U.S. NUCLEAR REGULATORY COMMISSION REGION I
OPERATOR LICENSING REQUALIFICATION PROGRAM EVALUATION REPORT

REQUALIFICATION PROGRAM EVALUATION REPORT NO. 50-213/89-06(OL-RQ)

FACILITY DOCKET NO.: 50-213

FACILITY LICENSE NO. DPR-61

LICENSEE: Connecticut Yankee Atomic Power Company
P. O. Box 270
Hartford, Connecticut 06141

FACILITY: Haddam Neck Power Plant

EXAMINATION DATES: May 1-5, 1989

CHIEF EXAMINER: Paul Bissett, Senior Operations Engineer — 8/23/89 Date

APPROVED BY: Peter Eselgroth, Chief, PWR Section
Operations Branch, Division of Reactor Safety — 8/24/89 Date

SUMMARY: The licensed operator requalification training program was rated as satisfactory. Written requalification examinations and operating tests were administered to eight senior reactor operators (SROs) and four reactor operators (ROs). The examinations were graded concurrently and independently by the NRC and the facility training staff. As graded by the NRC, one RO failed the written examination. The remaining SROs and ROs passed all portions of the examination. As graded by the facility, one SRO failed the simulator examination, one SRO failed the Job-Performance-Measures examination, and one RO (the same RO as identified by the NRC) failed the written examination. The remaining 9 operators passed all portions of the examination. Also, both the NRC and the facility evaluators judged all three crews as satisfactory during the performance of the simulator scenarios.

The NRC also identified one facility evaluator as performing his assigned responsibilities unsatisfactorily.

DETAILS

TYPE OF EXAMINATIONS: Requalification

EXAMINATION RESULTS:

NRC Grading	RO Pass/Fail	SRO Pass/Fail	TOTAL Pass/Fail
Written	3/1	8/0	11/1
Simulator	4/0	8/0	12/0
Walk-through	4/0	8/0	12/0
Overall	3/1	8/0	11/1

Facility Grading	RO Pass/Fail	SRO Pass/Fail	TOTAL Pass/Fail
Written	3/1	8/0	11/1
Simulator	4/0	7/1	11/1
Walk-through	4/0	7/1	11/1
Overall	3/1	6/2	9/3

1.0 PERSONNEL CONTACTED DURING THE EXAMINATION/EVALUATION

CHIEF EXAMINER AT SITE:

P. Bissett, Senior Operations Engineer (1,2,3,4)

OTHER NRC PERSONNEL:

A. Asars, Resident Inspector (4)
P. Eselgroth, Chief, PWR Section (3)
R. Gallo, Chief, Operations Branch, DRS (3)

OTHER NRC PERSONNEL (Cont'd.):

C. Casto, Chief (Acting), PWR Section, R:II	(1,2)
A. Lopez, (INEL)	(1,2)
R. Warner, (INEL)	(1,2)

CONNECTICUT YANKEE ATOMIC POWER COMPANY PERSONNEL:

J. Black, Director, Nuclear Training	(4)
G. Bouchard, CY Unit Superintendent	(2,4)
M. Bray, Assistant Supervisor Operator Training	(1,2,4)
R. Heidecker, Training Supervisor	(1,2,3,4)
M. Ewers, SRO Licensed Instructor	(1,2)
J. Rein, Requalification Program Coordinator	(1,2)
R. Tourville, Assistant Operations Supervisor	(2)
N. Young, Senior Training Instructor	(1,2)
G. Waig, Training Instructor	(2)

LEGEND:
(1) Participated in examination development
(2) Participated in examination administration
(3) Attended entrance meeting on March 9, 1989 at King of Prussia, Pa.
(4) Attended exit meeting on May 5, 1989 at the Northeast Utilities Training Center

2.0 PROGRAM EVALUATION RESULTS

Overall rating: Satisfactory

The program for licensed operator requalification training at Haddam Neck was rated as satisfactory in accordance with the criteria established in the above draft revision of NUREG-1021, ES-601. Those criteria are:

a. A pass/fail decision agreement between the NRC and facility grading of 90% for the written and operating examinations, with the licensee not being penalized for holding a higher standard of operator performance.

NRC grading resulted in eleven operators passing the written examination. Facility grading also resulted in eleven operators passing the written examination. This satisfies criterion a.

NRC grading resulted in twelve operators passing the operating examination. Facility grading resulted in ten operators passing the operating examination. One operator failed the simulator portion of the examination and one operator failed the Job Performance Measures (JPMs) portion of the examination. This also satisfies criterion a.

b. At least 75% of all operators pass the examination.

NRC grading is the only consideration for this criterion. Eleven of 12 operators passed the examination overall. This satisfies criterion b.

c. Failure of no more than one crew during the simulator portion of the operating examination.

Again, NRC grading is the only consideration for this criterion. Three crews were evaluated and all three crews passed the simulator portion of the operating examination. This satisfies criterion c.

3.0 SCENARIO EVALUATION

The following was noted during the scenario portion of the operating examinations.

A generic weakness was noted during the performance of simulator scenarios in that communications between the SROs and ROs were not always closed loop. The SROs were primarily identified in failing to close the communication loop in the majority of cases.

Another communication weakness identified throughout several scenarios observed involved the announcement of transition from one emergency operating procedure (EOP) to another EOP. The SROs were identified in many instances of not informing all crew personnel of this transition.

4.0 WRITTEN EXAMINATION EVALUATION

The following is a summary of generic deficiencies noted from the grading of the written examinations. This information is being provided to aid the licensee in upgrading licensed operator and operator requalification training programs. No licensee response is required.

PART A

Question No.	Comment
1.0012(9) 1.0014(9a)	The ability to identify controlling signals to the feedwater regulating control valves and the effects thereof.
1.0003(6)	The ability to explain, in detail, the effects of 1.0014(6a) changes in main steam pressure.
1.0013(6) 1.0003(6a)	The effects of changes in various parameters on the variable low pressure reactor trip setpoint.
1.0008(6) 1.0019(6a)	The ability to correctly identify transition steps within various emergency operating procedures.

PART B

Question No.	Comment
1.009(RO)	The ability to correctly identify actions to be taken in the event of reactor protection system failures.
1.0014(RO) 1.0014(SRO) 1.0017(RO) 1.0017(SRO)	Emergency Operating Procedures rules of usage.
1.0002(RO) 1.0002(SRO)	The effects of various changes to calorimetric inputs

5.0 JOB PERFORMANCE MEASURES (JPM) EVALUATION

One facility evaluator was identified as unsatisfactory in his evaluation of operators during their performance of JPMs. This unsatisfactory evaluation was attributable to the following.

- Both verbal and non verbal cues were excessive.
- Lacked professionalism.
- Did not document additional questions asked of the operators.
- Did not correct inadequate performance even after having been identified and communicated by the NRC examiner.

The licensee acknowledged the above comments and stated that the individual would be informed of his identified deficiencies and that necessary corrective actions would be taken to resolve these problems prior to his resuming evaluator duties.

