” to 54” the scenario may be terminated.

{PRIVATE }Facility: Cooper Nuclear Station Scenario No.: NRC 3 Op-Test No.:

Examiners: _____ Operators: _____
IC-213

Initial Conditions: A plant startup is in progress with APRM A and IRM A is out of service and bypassed.

Turnover Today is a red light day, continue the startup, transfer to RUN, and start the main generator.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R	Raise power with control rods
2	1	I	IRM fails downscale
3	2	C	CRD pump Trip
4	N/A	N	Transfers Mode to RUN
5	3	C	REC pump Trip
6	4	C	CW System Leak/Flooding in the Condenser area
7	5	M	Loss of Vacuum / Scram / ATWS
8	6	C	Failure of Group 1 isolation

Scenario Objective

The crew enters ESP 5.8.3 and inserts the control rods. When the crew gets all control rods inserted and level is being maintained 3” to 54” the scenario may be terminated

Scenario Summary

Initial Conditions:

- A plant startup is in progress with APRM A and IRM A is out of service and bypassed.

Events:

- Raise power with control rods
- IRM fails downscale
- CRD pump Trip
- Transfers Mode to RUN
- REC pump Trip
- CW System Leak/Flooding in the Condenser area
- Loss of Vacuum / Scram / ATWS
- Failure of Group 1 isolation

Scenario Sequence

- Raise power with control rods
- IRM fails downscale
- CRD pump Trip
- Transfers Mode to RUN
- REC pump Trip
- CW System Leak/Flooding in the Condenser area
- Loss of Vacuum / Scram / ATWS
- Failure of Group 1 isolation

Event One: Raise power with control rods

Malfunction Required:

Objective:
The crew withdraws control rods to raise power in order to transfer the mode switch to RUN.

Success Path:

Event Two: IRM fails downscale

Malfunction Required:

Objective:
Shortly after rod withdrawal begins IRM B fails upscale resulting in a rod block and half reactor scram. The crew addresses Technical Specifications and determines that sufficient instrumentation is available to continue the startup and transfer to RUN. The IRM is bypassed and the half scram is reset and the startup continues.

Success Path:

Event Three: CRD pump Trip

Malfunction Required:

Objective:
The running CRD pump trips requiring the standby pump to be started in order to continue the startup.

Success Path:

Event Four: Transfers Mode to RUN

Malfunction Required:

Objective:
After the CRD system is restored power is raised and mode switch is placed to RUN.

Success Path:

Event Five: REC pump Trip

Malfunction Required:

Objective:

After the reactor is in RUN REC pump "A" REC pump trips. The crew will respond per alarm cards and Technical Specifications.

Success Path:

Event Six: CW System Leak/Flooding in the Condenser area

Malfunction Required:

Objective:

After the REC system is restored a CW leak is reported in the condenser area. After the crews initial response to the flooding the CW pipe completely ruptures resulting in a complete loss of CW flow to the condenser. The crew responds per 2.4VAC.

Success Path:

Event Seven: Loss of Vacuum / Scram / ATWS

Malfunction Required:

Objective:

The crew initiates a manual scram (no control rods insert when the scram is initiated) and the crew enters EOP-7A.

Success Path:

Event Eight: Failure of Group 1 isolation

Malfunction Required:

Objective:

As the vacuum degrades the crew closes the MSIVs (automatic group 1 isolation fails and the bypass valves fail to close as vacuum degrades below 7"Hg). As power cycles

after the MSIVs are closed several fuel rods fail increasing reactor coolant activity. Pressure control transitions to SRVs/then HPCI and/or RCIC. If the crew starts SLC both SLC squib valves fail to fire.

Scenario Description

A startup is in progress following a refueling outage. APRM A and IRM A are inoperable Reactor power is at 4%. The crew withdraws control rods to raise power in order to transfer the mode switch to RUN. Shortly after rod withdrawal begins IRM B fails upscale resulting in a rod block and half reactor scram. The crew addresses Technical Specifications and determines that sufficient instrumentation is available to continue the startup and transfer to RUN. The IRM is bypassed and the half scram is reset and the startup continues. The running CRD pump trips requiring the standby pump to be started in order to continue the startup. After the CRD system is restored power is raised and mode switch is placed to RUN.

After the reactor is in RUN REC pump “A” REC pump trips. The crew will respond per alarm cards and Technical Specifications. After the REC system is restored a CW leak is reported in the condenser area. After the crews initial response to the flooding the CW pipe completely ruptures resulting in a complete loss of CW flow to the condenser. The crew responds per 2.4VAC.

The crew initiates a manual scram (no control rods insert when the scram is initiated) and the crew enters EOP-7A. As the vacuum degrades the crew closes the MSIVs (automatic group 1 isolation fails and the bypass valves fail to close as vacuum degrades below 7”Hg). As power cycles after the MSIVs are closed several fuel rods fail increasing reactor coolant activity. Pressure control transitions to SRVs/then HPCI and/or RCIC. If the crew starts SLC both SLC squib valves fail to fire.

The crew enters ESP 5.8.3 and inserts the control rods. When the crew gets all control rods inserted and level is being maintained 3” to 54” the scenario may be terminated