December 17, 1997

Mr. Howard Bundy, Chief Examiner
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Dear Mr. Bundy

Subject: South Texas Project Initial License Examination Scheduled for June 1, 1998

This letter is accompanying the Examination Outline for the South Texas Project Initial Examination scheduled for June 01, 1998. Examination materials to support the examination of six SRO Upgrade candidates.

Also included is additional information not actually required but provided to aid in your review of the examination materials. These additional materials include a simulator and job performance measure overview as well as a scenario overview to provide additional information beyond that contained in the associated outlines. A cross-reference of 10CFR55.45 items to operating examination materials as well as a probabilistic risk assessment item to examination materials is also provided to aid in your review.

None of these materials are to go to the public records until after the examination has been completed.

Please call me at (512)972-7241 if you have any questions.

Sincerely,

Gregory S. Chitwood

Gregory S. Chitwood
Examination Lead
South Texas Project
Nuclear Training Department

A070

Proposed Schedule

Day 1	Indoctrination (2 hrs)
	2 Simulator and 3 Admin JPMs
	3 In-Plant and 2 Admin JPMs
Day 2	
Day 3	Scenario Session #1 (U1, U2, U3)
	Scenario Session #2 (U4, U5, U6)
	Exit

Notes:

Simulator JPMs selected can be performed on the simulator simultaneously to expedite the exam process.

Simulator scenarios are suggested for day 3 to avoid a lengthy first day due to the time anticipated for up front items on the first day such as plant familiarization tours etc. The same three scenarios will be used for session one and session two.

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Facility: South Texas Project Date of Exam: 6/1/98 Exam Level: SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	3	3	9				3	5			1	24
	2	1	3	3				2	6			1	16
	3	1	0	2				0	0			0	3
	Tier Totals	5	6	14				5	11			2	43
2. Plant Systems	1	2	1	1	1	4	1	4	2	1	1	1	19
	2	1	0	1	4	2	1	1	3	0	3	1	17
	3	2	0	1	0	0	0	0	1	0	0	0	4
	Tier Totals	5	1	3	5	6	2	5	6	1	4	2	40

3. Generic Knowledge and Abilities	Cat 1	Cat 2	Cat 3	Cat 4	17
	5	4	3	5	

Note:
- Attempt to distribute topics among all K/A categories; select at least one topic from every K/A category within each tier.
- Actual point totals must match those specified in the table.
- Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
- Systems/evolutions within each group are identified on the associated outline.
- The shaded areas are not applicable to the category/tier.

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ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1							Form ES-401-3	
E/APE # / Name / Safety Function	10CFR 55.43 (b)	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts
000001 Continuous Rod Withdrawal / 1		022						K/O oper implications of continuous rod withdrawal and Delta Flux	3.6	
000003 Dropped Control Rod / 1						A01		Determine/interpret Rod position indication to actual rod position	3.9	
000005 Inoperable/Stuck Control Rod / 1	(2)			A04				K/O reason for Tech Spec limits for inoperable rods	4.1	
000005 Inoperable/Stuck Control Rod / 1				A06				K/O reason for actions contained in EOP for inoperable/stuck control rod	4.2	
000011 Large Break LOCA / III				E12				K/O reason for actions contained in EOP for emergency LOCA (large break)	4.6	
000011 Large Break LOCA / III	(5)				E11			Operate/monitor the long term cooling of the core following a large break LOCA	4.2	
W/E04 LOCA Outside Containment / III			E1					K/O interrelationships between LOCA outside containment and components, functions of control and safety systems, instrumentation, signals, interlocks, auto/manual features	3.9	
W/E02 SI Termination / III		E2						K/O oper implications of normal, abnormal and emerg procedures associated w/SI termination	3.9	
000015/17 RCP Malfunctions / IV						A10		Determine/interpret when to secure RCPs on loss of cooling or seal injection	3.7	
BW/E09; CE/A13; W/E09&(E10) Natural Circ. / IV					E3			Operate/monitor for desired results during natural circ with steam void in vessel	3.7	
000024 Emergency Boration / 1				A02				K/O the reasons for actions contained in EOP for emergency boration	4.4	
000026 Loss of Component Cooling Water / VIII				A03				K/O oper implications of guidance actions contained in EOP for loss of CCW	4.2	
000029 Anticipated Transient w/o Scram / 1				E12				K/O the reasons for actions contained in EOP for ATWS	4.7	
000040 (BW/E05; CE/E05; W/E12) Steam Line Rupture - Excessive Heat Transfer / IV			E2					K/O of interrelationships between Uncontrolled depress of all S/Gs and primary coolant, emerg coolant, decay heat removal systems and the proper oper of these systems	3.9	
CE/A11; W/E08 RCS Overcooling - PTS / IV				E2				K/O the reasons for normal, abnormal and emerg procedures associated with PTS	4.0	
000051 Loss of Condenser Vacuum / IV						A02		Determine/interpret conditions requiring reactor/turbine trip on loss of condenser vacuum	4.1	
000055 Station Blackout / VI	(2)			E02				K/O the reasons for actions contained in EOP for loss of offsite and onsite power	4.6	
000057 Loss of Vital AC Elec. Inst. Bus / VI					A06			Operate/monitor man control when auto control is lost after loss of vital AC instrument bus	3.5	
000062 Loss of Nuclear Service Water / IV						A02		Determine/interpret the cause of possible CCW loss	3.6	
000067 Plant Fire On-site / IX		A01						K/O oper implication of fire classificartion as applied to plant fire on site	3.9	
000067 Plant Fire On-site / IX						A16		Determine/interpret vital equip and control systems to be maintained/oper during a fire	4.0	
000068 (BW/A06) Control Room Evac. / VIII							X	2.4.40: K/O SRO's responsibilities in emergency plan implementation	4.0	
000074 (W/E06&E07) Inad. Core Cooling / IV			E04					K/O interrelationships between HHSI pumps and inadequate core cooling	4.1	
000076 High Reactor Coolant Activity / IX	(6)			A05				K/O the reasons for correctiva actions as a result of high fission product activity in RCS	3.6	
K/A Category Totals:		3 (2A) (1E)	3 (3E)	9 (5A) (4E)	3 (1A) (2E)	5 (5A)	1	Group Point Total:		24

ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 2								Form ES-401-3	
E/APE # / Name / Safety Function	10CFR 55.43 (b)	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts
000007 (BW/E07&E10; CE/E02) Reactor Trip - Stabilization - Recovery / 1	(5)					E02		Determine/interpret the proper actions to be taken if the automatic safety functions have not taken place	4.6	
000008 Pressurizer Vapor Space Accident / III						A12		Determine/interpret PZR level indicators as they apply to a PZR vapor space accidant	3.7	
000009 Small Break LOCA / III	(2)			E21				K/O the reasons for the actions contained in EOP for small break LOCA/leak	4.5	
BW/E08; W/E03 LOCA Cooldown - Depress. / IV		E2						K/O oper implications of normal, abnormal, emergency procedures associated w/LOCA cooldown and depressurization	4.1	
W/E11 Loss of Emergency Coolant Recirc. / IV			E1					K/O interrelations between Loss of emerg coolant recirc and comp. functions of control and safety systems, instru, signals, interlocks, and auto/manual features	3.9	
000022 Loss of Reactor Coolant Makeup / II						A02		Determine/interpret charging pump problems as they apply to loss of reactor coolant makeup	3.7	
000025 Loss of RHR System / IV					A09			Operate/monitor LHSI pump switches, ammeter, disch press and flow indications	3.1	
000032 Loss of Source Range NI / VII						A04		Determine/interpret satisfactory source-range/intermediate range overlap as it applies to loss of source range nuclear instrumentation	3.5	
000038 Steam Generator Tube Rupture / III						E15		Determine/interpret the press at which to maintain RCS during S/G C/D following a SGTR	4.4	
000054 (CE/E06) Loss of Main Feedwater / IV						A04		Determine/interpret proper oper of AFW pumps and valves following a loss of MFW	4.3	
BW/E04; W/E05 Inadequate Heat Transfer - Loss of Secondary Heat Sink / IV			E2					K/O interrelations between Loss of secondary heat sink and primary coolant, emerg coolant, decay heat removal systems, and the proper oper of these systems	4.2	
000058 Loss of DC Power / VI				A01				K/O the reasons for use of DC control power by D/Gs as it applies to a loss of DC power	3.7	
000060 Accidental Gaseous Radwaste Rel. / IX			A02					K/O of interrelations between Aux Bldg ventilation system and accidental gaseous radwaste release	3.1	
000061 ARM System Alarms / VII				A02				K/O the reasons for guidance contained in alarm response for ARM system	3.6	
W/E16 High Containment Radiation / IX					E3			Operate/monitor desired results during abnormal/emerg situations for high containment radiation	3.3	
000065 Loss of Instrument Air / VIII							X	2.1.23: Perform specific system and integrated plant procedures during all modes of plant operation	4.0	
K/A Category Point Totals:		1 (1E)	3 (1A) (2E)	3 (2A) (1E)	2 (1A) (1E)	6 (4A) (2E)	1	Group Point Total:		16

ES-401	PWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 3								Form ES-401-3
E/APE # / Name / Safety Function	10CFR 55.43 (b)	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts
000028 Pressurizer Level Malfunction / II										
000036 (BW/A08) Fuel Handling Accident / VIII	(7)			A03				K/O the reasons for guidance contained in EOP for fuel handling incident	4.1	
000056 Loss of Off-site Power / VI	(2)			A02				K/O the reasons for actions contained in EOP for loss of offsite power	4.7	
BW/E13&E14 EOP Rules and Enclosures										
BW/A05 Emergency Diesel Actuation / VI										
BW/A07 Flooding / VIII										
CE/A16 Excess RCS Leakage / II										
W/E13 Steam Generator Over-pressure / IV		E2						K/O oper implications of normal, abnormal and emerg procedures as they apply to S/G overpressure	3.3	
W/E15 Containment Flooding / V										
K/A Category Point Totals:		1 (1E)	0	2 (2A)	0	0	0	Group Point Total:		3