A generic deficiency was noted during the performance of JPMs performed on the simulator. Several individuals, as noted by the licensee and the NRC, experienced some difficulty in performing selected JPMs, especially one dealing with a segment of an Emergency Operating Procedure (EOP). Several operators failed this particular JPM because they tended to place more emphasis on the rapid completion of the JPM rather the actual procedural steps involved. As a consequence, some steps were missed or were incorrectly performed. This was also identified as being the first time that JPMs were performed on the simulator. The licensee felt that this may have contributed to the problem. The NRC examiner was informed that JPM training utilizing the simulator would become a routine part of any future training.

Another JPM caused difficulty in satisfactory completion by several operators due to the fact that it was not valid in some respects. By procedure, this JPM could be satisfactorily completed without the operator fully completing all of the steps detailed within the JPM. All JPMs are expected to be validated against current plant procedures prior to their use.

6.0 SUMMARY OF COMMENTS MADE AT EXIT MEETING ON FEBRUARY 10, 1989

a. The NRC expressed appreciation for the level of effort expended by the training department representatives in accommodating the NRC examination team. This level of effort, which included providing an adequate working area, appropriate reference materials, locked storage capabilities, plant access badging, etc., helped in expediting the review process and the conduct of the exam. Appreciation was also expressed for the cooperation and level of effort expended by all those involved in the process, especially the facility team members who administered the examination.

b. The NRC discussed the topics addressed in Paragraphs 2 thru 5 above.

c. During the performance of in-plant JPMs, several delays were encountered as a result of any one particular JPM not being completed in the time frame expected. It was recommended that during the performance of JPMs, that a coordinator be assigned whose primary responsibility would be to track and adjust the JPM schedule as necessary to keep the process moving, thus avoiding unnecessary delays.

d. The licensee needs to apply Quality Control examination techniques to JPM questions in much the same manner that QC techniques were applied during the written exam review performed by the NRC during the exam preparation review week. Also, the JPMs should be reviewed in more detail as far as identification of critical tasks are concerned.

e. Although not discussed at the exit meeting, the reference material supplied by the licensee to the NRC for examination preparation was more than adequate. All material was well indexed and tabbed which allowed rapid access to specific topics and component information.

7.0 There were minor changes made to the written examination answer keys after they were administered to the operators. Those changes as a result of further research have been made to the examinations attached to this report.

Attachments:
1. Simulator Examinations (cover sheets only)
2. Job Performance Measures (cover sheets only)
3. Written Examination and Answer Keys (RO & SRO)
4. Connecticut Yankee Atomic Power Company Letter (D. B. Miller to R. M. Gallo) Dated June 5, 1989

CONNECTICUT YANKEE

SIMULATOR SCENARIO SUMMARY

CY-OP-LORT-S010

EVENT #	TIME	MALF	DESCRIPTION
1.	+5	CHR15	Change wind speed to 75 mph up to 90 mph over next 5 minutes.
2.	+10	ED01A	Loss of the 1772 line
3.	+20	SWR 33, 34, 35 & 36 Closed	Loss of all Service Water
	+20	C ,, ,C,D 100% severity	Condenser tube sheet 50% blocked.
4.	+32	ED01B	Loss of 1206 Line (Black out)

PROCEDURES USED DURING SCENARIO

1.	AOP 3.2-5	Natural Disasters
2.	EPIP 1.5-1	Emergency Assessment
3.	ACP 1.2-16.1	Plant Information Report
4.	E-0	Rx trip or SI
5.	ES-01	Rx trip response
6.	ES-0.2	Natural Circ Cooldown
7.	ECA 0.0	ation Black out
8.	AOP 3.2-19	Loss of Service Water

CONNECTICUT YANKEE

SIMULATOR SCENARIO SUMMARY

CY-OP-LOCT-87-AES014

EVENT #	TIME	MALF	DESCRIPTION
1.	+5	RX09A @ 100% Fails high	#1 Feed Water Hagan Xmitter
2.	+15	FWR01 @ 1-1.5%	Vacuum bkr 1-1.5% open
3.	+~25	RD08	Continuous Rod inserted inserted during load reduction as manual rod motion is occurring.
4.	+35	FWR01 10%	Loss of vacuum Rx trip

PROCEDURES USED DURING SCENARIO

1.	AOP 3.2-18	Loss of Feedwater (FW) Flow, Feedwater (FW) regulator valve failure
2.	AOP 3.2-33	Partial Loss of Main Condenser Vacuum
3.	AOP 3.2-23	Malfunction of Rod Control System
4.	T.S. Sec 3.9	Operational Safety Instrumentation and Control System
5.	NOP 2.2-1	Changing Plant Load
6.	ODI #124	Excessive turbine steam cycle air Inleakage
7.	E-O	RX Trip or safety injectior
8.	ES-0.1	RX Trip response
9.	EOP 3.1-8	Complete Loss of Condenser Vacuum

CONNECTICUT YANKEE

SIMULATOR SCENARIO SUMMARY

CY-OP-LOCT-87-AES001

EVENT #	TIME	MALF	EVENT DESCRIPTION
1.	0		IC#6 25% Power with xenon increasing
	+5	RD0132	Dropped rod #31
	~~+35~~ 10	MS01D	MSLB Inside Containment, 100% severity with no ramp

PROCEDURES USED DURING SCENARIO

AOP 3.2-23 Failure of Rod Control System

E-0, Reactor Trip or Safety Injection

E-2, Faulted Steam Generator Isolation

E-1, Loss of Reactor or Secondary Coolant

ES-1.1, SI Termination

CONNECTICUT YANKEE

SIMULATOR SCENARIO SUMMARY

CY-OP-LORT-S015

EVENT #	TIME	MALF	DESCRIPTION
1.	+3	RC07 @ 5% severity	Rx vessel head vent leak
2.	+25	RC06 @ 10% severity	RCS Surge line rupture.
3.	+35	SG02D @ 100%	#4 S/G tube rupture.

PROCEDURES USED DURING SCENARIO

1.	AOP 3.2-31	Reactor Coolant System Leak
2.	Tech Specs	3.1.4 Primary System Leakage
3.	EPIP 1.5-1	Emergency Assessment
4.	ACP 1.2-16.1	Plant Information Report
5.	NOP 2.2-1	Changing Plant load
6.	E-0	Rx trip or SI.
7.	E-1	Loss of Rx or secondary coolant
8.	ES-1.2	Post loca cooldown and depressurization
9.	E-3	Steam Generator tube rupture
10.	ECA 3.1	SGTR with loss of Rx coolant subcooled recovery desired.

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONN YANKEE Examinee:

JPM Number: 35 Time to complete: 15 minutes

Task Title: Calculate QPTR

Task No. (CY) 002-103-01-01

Task No. (K/S) 015-000-A1.04 K/A No. 3.5/3.7

Applicable methods of testing:

Simulate performance _____ Actual performance _____

Classroom _____ Simulator _____ Plant _____

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The plant is operating at 100% power, all systems operating normally and in automatic. No equipment is out of service, no major evolutions planned.