ES-401	PWR SRO Examination Outline Plant Systems - Tier 2/Group 1												Form ES-401-3	
System # / Name	10CFR 55.43 (b)	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
001 Control Rod Drive						04							K/O oper implication of rod ins limits and CRDS	4.7	
001 Control Rod Drive								02					Predict/monitor changes in Tref associated with operating CRDS	3.4	
003 Reactor Coolant Pump	(5)						04						K/O loss/malf of cont isol vlvs on RCP operation	3.1	
003 Reactor Coolant Pump									01				Predict/mitigate RCP seal leak-off problems	3.9	
004 Chemical and Volume Control		06											K/O physical connections, cause/effect between CVCS and makeup sys to VCT	3.1	
004 Chemical and Volume Control						01							K/O oper implications of O2 control and CVCS	3.3	
013 Engineered Safety Features Actuation										02			Monitor auto oper of ESFAS actuated equipment	4.2	
014 Rod Position Indication								02					Predict/monitor rod position indications	3.6	
015 Nuclear Instrumentation								05					Predict/monitor axial imbalance to prevent exceeding design limits	3.9	
017 In-core Temperature Monitor						03							K/O oper implications of superheating and CET system	4.1	
022 Containment Cooling				01									K/O effect a loss of CCS has on cont equip	3.2*	
026 Containment Spray											01		Operate/monitor CSS controls	4.3	
056 Condensate						03							K/O oper implication water hammer/prevention	2.6*	
059 Main Feedwater		04											K/O relationship between MFW and SGWLCS	3.4	
061 Auxiliary/Emergency Feedwater									08				Predict/mitigate expected flow rates of AFW valve combinations	2.9*	
063 DC Electrical Distribution			01										K/O power supplies to major DC loads	3.1*	
068 Liquid Radwaste												X	2.1.32: Explain/apply sys limits/precautions	3.8	
071 Waste Gas Disposal					04								K/O design/interlocks for isol of waste gas tanks	3.4	
072 Area Radiation Monitoring								01					Predict/monitor radiation levels to prevent exceeding design limits	3.6	
K/A Category Point Totals:		2	1	1	1	4	1	4	2	1	1	1	Group Point Total:		19

ES-401 — PWR SRO Examination Outline — Plant Systems - Tier 2/Group 2 — Form ES-401-3

System # / Name	10CFR 55.43 (b)	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
002 Reactor Coolant											03		Operate/monitor RCS to recognize/correct saturated conditions	4.4	
006 Emergency Core Cooling					05								K/O design/interlocks for HHSI/LHSI autostart	4.4	
010 Pressurizer Pressure Control											02		Operate/monitor pressurizer heaters	3.4	
011 Pressurizer Level Control							03						K/O relationship between PZR level and heater controls	3.3	
012 Reactor Protection					02								K/O design/interlocks/basis for auto Rx trip for each RPS function	4.3	
028 Hydrogen Recombiner and Purge Control	(5)					03							K/O oper implications of sources of H2 in RCB	3.6*	
029 Containment Purge		01											K/O connections/cause-effects relationships between Cont Purge and gas radiation release monitors	3.7	
033 Spent Fuel Pool Cooling								01					Predict/monitor SFP water level to prevent exceeding design limits	3.3	
034 Fuel Handling Equipment					02								K/O design/interlocks for fuel movement	3.3	
035 Steam Generator											06		Operate/monitor S/G isol on steam leak or tube rupture	4.6	
039 Main and Reheat Steam						08							K/O oper implications of effect of steam removal on reactivity	3.6	
062 AC Electrical Distribution					03								K/O design/interlocks between auto bus transfer and breakers	3.1	
064 Emergency Diesel Generator									02				Predict/mitigate malf of load, VARS, air press, speed droop, freq, volt, fuel, temperatures	2.9	
073 Process Radiation Monitoring				01									K/O effect of loss of PRM system has on radioactive effluent releases	4.2	
075 Circulating Water									02				Predict/mitigate loss of circulating water pumps	2.7	
086 Fire Protection												X	2.4.25: K/O fire protection procedures	3.4	
103 Containment	(4)								05				Predict/mitigate emergency containment entry	3.5	
K/A Category Point Totals:		1	0	1	4	2	1	1	3	0	3	1	Group Point Total:		17