Task Standards: Successfully and in a timely manner, calculate the core QPTR using the Excore Method in accordance with SUR 5.3-40.

Required Materials: Calculator, SUR 5.3-40, Core Data Reference Book.

Initiating Cues: The Reactor Engineering Department has just completed an incore flux map and incore QPTR calculation. The duty engineer has requested that you, as the Primary Side C.O., perform an excore QPTR calculation to verify their results.

Disk JPM #10.7

JOB PERFORMANCE MEASURE WORKSHEET

Facility: Connecticut Yankee Examinee: _____

JPM Number: 48 Time to complete: 15 ~~20~~ minutes

Task Title: Perform Process Rad Monitoring Instrument Functional Check

Task No. (CY) 073-001-02-01

TASK NO. (K/S) 072-000-A4.02 K/A No. 3.7/3.7

Applicable methods of testing:

Simulate performance _____ Actual performance _____

Classroom _____ Simulator _____ Plant _____

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Mode 1, 100% power, all system operating normally and in automatic.

Task Standards: Successfully perform the daily Rad Monitoring Operator's Check (SUR 5.1-11) for R-14A, R-31, and CD-1.

Required Materials: None

Initiating Cues: You are the 00-08 shift primary side C.O. You have just completed logs and now must perform the Daily Rad Monitoring Checks for R-14A, R-31, and CD-1. No radiation releases are in progress.

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONNECTICUT YANKEE Examinee:

JPM Number: 123 Time to complete: 15 minutes

Task Title: Isolate a Steam Generator Locally

Task No. 400-517-05-01

Task No. (K/S) 035-010-A4.06 K/A No. 4.5/4.6

Applicable methods of testing:

Simulate performance X Actual performance

Classroom Simulator Plant X

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Reactor plant has tripped from 100%, safety injection signal has occurred, a steam-line break inside containment from #2 SG has been identified. #2 MSIV, #2 feed line MOV and #2 FRV bypass valves are shut.

Task Standards: Within the appropriate time requirements be able to locally isolate the #2 Steam Generator per E-2.

Required Materials:

Initiating Cues: Hand operator the "Valves required to isolate a faulted steam generator" page from E-2 and inform that he must locally isolate #2 Steam Generator.

Disk: JPM #12.5

JOB PERFORMANCE MEASURE WORKSHEET

Facility: Connecticut Yankee Examinee:

JPM Number: 56 Time to complete: 15 minutes

Task Title: Dump Steam through the Atmospheric Dump

Task No. 039-008-01-01

Task No. (K/S) 000-055 EA 2.01 K/A No. 3.4/3.7

Applicable methods of testing:

Simulate performance X Actual performance _____

Classroom _____ Simulator _____ Plant X

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Station blackout in progress (plant formerly running normally at 100% power).

Task Standards: Atmospheric Steam dump is locally manually operated to the full open position.

Required Materials: CY key, Operator Aid #88-11, Appropriate Wrenches (2), N_2 Bottle.

Initiating Cues: Control room has directed operator to locally manually open the Atmospheric Steam Dump.

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONNECTICUT YANKEE Examinee:

JPM Number: 4 Time to complete: 20 minutes

Task Title: Borate RCS Locally at MCC-8

Task No. 401-106-04-01

Task No. (K/S) 000-068EA 1.08 K/A No. 4.2/4.2

Applicable methods of testing:

Simulate performance X Actual performance _____

Classroom _____ Simulator _____ Plant X

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Control Room evacuated, you have been directed by the SS to borate the RCS at MCC-8 as per AOP 3.2-8 step 4.8.

Task Standards: Perform steps 4.8.1 through 4.8.9 of AOP 3.2-8 borate RCS - OPS outside Control Room.

Required Materials: AOP 3.2-8, fuse puller, goggles/face shield, rubber gloves.

Initiating Cues: Per direction of SS.

USE AOP 3-2-8

From #2 - DIESEL

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONNECTICUT YANKEE Examinee:

JPM Number: 2 Time to complete: 15 minutes

Task Title: Manual Start EDG & Energize Bus 9

Task No. (CY) 401-403-04-01

Task No. (K/S) 000-068-EA1.31 K/A No. 3.9/4.0

Applicable methods of testing:

Simulate performance X Actual performance _____

Classroom _____ Simulator _____ Plant X

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Mode 3, Reactor & Turbine tripped, Control Room evacuated, you are assigned to proceed with step 4.5 AOP 3.2-8.

Task Standards: Locate appropriate panels/switches using AOP 3.2-8 and start EDG2B and energize Bus 9.

Required Materials: Locked valve key.

Initiating Cues: You are assigned to perform EDG startup per AOP 3.2-8. There is another operator in switchgear aligning 480V buses per AOP 3.2-8 steps 4.5.5 thru 4.5.10.

JOB PERFORMANCE MEASURE WORKSHEET

Facility: Connecticut Yankee Examinee: _____

JPM Number: 33 Time to complete: 15 minutes

Task Title: Operate the CVCS to Makeup To The RWST

Task No. (CY) 004-34-01-01

Task No. (K/S) 004-020-A2.08 K/A No.

Applicable methods of testing:

Simulate performance _____ Actual performance _____

Classroom _____ Simulator _____ Plant _____

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The plant is operating at 100% power, all systems operating normally and in automatic. The boric acid mix tank concentration is 17,350 ppm boron.

Task Standards: Successfully and in a timely manner calculate the required blender ratio to makeup to the RWST, and perform a blended makeup to the RWST.

Required Materials: Calculator, NOP 2.6-3

General References: NOP 2.6-3

Initiating Cues: RWST level is 240,000 gallons. The SCO has just requested that you, the Primary Side Co, makeup to the RWST to restore level to 248,000 gallons. A recent chemistry sample of the RWST shows boron concentration to be 2600 ppm.

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONNECTICUT YANKEE Examinee: _____

JPM Number: 94 Time to complete: 15 minutes

Task Title: Perform Swapover from Injection to Recirculation

Task No. 006 102-05-01

Task No. (K/S) 000-011-EA1-11 K/A No. 4.2/4.2

Applicable methods of testing:

Simulate performance _____ Actual performance _____

Classroom _____ Simulator X Plant _____

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Mode 1, 100% power EOL

Task Standards: Properly implement ES1.3 transfer to RHR Recirculation.

Required Materials: CY Simulator, Copy of EOP Book

Initiating Cues: The plant has experienced a large break LOCA from 100% power. The operators enter E-0 then transfer to E-1. While conducting E-1, the RWST level decreases to 130,000 gallons. The operators transfer to ES-1.3, containment pressure is 32 psig.