ES-401	PWR SRO Examination Outline Plant Systems - Tier 2/Group 3												Form ES-401-3	
System # / Name	10CFR 55.43 (b)	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts
005 Residual Heat Removal		06											K/O connections/cause-effect relationship between RHRS and ECCS	3.6	
007 Pressurizer Relief/Quench Tank				01									K/O effect of loss of PRTS on containment	3.6	
008 Component Cooling Water	(5)								01				Predict/mitigate loss of CCW pump	3.6	
041 Steam Dump/Turbine Bypass Control															
045 Main Turbine Generator															
076 Service Water		01											K/O connections/cause-effect relationships between SWS and CCW system	3.3	
078 Instrument Air															
K/A Category Point Totals:		2	0	1	0	0	0	0	1	0	0	0	Group Point Total:		4

ES-401 Generic Knowledge and Abilities Outline (Tier 3) Form ES-401-5

Facility: South Texas Project		Date of Exam: 6/1/98		Exam Level: SRO	
Category	K/A #	10CFR 55.43 (b)	Topic	Imp.	Pts
Conduct of Operations	2.1.10	(1)	K/O conditions/limitations in the facility license	3.9	
	2.1.11	(2)	K/O <1 hour T.S. action statements	3.8	
	2.1.13	(5)	K/O facility req. for controlling vital/controlled access	2.9	
	2.1.29		K/O how to conduct/verify valve lineups	3.3	
	2.1.33	(2)	Ability to entry conditions to T.S.	4.0	
	Total				5
Equipment Control	2.2.7	(3)	K/O process for conducting test/experiment not described in FSAR	3.2	
	2.2.13		K/O tagging and clearance procedures	3.8	
	2.2.22	(2)	K/O LCOs and safety limits	4.1	
	2.2.31	(7)	K/O SRO fuel handling responsibilities	3.8	
	Total				4
Radiation Control	2.3.1	(4)	K/O 10CFR20 and facility radiation control requirements	3.0	
	2.3.2	(4)	K/O facility ALARA program	2.9	
	2.3.9	(4)	K/O process for performing a containment purge	3.4	
	Total				3
Emergency Procedures and Plan	2.4.18		K/O specific bases for EOPs	3.6	
	2.4.21	(5)	K/O parameters/logics used to assess the status of safety functions	4.3	
	2.4.26		K/O facility protection req. including fire brigade and fire fighting equipment usage	3.3	
	2.4.40	(5)	K/O SRO's responsibility in emergency plan implementation	4.0	
	2.4.44	(5)	K/O emergency plan protective action recommendations	4.0	
	Total				5
Tier 3 Target Point Total (SRO)					17

Facility: South Texas Project **Scenario No.:** 1 **Op-Test No.:** 1

Session 1 Examiners: E1 evaluating U1 Operators: SRO-U1
RO-U2
BOP-U3

Session 2 Examiners: E2 evaluating U4 Operators: SRO-U4
RO-U5
BOP-U6

Objectives: Evaluate the Unit Supervisor's decision making ability during escalating steam generator tube leakage. The crew's ability to protect plant personnel and the public during a release of radioactive materials due to a ruptured and faulted steam generator will also be evaluated. Familiarity with the EOPs including the User's Guide will also be evaluated due to the procedural transition demands during a ruptured and faulted steam generator as well as the unavailability of a bank 1 steam dump. This scenario is designed to evaluate the crew's ability to respond to a Steam Generator Tube Rupture with a containment bypass due to the safety leaking by since this event is the top ranking core damage sequence in accordance with the site specific Probabilistic Risk Assessment.

Initial Conditions: 25% power, 8,000 MWD/MTU

Turnover: The Unit is at 25% power, maintaining power until chemistry levels are acceptable for power increase. Start CCW Pump 1B and secure CCW Pump 1A to allow inspection of the inboard pump bearing. Bank 1 Steam Dump Valve PV-7493 has been manually isolated due to excessive seat leakage.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Shift Operating CCW Pumps.
2	1-38-2	I	Power Range NI-42 Fails Low.
3	8-23-2	C	Condensate Pump #12 Trips.
4	5-3-2	M	Steam Generator 1B tube leakage escalating value to Safety Injection required leak rate. Design Basis Accident leakage rate immediately after the reactor is tripped.
5	5-5-2	C	Safety on ruptured Steam Generator 1B leakage after the reactor is tripped.
6	Panel Graphics Overide	C	Charging line OCIV fails to close upon receipt of a Safety Injection signal.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor. All event types apply only to the SRO position.

Facility: South Texas Project **Scenario No.**: 2 **Op-Test No.**: 1

Session 1 Examiners: E2 evaluating U2 Operators: SRO-U2
RO-U3
BOP-U1

Session 2 Examiners: E1 evaluating U5 Operators: SRO-U5
RO-U6
BOP-U4

Objectives: The Unit Supervisor's ability to protect plant personnel and the public is evaluated during a failure of the Containment Ventilation Isolation signal to isolate the Containment Supplemental Purge in progress. The ability to diagnose events is evaluated during a loss of a 4.16 KV ESF Bus which results in a loss of letdown. Familiarity with procedural immediate actions and the ability to take timely actions to mitigate events is evaluated during a Tcold instrument failure which will result in an unexpected rod insertion.