Disk: JPM #8.11

JOB PERFORMANCE MEASURE WORKSHEET

Facility: Conn Yankee Examinee:

JPM Number: 121 Time to complete: 12 minutes

Task Title: Shutdown of EDG After SI

Task No. 064-006-01-01

Task No. (K/S) 064-000-A4.05 K/A No. 3.1/3.2

Applicable methods of testing:

Simulate performance _____ Actual performance _____

Classroom _____ Simulator _____ Plant _____

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The plant experienced a Safety Injection due to a Feed Reg Valve failing open upon unit trip. Normal station service is available and all systems responded normally.

Task Standards: Locates all controls and indications. Shutdown and returns EG2A to standby condition in accordance with ES-1.1.

Required Materials: ES-1.1, Procedure to Shutdown a Diesel when not phased to its bus.

Initiating Cues: The SCO has used the EOP network and is presently in ES-1.1 at step 22b. ~~with SI reset.~~ SI is NOT Reset You are directed to shutdown EG2A in accordance with the opposite page.

Disk: 11.13

JOB PERFORMANCE MEASURE WORKSHEET

Facility: CONN YANKEE Examinee:

JPM Number: 24 Time to complete: 15 minutes

Task Title: START A RCP

Task No. (CY) 003-001-01-01

Task No. (K/S) 003-000-A14 K/A No. 4.0/3.9

Applicable methods of testing:

Simulate performance X Actual performance _____

Classroom _____ Simulator _____ Plant X

* READ TO THE OPERATOR *

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Mode 3, RCS temp>465°.

Task Standards: Start #3 RCP per NOP 2.4-2.

Required Materials: NOP 2.4-2

Initiating Cues: The SCO directs you to start #3 RCP.

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT - RO
Examination Category : 1

Examinee : _____ _____ Final Grade : _____

Examination Number : RO : 890011 Developed : _____

Date Administered : 05/01/89 Approved : _____
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 2.00 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____

Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT - RO

Examination Number : RO : 890011 Date Administered : 05/01/89

Category Value	% of Total	Student's Score	% of Cat. Value	Category
50.0	100.00	_____	_____	LIMITS AND CONTROLS
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
50.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT - RO
05/01/89

Ques # / Pts Question Exam # : RO : 890011

1.0001 / 2.4 The plant tripped one hour ago from an extended 100% power run. All recovery operations were normal except that when restarting #3 RCP, it tripped on an electrical fault. This is under investigation and the loop stop valve was re-opened. Data is 200 EFPD, Tavg = 535 degrees, the process computer is not available and boron concentration is 840 ppm. Use SUR 5.3-19 to determine if adequate shutdown margin is being maintained. Complete all required data sheets.

1.0002 / 1.9 The Reactor Engineer calculates core thermal power using a heat balance but neglects the effects of RCP horsepower and of S/G blowdown being in service. How will the calculated value be affected?

a. Both effects make the calculated value higher than the actual core thermal power.

b. Both effects make the calculated value lower than the actual core thermal power.

c. Neglecting RCPs makes the calculated value higher; neglecting blowdown makes it lower.

d. Neglecting RCPs makes the calculated value lower; neglecting blowdown makes it higher.

1.0003 / 2.2 The plant is at 30% power after being shutdown for RCP seal replacement for 20 days. Prior to shutdown, power level was at 100% for 68 days. Which of the following power ascension guidelines would be used for these conditions?

a. 30% to 100% 3%/hour

b. 30% to 80% 10%/hour
80% to 100% 3%/hour

c. 30% to 80% 15%/hour
80% to 100% 10%/hour

d. 1% hour

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT - RO
05/01/89

Ques # / Pts Question Exam # : RO : 890011

1.0004 / 1.4 A control room operator is returning from a special assignment which removed him from his watchstanding duties for a period of six and one-half months. Which one of the following best describes the action(s) necessary for the operator to relieve the watch?

a. Read and sign the turnover sheet, review the previous days Control Room log, and walkdown the main control board prior to relieving the watch.

b. Read and sign the turnover sheet, review the control room logs back to the last watch stood, and walkdown the main control prior to relieving the watch.

c. Stand 40 hours of watch under instruction, have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover. The turnover includes reviewing the Control Room log back to the last watch, read and sign the turnover sheet, walkdown the main control board prior to relieving the watch.

d. Have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover. The turnover being review of the Control Room log back to the last watch, read and sign the turnover sheet and walkdown the main control board prior to relieving the watch.

1.0005 / 1.5 A computer repair man from corporate has come to work on the plant computer in the computer room. In his repair kit are two pint bottles of isopropal alcohol. What actions must be taken to allow the repair man to take the entire volume of alcohol into the computer room?

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT - RO
05/01/89

Ques # / Pts Question Exam # : RO : 890011

1.0006 / 1.6 An approach to criticality is being performed by means of control rod withdrawl. The RO stops control rod motion when the reactor is close to criticality but still subcritical.

The SR count rate should ...

a. Continue to increase, but at a slower rate. The startup rate should stabilize at a lower positive value.

b. Continue to increase for a short time and then plateau. The startup rate should gradually decrease to zero.

c. Stop increasing and stabilize at its present value. The startup rate should immediately decrease to zero.

d. Begin to slowly decrease. The startup rate should gradually decrease to zero from a slightly negative value.

1.0007 / 2.2 WITH THE PLANT OPERATING AT 100% POWER A LINE FAULT ON THE 1206 LINE RESULTS IN 4160V BUS 1-3 BEING POWERED FROM 4160V BUS 1-2 VIA ACB 2T3. WHAT ACTIONS CAN THE OPERATOR TAKE TO REESTABLISH TWO STATION SERVICE TRANSFORMER OPERATION ON THE 1772 LINE UNTIL THE 1206 LINE IS RESTORED?

1.0008 / 2.1 The plant was operating at 100% power when "A" Vital bus was lost. All equipment responded as expected. The primary side operator notices that pressurizer level on Channels 2 and 3 is increasing. List two reasons why pressurizer level is increasing?

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Ques # / Pts | Question | Exam # : RO : 890011

1.0009 / 2.3 The reactor is at 100% power. The lower detector in PR channel 34 failed low. Channel 34 was removed from service.

Which one of the following statements is true concerning actions that must be taken at this time:

a. The overpower trip bistables must be tripped within one hour.

b. The rod stop must be reset to allow automatic outward rod motion.

c. Axial offset monitoring must be commenced within 15 minutes.

d. A Quadrant Power Tilt calculation must be done every 24 hours using the remaining operable power range channels.

1.0010 / 1.6 The plant is in a refueling condition with the reactor vessel drained down below the flange level in preparation to lift the head. Flow of the RHR system is increased when taking manual control of RH-FCV-602 (bypass flow control valve). The operator notices that the RHR pump amps are fluctuating 40 amps. Which of the following would best describe the actions that the operator should take?

a. Start the non-operating RHR pump.

b. Decrease the flow of the operating RHR pump and start the second pump.

c. Stop the RHR pump that was running, increase the water level in the vessel, vent the pumps prior to restart.

d. Stop operating RHR pump, go solid and remove decay heat with the steam generators.

1.0011 / 1.8 The plant is in MODE 3 when a total loss of offsite power is experienced. Both diesel start and load normally. All other conditions are normal.

a. How is natural circulation flow in the RCS confirmed?

b. How would you classify this situation if these conditions still existed 20 minutes later?

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1.0012 / 1.4 With the plant operating normal in MODE 1, a fire is reported on Emergency Bus 8. What actions must be taken by the control room operators to deenergize the bus?

1.0013 / 1.7 With POST SOAK completed following a "Response to Imminent Pressurized Thermal Shock Condition" you are required to maintain RCS pressure and cold leg temperatures within certain limits. The event that just occurred was a multiple steam line break in containment. Using the following parameters determine if you are maintaining RCS pressure and cold leg temperatures within the operating zone.

Loop 1 TC 320 degrees F
Loop 2 TC 322 degrees F PT 403 1015 psig
Loop 3 TC 325 degrees F PT 404 1010 psig
Loop 4 TC 320 degrees F Containment Pressure 3 psig
CD 1/CD 2 reading less than 1 R/Hr

1.0014 / 1.7 During the performance of ECA 2.1 "Uncontrolled Depressurization of all steam generators" it was noted that the Containment Pressure was reading 42 psig. What action is required at this time?

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Ques # / Pts Question Exam # : RO : 890011

1.0015 / 2.7 The control room operators are responding to a reactor trip without SI when a red condition is indicated on subcriticality status tree. The operators re-verify that the reactor and turbine have tripped, ensure that that the AFW pumps are running, initiate emergency boration, and begin checking for possible causes of the loss of subcriticality. Their investigation reveals the following:

- RCS temperature and pressure are decreasing rapidly.
- The pressure in #1 S/G is decreasing uncontrollably.
- The MSIVs and MSIV bypass valves for all S/Gs are closed.
- The normal dilution flow path isolation valve is closed.
- The chemical addition tank inlet and outlet valves are closed.
- The local makeup isolation valve is closed.

Based on these indications, what is the probable cause of this loss of subcriticality?

a. Excessive cooldown caused by an unisolable ruptured S/G
b. Excessive cooldown caused by an unisolable faulted S/G
c. Inadvertent dilution flow path alignment
d. Loss of secondary heat sink

1.0016 / 1.9 A LOCA causes RCS pressure to drop to 1600 psi causing SI. How will following valves be effected?

SI MOV 861A
CD MOV 871A
BA MOV 373
CH MOV 292B
LD MOV 200
CH MOV 257
CH MOV 32
Seal return MOVs

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Ques # / Pts Question Exam # : RO : 890011

1.0017 / 2.4 Following a safety injection, you are performing E-0, Reactor Trip or Safety Injection, and have just completed step 5 (Verify Feedwater Isolation) when you discover that there is no feed water flow to the steam generators and the AFW pumps cannot be started. Should you:

A. Immediately go to FR-H.1, Loss of Secondary Heat Sink

B. Complete the immediate actions and then go to FR-H.1, Loss of Secondary Heat Sink

C. Go to FR-H.1, Loss of Secondary Heat Sink, as soon as the procedure tells you to commence monitoring the Critical Safety Function Status Trees

D. Continue on in E-0 then Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step in E-0.

1.0018 / 1.6 During transfer to two path recirculation, RHR discharge pressure is checked to be greater than 80 psi. Why is this step necessary?

1.0019 / 1.8 A small-break LOCA has occurred. The operators have completed implementation of procedure EOP E-0 and are implementing procedure E-1, Loss of Reactor or Secondary Coolant. E-1 directs the operators to check the intact S/G water levels.

The purpose of this step is to ensure which of the following?

a. S/G water levels are sufficient to cover a ruptured S/G tube.
b. Sufficient S/G water inventory is available to provide an adequate heat sink.
c. S/G water level instrumentation is functioning properly, and the AFW throttle valves are adjusted correctly.
d. An excessive S/G cooldown does not complicate the recovery procedure.

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1.0020 / 2.6 The plant is in an emergency condition, and the control room operators are performing ES-0.3, Natural Circulation Cooldown with Steam Void in the Vessel (with RVLIS). The operators try unsuccessfully to start an RCP. They continue the RCS cooldown (cooldown rate is 10 degrees/hour) and intiate RCS depressurization. To keep PZR level within the desired band at this point, an operator establishes charging significantly greater than letdown.

With charging significantly greater than letdown, which of the following should occur under these conditions?

	PZR PRESSURE	VESSEL VOID	PZR LEVEL
a.	Increase	Shrink	Decrease
b.	Decrease	Grow	Increase
c.	Increase	Grow	Increase
d.	Decrease	Shrink	Decrease

1.0021 / 2.6 The following questions pertain to a S/G Tube Rupture.

a. Why should a ruptured S/G (secondary side) be isolated before starting RCS cooldown in the S/G Tube Rupture procedure E-3?

b. Why do we try to keep a RCP running during the cooldown and depressurization of the S/G?

1.0022 / 1.5 You are assigned to the relief crew and are doing surveillance testing when a station blackout occurs. An alert is declared and the evacuation alarm sounds. You should immediately:

a. Evacuate the site and report to the EOF.
b. Evacuate the site and report to the INFO Center.
c. Report to the control room.
d. Proceed to the Diesel Room to help the AO restore power.

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Ques # /	Pts	Question	Exam # : RO : 890011

1.0023 / 1.8 During the outage an electrician is electrocuted while working on a 480 Volt bus that he thought was deenergized. Classify the event(RO and SRO) and determine the notification requirements for this event.(SRO)

Diff

1.0024 / 1.9 Following a line fault on the 1206 line, the plant continues to operate at 100% power with Bus 1-3 being powered from Bus 1-2 via ACB 2T3. CONVEX estimates 9 hours until the 1206 line can be restored. To comply with Technical Specifications, what actions must be performed?

1.0025 / 1.3 The plant is operating at 80% power to do flux maps after refueling. PR channel 34 is tagged out of service because of a power supply problem. Subsequently PR channel 32 lower detector fails.

Assuming that it will take approximately 12 hours or longer to fix N34, what actions should you take with respect to plant operations?

a. Do not change plant power level until at least one PR channel is restored to operable status.

b. Proceed to HOT STANDBY condition. The reactor must be shut down under these circumstances.

c. Continue normal power operations and increase load to 100% when flux mapping is complete.

d. Verify that the plant is above Permissive P7 setpoint, and trip the Overpower Trip bistables on Channel N32.

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Ques # /	Pts	Question	Exam # : RO : 890011
1.0026 /	2.1	The plant is in STARTUP (MODE 2) with three RCPs in operation. The non-operating pump is operable and the loop is ready to returned to OPERABLE status. Is the plant in the proper mode to allow for returning of the ISOLATED loop to service? Justify your answer.	