Initial Conditions: 100% Power, 8,000 MWD/MTU

Turnover: Secure Closed Loop Auxiliary Cooling Water Pump #11 due to high vibration. Supplemental Purge is in progress.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Shift operating Closed Loop Auxiliary Cooling Water Pumps.
2	2-25-2	I	Reactor Coolant System temperature instrument Loop 1 Tcold fails high.
3	10-11-3	C	Loss of 4.16 KV ESF Bus E1C due to overcurrent lockout.
4	2-1-1	M	Large Break LOCA Reactor Coolant System Loop 1A.
5	Rose Schematics	I	Failure of Containment Ventilation Isolation Signal Train A.
6	4-16-2	C	Containment Spray Pump 1B Trips after checked in EO00
7			
8			

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor. All event types apply only to the SRO position.

Facility: South Texas Project **Scenario No.**: 3 **Op-Test No.**: 1

Session 1 Examiners: E1 evaluating U3 Operators: SRO-U3
RO-U1
BOP-U2

Session 2 Examiners: E2 evaluating U6 Operators: SRO-U6
RO-U4
BOP-U5

Objectives: Evaluate the crew's ability to diagnose plant events as well as protect plant personnel and the public during a radioactive leak in the Auxiliary Building. Evaluate the Unit Supervisor's ability to direct appropriate actions to control the plant and minimize transients during a loss of vacuum with power slightly above the turbine trip/reactor trip setpoint. Evaluate the crew's ability to diagnose events and take required actions during a slowly increasing steam break inside the reactor containment building. Evaluate the crew's ability to initiate contingency actions as directed in the EOPs based on a failure of an MSIV to close.

Initial Conditions: 55% Power, 8,000 MWD/MTU, fuel pre-conditioning limits have been met, power increase in progress.

Turnover: The 85 gpm letdown orifice is to be placed in service and the 120 gpm letdown orifice is to be secured to allow flow verification for the 85 gpm orifice. Power increase in progress, fuel pre-conditioning limits have been met.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Swap letdown orifices.
2	2-19-1	I	Pressurizer pressure instrument PT-455 fails low.
3	3-12-1	C	20 gpm letdown line leak outside containment..
4	7-2-1	C	Slowly escalating condenser air inleakage.
5	5-2-3	M	Slow increasing fault on S/G 1C inside the Reactor Containment Building.
6	5-7-3	C	Main Steam Isolation Valve 1C fails to close until local actions taken to close.
7			
8			

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor. All event types apply only to the SRO position.

South Texas Project 6/01/98 Exam
OPERATING TEST NO.: 1

Applicant Type	Evolution Type	Minimum Number	Scenario Number 1	2	3	4
RO	Reactivity	1				
	Normal	1				
	Instrument	2				
	Component	2				
	Major	1				
As RO	Reactivity	1				
	Normal	0				
	Instrument	1				
	Component	1				
	Major	1				
SRO-I						
As SRO	Reactivity	0				
	Normal	1				
	Instrument	1				
	Component	1				
	Major	1				
SRO-U	Reactivity	0				
	Normal	1	1	1	1	
	Instrument	1	2	2,5	2	
	Component	1	3,5,6	3,6	3,4,6	
	Major	1	4	4	5	

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Instructions: (1)Enter the operating test number and Form ES-D-1 event numbers for each evolution type.
(2)Reactivity manipulations must be significant as defined in Appendix D.

Author: Gregg S. Chitwood 12/22/97

Chief Examiner: _____

South Texas Project Exam 6/01/98

Competencies	Applicant #U1/U4 SRO-U				Applicant #U2/U5 SRO-U				Applicant #U3/U6 SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2		2		2	2				1	2	
Diagnose Events and Conditions	4		3		2	2	5		5	2	3	
Understand Plant and System Response	3		3		4	3	4		3	3	3	
Comply With and Use Procedures (1)	1		1			1	4			1	1	
Operate Control Boards (2)			1				4		3	2		
Communicate and Interact With the Crew	5		3		4	3	4		5	2	4	
Demonstrate Supervisory Ability (3)	4					5					4	
Comply With and Use Tech. Specs. (3)	2					2					2	

Notes:

(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Rev 0

Instructions:
Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

Author: Gregg S. Stitwood 12/22/97

Chief Examiner: _____

Facility: South Texas Project	Date of Examination: 06/01/98
Examination Level: SRO	Operating Test Number: 1

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM
A.1	Conduct of Operations	K/A: 2.1.3 [3.4] K/O Shift turnover practices
		TITLE: Review Control Room Logs (A1)
	Conduct of Operations	K/A: 2.1.33 [4.0] Ability to recognize indications for system operating parameters which are entry level conditions for Tech Specs.
		TITLE: Review ESF Power Availibility Surveillance Results (A2)
A.2	Equipment Control	K/A: 2.2.13 [3.8] K/O tagging and clearance procedures
		TITLE: Review a Faulted Tagout (A3)
A.3	Radiation Control	K/A: 2.3.10 [3.2] Ability to control radiation releases
		TITLE: Review and Approve a Liquid Rad Release (A4)
A.4	Emergency Plan	K/A:2.4.44 [4.0] K/O E-Plan protective action recommendations
		TITLE: Determine Emergency Action Levels (A5)