NRC MASTER

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003169	1.0001	2.4	The plant tripped one hour ago from an extended 100% power run. All recovery operations were normal except that when restarting #3 RCP, it tripped on an electrical fault. This is under investigation and the loop stop valve was re-opened. Data is 200 EFPD, Tavg = 535 degrees, the process computer is not available and boron concentration is 840 ppm. Use SUR 5.3-19 to determine if adequate shutdown margin is being maintained. Complete all required data sheets.	For given data required Cb = 800 ppm +- 5ppm(75%). therefore SDM is adequate (25%) LP REF: L35011 K/A REF: 004000K5.19 K/A RATING: 3.5/3.9 ED: 5 PROC REF: 5.3-19 DIFF: 3 TIME: 5 MINUTES	
003243	1.0002	1.9	Core thermal power is calculated using a heat balance. If one neglects the effects of RCP horsepower and SG blowdown being in service,how will the calculated value be affected?	Both effects make the calculated values higher (1.0) or RCPs higher (.5) and blowdown r (.5) LP REF: ST-6-L03 K/A REF: 193007K1.08 K/A RATING: 3.1/3.4 ED: 3 PROC REF: HTFF MAN DIFF: 3 TIME: 5 MINUTES	
003359	1.0003	2.2	The plant has been at 30% power for 48 hrs after being shutdown for RCP seal replacement for 20 days. Prior to shutdown, power level was at 100% for 68 days. Which of the following power ascension guidelines would be used for these conditions? a. 30% to 100% 3%/hour b. 30% to 80% 10%/hour 80% to 100% 3%/hour c. 30% to 80% 15%/hour 80% to 100% 10%/hour d. 1% hour	B LP REF: SU7503 K/A REF: 001000K5.10 K/A RATING: 3.4/3.7 ED: 2 PROC REF: NOP 2.2-1 DIFF: 3 TIME: 3 MINUTES	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003302	1.0004	1.4	A control room operator is returning from a special assignment which removed him from his watchstanding duties for a period of six and one-half months. Which one of the following best describes the action(s) necessary for the operator to relieve the watch?	C	
				LP REF: L86101 K/A REF: 194001A1.03 K/A RATING: 2.5/3.4 EO: 4 PROC REF: ODI-1/ACP 1.0-8 DIFF: 2 TIME: 3 MINUTES	

a. Stand 8 hours of watch under instruction. Read and sign the turnover sheet, review the previous days Control Room log, and walkdown the main control board prior to relieving the watch.

b. Stand 8 hours of watch under instruction.Read and sign the turnover sheet, review the control room logs back to the last watch stood, and walkdown the main control prior to relieving the watch.

c. Stand 40 hours of watch under instruction, have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover.The turnover includes reviewing the Control Room log back to the last watch, read and sign the turnover sheet, walkdown the main control board prior to relieving the watch.

d. Stand 56 hrs of watch under instruction.Have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover. The turnover being review of the Control Room log back to the last watch, read and sign the turnover sheet and walkdown the main control board prior to relieving the watch.

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003242	1.0005	1.5	A computer repair man from corporate has come to work on the plant computer in the computer room. In his repair kit are two pint bottles of isopropal alcohol. What actions must be taken to allow the repair man to take the entire volume of alcohol into the computer room?	written permission by SCO or SS (.33); Contained in a suitable container not to exceed 1 quart(.33); Must have a dedicated fire watch assigned to the activity.(.33) LP REF: ADMSG K/A REF: 194001K1.16 K/A RATING: 3.5/4.2 EO: N/A PROC REF: ACP 1.0-33 DIFF: 2 TIME: 2 MINUTES	
003240	1.0006	1.6	An approach to criticality is being performed by means of control rod withdrawl. The RO stops control rod motion when the reactor is close to criticality but still subcritical. The SR count rate should ... a. Continue to increase, but at a slower rate. The startup rate should stabilize at a lower positive value. b. Continue to increase for a short time and then plateau. The startup rate should gradually decrease to zero. c. Stop increasing and stabilize at its present value. The startup rate should immediately decrease to zero. d. Begin to slowly decrease. The startup rate should gradually decrease to zero from a slightly negative value.	B LP REF: 87-1-L02 K/A REF: 192008K1.03 K/A RATING: 3.9/4.0 EO: 5 PROC REF: RXTH MAN DIFF: 2 TIME: 3 MINUTES	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
002901	1.0007	2.2	With the plant operating at 100% power a line fault on 1206 line results in 4160V BUS 1-3 being powered from 4160V BUS 1-2 via ACB 2T3. What actions should the operator take to reestablish TWO STATION SERVICE TRANSFORMER OPERATION on the 1772 LINE until the 1206 LINE is restored?	1. NOTIFY CONVEX, REQUEST A SWITCHING ORDER(.2) 2. OPEN 1206-12R-5 (.2) 3. CLOSE 12R-1T-2 (389T399) (.2) 4. CLOSE 12R-22S3-2 (3991) (.2) 5. OPEN 2T3 (.2) (must be in correct sequence for full credit) LP. REF: S87504 K/A REF 056000 GEN K.5 E OBJ TERM K/A RATING 3.3/3.6 DIFF 3 PROCEDURE REF: ANN 4.13-4 TIME 10	
002718	1.0008	2.1	The plant was operating at 100% power when "A" vital bus was lost. All equipment responded as expected. The primary side operator notices that pressurizer level on Channels 2 and 3 is increasing. List two reasons why pressurizer level is increasing?	The letdown valves shut (.5) and the selected charging flow control valve has failed open (.5). LP REF:CY-OP-LOCT-88-1-L88104 K/A REF:001000K3.01 ELO REF: 3 K/A RATING:3.2/3.4 DIFF: 3 PROC REF: AOP3.2-15 TIME: 3 min	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003283	1.0009	2.3	The reactor is at 100% power. The lower detector in PR channel 34 failed low. Channel 34 was removed from service. Which action must be taken at this time: a. The overpower trip bistables must be tripped within one hour. b. The rod stop must be reset to allow automatic outward rod motion. c. Axial offset monitoring must be commenced within 15 minutes. d. A Quadrant Power Tilt calculation must be done every 24 hours using the remaining operable power range channels.	C LP REF: L88604 K/A REF: 015000K4.07 K/A RATING: 3.7/3.8 EO: 5 PROC REF: AOP 3.2-14 DIFF: 3 TIME: 3 MINUTES	
003303	1.0010	1.6	The plant is in a refueling condition with the reactor vessel drained down below the flange level in preparation to lift the head. Flow of the RHR system is increased when taking manual control of RH-FCV-602 (bypass flow control valve). The operator notices that the RHR pump amps are fluctuating 40 amps. Which of the following would best describe the actions that the operator should take? a. Stop the operating RHR pump and start the non-operating RHR pump. b. Decrease the flow of the operating RHR pump and start the second pump. c. Stop the RHR pump that was running, increase the water level in the vessel, vent the pumps prior to restart. d. Stop operating RHR pump, go solid and remove decay heat with the steam generators.	C LP REF: 87-1-L04 K/A REF: 000025EK3.03 K/A RATING: 3.9/4.1 EO: 9 PROC REF: AOP 3.2-12 DIFF: 2 TIME: 3 MINUTES	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003325	1.0011	1.8	The plant is in MODE 3 when a total loss of offsite power is experienced. Both diesel start and load normally. All other conditions are normal. a. List four indications of natural circulation flow in the RCS? b. How would you classify this situation, loss of offsite power, if these conditions still existed 20 minutes later?	a.1. Steam release from S/Gs is effectively maintaining S/G pressure constant or decreasing 2. Average reading of CETs is being maintained or decreasing less than saturation temperature for the pressurizer pressure 3. Cold leg temperature stabilized at or decreasing below saturation temperature for S/G pressure 4. Observed differential temperature across each active loop should be no greater than full power forced flow delta T. (.125 each)(credit for given AOP 3.2-30 and appropriate steps) b. Unusual Event (.25). D-1(.25) LP REF: L88603 K/A REF: 000017EA1.21 K/A RATING: 4.4/4.5 EO: 13 PROC REF: AOP 3.2-30 DIFF: 2 TIME: 3 MINUTES
003354	1.0012	1.4	With the plant operating normal in MODE 1, a fire is reported on Emergency Bus 8. What actions must be taken by the control room operators to deenergize the bus?	. Open circuit 5 on DC panel (.2) . Close the 4T5 breaker.(.2) . Open 4351/4850 (.2) . Defeat auto start of "A" Emergency Diesel by openning AC control power breaker on MCC-5 and DC control power breaker on DC Bus "A" or TPO (.2). . Open ACB 8T2 breaker.(.2) (concept applied for AOP 3.2.-35 steps 4.5.4 a-h) LP REF: T12000 K/A REF: 000067EK3.04 K/A RATING: 3.3/4.1 KR: B PROC REF: AOP 3.2-35 DIFF: 2 TIME: 4 MINUTES

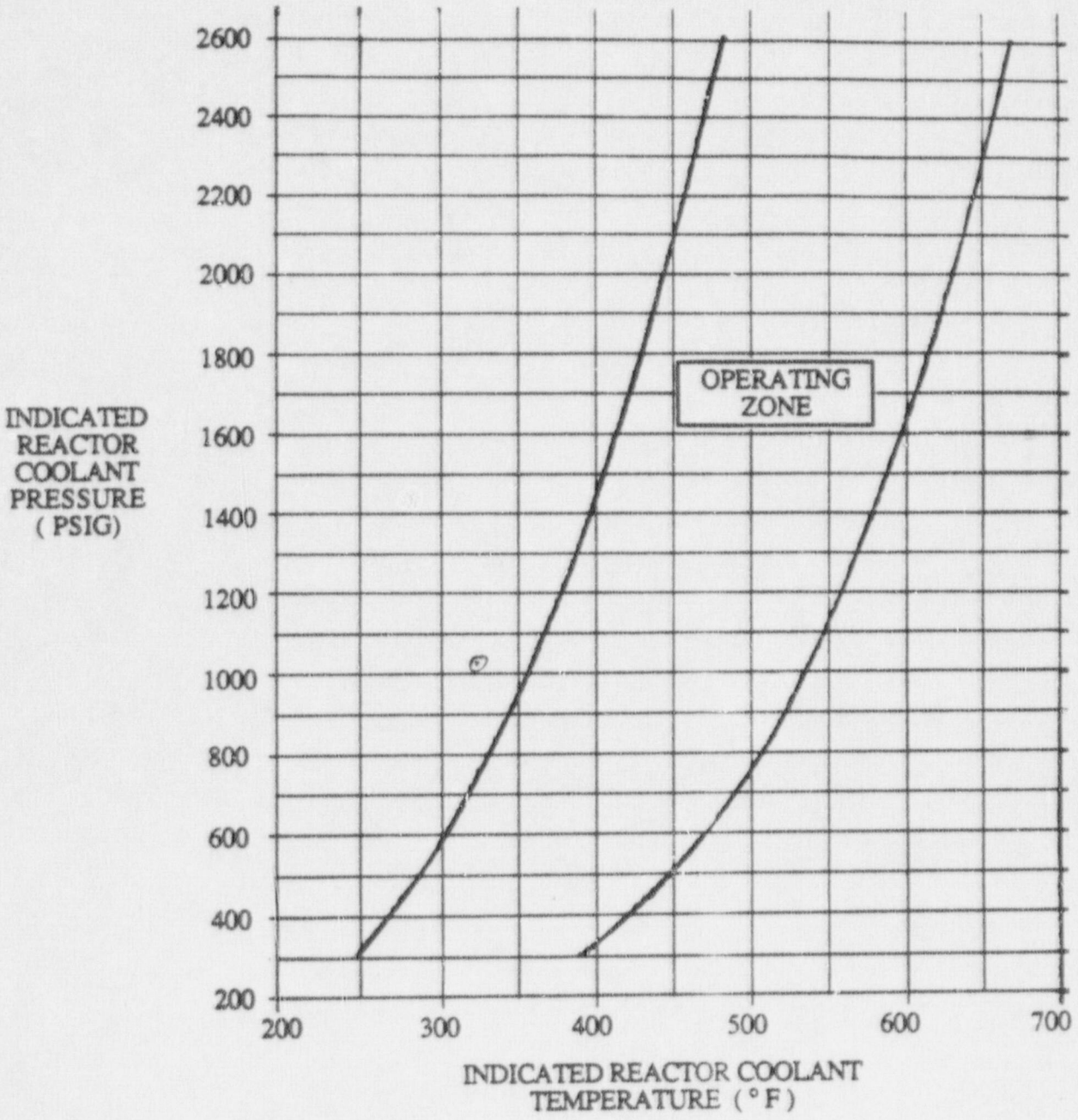

FIGURE FRP2-1.N

COOLDOWN LIMIT
NORMAL CONTAINMENT

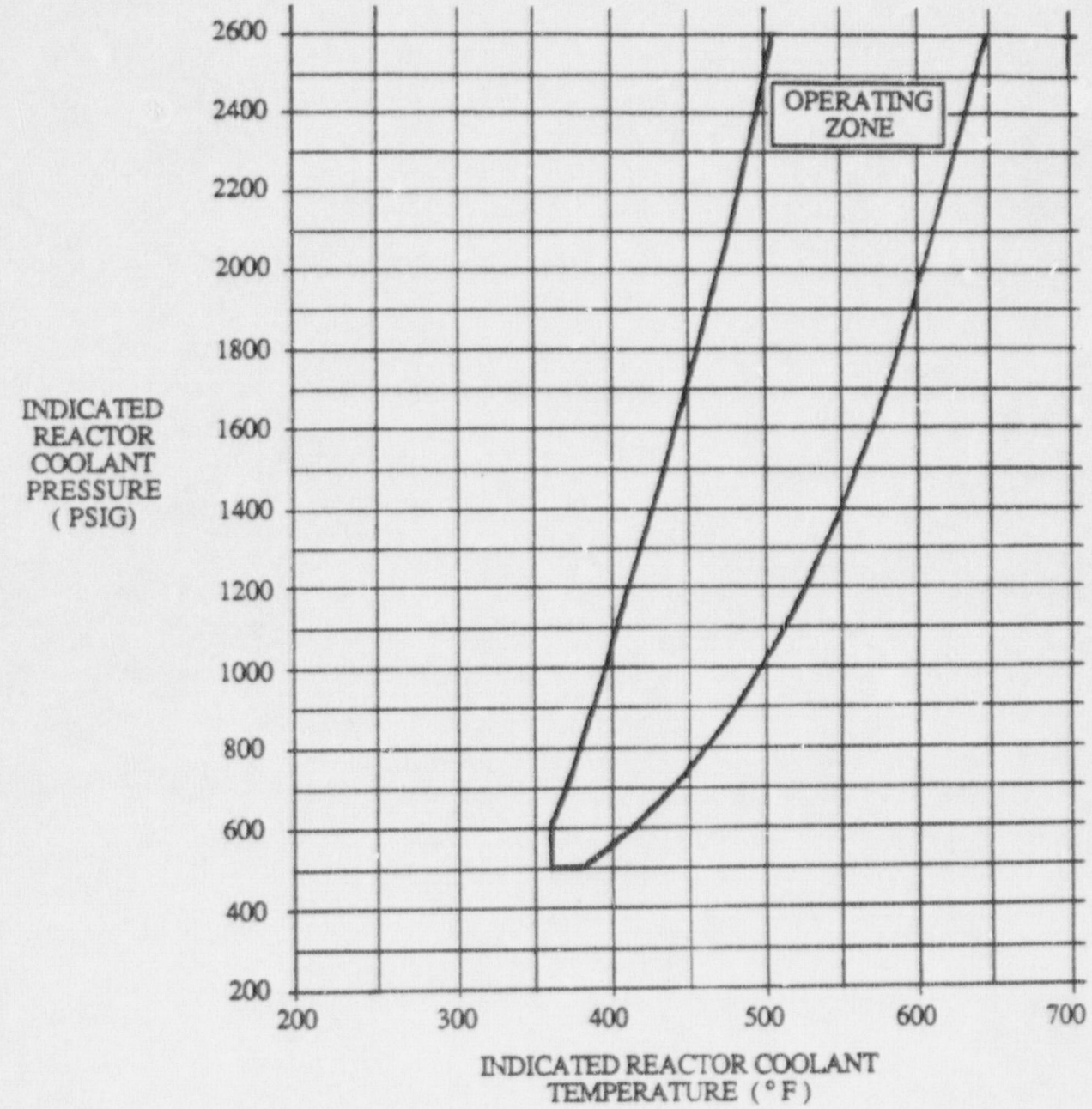

FIGURE FRP2-1.A

COOLDOWN LIMIT
ADVERSE CONTAINMENT

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003002	1.0013	1.7	With POST SOAK completed following a "Response to Imminent Pressurized Thermal Shock Condition" you are required to maintain RCS pressure and cold leg temperatures within certain limits. The event that just occurred was a multiple steam line break in containment. Using the following parameters determine if you are maintaining RCS pressure and cold leg temperatures within the operating zone by plotting parameters on the attached curves. Loop 1 TC 320 degrees F Loop 2 TC 322 degrees F PT 403 1015 psig Loop 3 TC 325 degrees F PT 404 1010 psig Loop 4 TC 320 degrees F Containment Pressure 3 psig CD 1/CD 2 reading less than 1 R/Hr	Outside the operating zone . See plots for correct data point (1.0) LP REF: CY-OP-LO-EOP-L88606 K/A REF: 000-009 EK 3.08 E. OBJ: 6 K/A RATING: 3.6/4.1 DIFF: 2 PROCEDURE REF:FR-p.1 TIME:3 minutes	
003047	1.0014	1.7	During the performance of ECA 2.1 "Uncontrolled Depressurization of all steam generators" it was noted that the Containment Pressure was reading 42 psig. What procedural action is required at this time?	Exit ECA 2.1 and conduct FR-Z.1 because a orange path exits.(1.0) LP REF: ECP-L36 K/A REF: 000-040-EA1.20 E. OBJ: EC 7 K/A RATING: 4.1/4.2 DIFF: 2 PROCEDURE REF: ECA-2.1 TIME: 3 MIN	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003173	1.0015	2.7	The control room operators are responding to a reactor trip without SI when a red condition is indicated on subcriticality status tree. The operators re-verify that the reactor and turbine have tripped, ensure that that the AFW pumps are running, initiate emergency