Rev 0

Facility: South Texas Project Exam Level: SRO(U)	Date of Examination: 06/01/98 Operating Test No.: 1	
System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance - Description
1. Residual Heat Removal. Shift RHR Trains. (S)(M)(A)(L)	IV	a. APE 025AA101 [3.7] Ability to monitor heatup rates during loss of RHR.
		b. 004000A413 [2.9] Ability to monitor VCT level control.
2. PZR Relief Tank. Feed and Bleed the Pressurizer Relief Tank. (S)(D)	V	a. 026000K408 [4.3] Knowledge of interlocks which provide auto swapover for recirc phase.
		b. 028000A201 [3.6] Ability to monitor changes in parameters including H2 Recombiner power setting.
3. Electrical, 125 VDC Class 1E. Place a Class 1E 125 VDC Battery Charger in Service. (P)(N)	VI	a. EPE 055EA105 [3.6] Ability to monitor battery when approaching fully discharged.
		b. 063000K302 [3.7] Knowledge of effects of a loss of DC on components using DC power
4.Rod Control. Startup the Rod Control System. (P)(D)(L)	I	a. GEN 2.1.12 [4.0] Ability to apply Tech Specs to a given system
		b. 001000K409 [4.0] Knowledge of interlocks which provide for recovery of a dropped rod.
5.Boric Acid. Locally Align Alternate Boration Flowpath. (P)(D)(R)	II	a. GEN 2.3.1 [3.0] Knowledge of 10CFR20 and facility radiological control requirements.
		b. GEN 2.1.12 [4.0] Ability to apply Tech Specs to a given system.

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (P)lant, (R)CA

Rev 0

Scenario Overviews

Overviews of each scenario are described below to provide additional information beyond that provided in the outline to help answer questions concerning scenario details

Scenario #1

The crew will Shift Operating CCW Pumps per shift turnover direction. NI-42 fails and as soon as the correct Tech Specs are addressed Condensate Pump #12 trips. When the crew has the standby Condensate Pump in service a slowly escalating S/G Tube Leak occurs. The crew will take actions in the Off-Normal procedure and end up tripping the reactor based on procedure direction due to the inability to maintain VCT level. Once the reactor is tripped the S/G Tube Leakage escalates to DBA value and a Safety on the same S/G begins to leak. The crew will need to address the failure of the charging OCIV to shut (can be shut by local manual operation). During the cooldown in EO30 the crew will need to take actions to per the EOP User's Guide to compensate for the out of service steam dump valve during the RCS cooldown in EO30. The scenario will be terminated once the crew has the faulted/ruptured S/G isolated and has commenced the RCS cooldown in EO30.

Procedural Flowpath

Normal Operating Procedure POP02-CC-0001 used to shift CCW Pumps
Offnormal Procedure POP04-NI-0001 used to address NI failure
Annunciator Response Procedure POP09 used to address Condensate Pump Trip
Offnormal Procedure POP04-RC-0004 used to address S/G Tube Leakage
Reactor Trips and the following EOPs should be entered - EO00, EO20, EO30

ES-301-4 Attributes Breakdown

- Total Malfunctions - 5 - Events 2,3,4,5,6
- Malfunctions After EOP Entry - 2 - Safety fails open and charging OCIV fails
- Major Transients - 1 - Faulted/Ruptured S/G
- EOPs entered requiring substantive actions - 2 - EO20, EO30
- EOP Contingencies Requiring Substantive Actions - 0 -

Scenario #2

The crew will shift Closed Loop Auxiliary Cooling Water Pumps per shift turnover direction. Once the Closed Loop Auxiliary Cooling Water Pumps have been shifted an RCS Tcold RTD will fail high resulting in rod insertion due to rods being in automatic at 100% power. After the crew has addressed Tech Specs for the Thot failure a loss of 4.16 KV ESF Bus E1C will result in a loss of letdown. This will require the crew to make preparations to place excess letdown in service to control RCS inventory. After the SRO directs actions to place excess letdown in service a Large Break LOCA will occur. After the LOCA the crew will need to address a failure of the Containment Ventilation Signal which is significant since the containment purge valves were open prior to the event and will not receive a close signal. After the crew checks the Containment Spray Pumps running in EO00 Containment Spray Pump 1B will trip. The crew should make a brief transition to FRP1 and exit at the first step based on LHSI pump flow. The crew should then enter FRZ1 based on increasing containment pressure due to only one of three Containment Spray Pumps available. The scenario will be terminated shortly after the crew transitions to EO10.

Procedural Flowpath

Normal Operating Procedure POP02-AC-0001 used to shift Closed Loop ACW Pumps.
Offnormal Procedure POP04-RP-0004 used to address RTD failure
Annunciator Response Procedure POP09 and Offnormal Procedure POP04-CV-0004 used to address the charging pump trip and loss of letdown.
The following EOPs should be entered - EO00, FRP1, FRZ1, EO10

ES-301-4 Attributes Breakdown

- Total Malfunctions - 5 - Events 2,3,4,5, and 6
- Malfunctions After EOP Entry - 2 - CVI fails & CTMT Spray Pump Trip
- Major Transients - 1 - Large Break LOCA
- EOPs entered requiring substantive actions - 1 - EO10
- EOP Contingencies Requiring Substantive Actions - 1 - FRZ1

Scenario #3

The crew will be directed to swap letdown orifices prior to continuing with the power increase. Once letdown orifices have been swapped a pressurizer pressure instrument will fail. This pressurizer pressure instrument failure was placed in the scenario based on a similar event occurring recently to one of the operating units. After the crew has addressed Tech Specs for the pressurizer pressure instrument failure a small letdown line leak will occur on the piping in the MAB. Once the crew has taken actions to isolate the letdown leakage a condenser air inleakage event will initiate. The rate of condenser air inleakage will gradually increase. This slowly increasing rate of condenser air inleakage will result in the crew taking actions to reduce power to both decrease the rate of vacuum loss and avoid a reactor trip if the turbine is tripped below 50% power. The loss of letdown flow gains significance at this point due to the limitations placed on boration capabilities due to normal charging being isolated while normal letdown is unavailable. The rate of condenser air inleakage will increase to a value requiring a turbine trip regardless of whether or not power is decreased to less than 50%. Once the Turbine is tripped a fault on S/G 1C inside containment will occur. The MSIV for the faulted S/G will not close from the control room but can be closed locally. The crew may or may not enter FRZ1 dependent on the length of time spent in EO00 which may allow Containment pressure to decrease to less than the procedural entry value. The scenario will be terminated once the crew has completed the actions of EO20.

Procedural Flowpath

Normal Operating Procedure POP02-CV-0004 used swap letdown orifices
Offnormal Procedure POP04-RP-0001 used to address PZR pressure failure
Offnormal Procedure POP04-RC-0003 used to address letdown line leak
Offnormal Procedure POP04-CR-0001 used to address condenser air inleakage
The following EOPs should be entered - EO00, EO20, possibly FRZ1

ES-301-4 Attributes Breakdown

- Total Malfunctions - 5 - Events 2,3,4,5, and 6
- Malfunctions After EOP Entry - 1 - MSIV fails to close
- Major Transients - 1 - Faulted S/G
- EOPs entered requiring substantive actions - 1 - EO20
- EOP Contingencies Requiring Substantive Actions - 0

JPM OVERVIEW

The following information beyond the detail provided for in the test outline form to help answer questions concerning operating JPM details.

The two JPMs designated for simulator setting should be able to be performed at the same time on the simulator. The basic format of the JPM questions has been determined. As currently planned 70% of the JPM questions will be of the open reference type. The open reference questions have been planned to ensure the candidates will be required to utilize a variety of different reference types. A sampling of the types of open reference documents to be used includes graphs, piping diagrams, electrical diagrams, tech specs, plant curve books, and operating procedures.

Probabilistic Risk Assessment Input

The South Texas Project Probabilistic Risk Assessment was reviewed and used as input to determine the content of the examination. A table describing the "Top 15 Core Damage Sequences" included as part of the Project Probabilistic Risk Assessment was reviewed to help identify dominant accident sequences and used as input to the examination. Also a table called "Risk Importance for Operator Actions was reviewed to identify important operator actions that help drive events to low risk. Two other tables relating to system importance and reliability were reviewed to ensure the systems which were targeted as important to core damage mitigation and those vulnerable to unreliability were addressed on the examination. The latter two tables are titled "Risk Achievement Worth" and "System Importance"

The cross-reference below shows items from these tables that were targeted for one of the reasons listed above and cross-references the area of the examination that relates to these items. The cross-reference below is not an attempt to show all items from these tables and all areas where these items are addressed but is provided to provide examples of how the PRA was addressed in the examination.

PRA Item Description	Related Examination Items
S/G Tube Rupture with Containment Bypass. (Top ranking core damage sequence)	Simulator scenario includes a DBA Tube Rupture coincident with a leaking S/G Safety valve on the ruptured S/G. Additionally the written examination contains questions under K/A 038EA2.15 and 035A4.06 that relate to this event.
During a S/G Tube Rupture with Containment Bypass the operators are not able to place RHR in service. (Top ranking core damage sequence)	JPM NRC-1 includes starting an RHR pump and responding to a loss of the same RHR pump.
Loss of a vital 125 VDC Bus (Second ranking core damage sequence)	JPM NRC-3 includes placing a 125 VDC Battery Charger in service. Additionally the written examination contains questions under K/As 055EK3.02, 058AK3.01, and 063K2.01 that relate to this event.
Operator actions during an electric power recovery (Top ranking operator action in the "Risk Important Operator Actions" table)	Simulator scenario #2 has the respond to a loss of a 4.16 KV ESF bus. Also JPM NRC-3 includes placing a 125 VDC Battery Charger in service. Additionally the written examination contains questions under K/As 055EK3.02, 057AA1.06, and 056AK3.02.
Operator initiates RHR is one of the top ranking operator actions in the "Risk Important Operator Actions" table	JPM NRC-1 includes starting an RHR pump and responding to a loss of the same RHR pump.
The AFW System rates very highly in system importance to prevent core damage and also in potential unreliability.	All simulator scenarios will require the operator to take some sort of actions that involve operation of AFW equipment. These actions will include throttling flow and securing equipment to minimize cooldown. Additionally the written examination contains questions under K/A 054A2.04 and 061A2.08

Operating Exam 10CFR55.45 Item Cross-Reference

The following cross-reference lists the 10CFR55.45 Operating Tests *(a) Content* section substep to the portion of the operating exam that as a minimum satisfies this substep.

(1) Walk through JPM 4, Startup the Rod Control System

(2) Scenario #3, Plant power increase in progress (U3 & U1)
Scenario #2, Rod Withdrawal while at power (U2 & U3)

(3) Walk through JPM #1, RHR Pump Trips

(4) JPM 4 Question 1, Question concerning Axial Flux out of normal band.

(5) All scenarios involve challenges to controlling the plant.

(6) All scenarios contain normal, abnormal, and emergency operating situations.

(7) Walkthrough JPM #1, Shifting RHR pumps.

(8) Admin JPM #A4, Review and Approve a Liquid Radiation Release. Walkthrough JPM #5 involves operation of the Boric Acid System. Additionally all scenarios contain some sort of challenge to mitigating radioactive releases.

(9) Walkthrough JPM #5, results in an RCA entry. Also JPM #5 Question #2 discusses requirements if a radiation monitor is out of service.

(10) Walkthorugh JPM #5, results in an RCA entry. Also JPM #5 Question #1 discusses facility rad control requirements.

(11) Admin JPM #A5, requires declaration of Emergency Action levels.

(12) Admin JPM #A1, requires a log review which is a job position requirement.

(13) All scenarios require functioning within the control team.

CHIEF EXAMINER OUTLINE COMMENTS - SOUTH TEXAS 6/1/98

WRITTEN

- How does KA 000076AK3.05 relate to 10CFR55.43(b)(6)? **Resolution: Changed reference to 10CFR55.43(b)(2).**

- How do KAs 000055EK3.02, 000056AK3.02, and 000009EK3.21 relate to 10CFR55.43(b)(2)? They appear to involve EOPs, not Technical Specifications. **Resolution: Changed references to 10CFR55.43(5).**

ADMINISTRATIVE TOPIC OUTLINE

- Replace JPM A4 for the following reasons: 1) The SRO can not authorize the release; therefore this JPM does not have a high enough importance rating. 2) Because it was used on the last exam, it would not be unexpected for the applicants to prepare for this task. **Resolution: 1) The SRO does approve this release. 2) JPM was replaced because of second comment.**

WALKTHROUGH OUTLINE

- Which one of the Subcategory B.1 tasks involves an engineered safety feature? At least one of these tasks must relate to an ESF and should be so designated on the outline. **Resolution: Designated JPM 3 as ESF. Also, new JPM 4 was designated ESF.**

- For JPM 4, Question "a," avoid Technical Specifications questions which do not test system knowledge. **Resolution: JPM 4 was replaced and new questions no involving Technical Specifications were prepared.**

- As described, it appears that JPM 5 applies to Safety Function I. This would result in JPMs 4 and 5 applying to the same safety function. Each task must apply to a unique safety function. Question "a" is not appropriate for a systems task. For Question "b" avoid Technical Specifications questions which do not test system knowledge. **Resolution: JPM 4 was replaced with one applying to Safety Function II. JPM 5 was replaced because of similarity to a JPM on the last exam and appropriate questions were developed.**

SCENARIOS

GENERAL

- Complete Forms ES-301-5 and ES-301-6 for applicants only in SRO position. An examiner will not be assigned to specific applicants in the RO/BOP positions. However, where there are actions for the RO/BOP, they should be covered in detail on Form ES-D-2 to assist in performing a top level evaluation. **Resolution: Forms were revised appropriately.**

- We recommend validation of timing for specific malfunctions to assist in estimating an overall time line for each scenario. **Resolution: Appropriate validation times for specific malfunctions were included with scenario documents.**

- It will be necessary to develop a backup scenario. **Resolution: Developed a backup scenario.**

Facility Initial
Examination
Submittal
(Written and
Operating)