boration, and begin checking for possible causes of the loss of subcriticality. Their investigation reveals the following: . RCS temperature and pressure are decreasing rapidly. . The pressure in #1 S/G is decreasing uncontrollably. . The MSIVs and MSIV bypass valves for all S/Gs are closed. . The normal dilution flow path isolation valve is closed . The chemical addition tank inlet and outlet valves are closed. . The local makeup isolation valve is closed. Based on these indications, what is the probable cause of this loss of subcriticality? a. Excessive cooldown caused by an unisolable ruptured S/G b. Excessive cooldown caused by an unisolable faulted S/G c. Inadvertent dilution flow path alignment d. Loss of secondary heat sink	B LP REF: S87503 K/A REF: 000029EK3.12 K/A RATING: 4.4/4.7 EO: 7 PROC REF: FR-S.1 DIFF: 3 TIME: 3 MINUTES	
002738	1.0016	1.9	A LOCA causes RCS pressure to drop to 1600 psi causing SI. How will the following valves be effected? (open,close,as is, or throttled) SI MOV 861A CD MOV 871A BA MOV 373 CH MOV 292B LD MOV 200 CH MOV 257 CH MOV 32 Seal retur Vs	MOV 861A-OPENS MOV 871A-OPENS MOV 373-OPENS MOV 292B-OPENS MOV 200-CLOSES MOV 257-CLOSES MOV 32-AS IS SEAL RETURNS-as is (.125 each) LP REF:CY-OP-LOCT-87-3-S87302 K/A REF:013000A4.03 ELO REF: 13 K/A RATING:4.5/4.7 DIFF:3 PROC REF: E-0	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
002741	1.0017	2.4	Following a safety injection, you are performing E-0, Reactor Trip or Safety Injection, and have just completed step 5 (Verify Feedwater Isolation) when you discover that there is no feed water flow to the steam generators and the AFW pumps cannot be started. Should you: A. Immediately go to FR-H.1, Loss of Secondary Heat Sink B. Complete the immediate actions and then go to FR-H.1, Loss of Secondary Heat Sink C. Go to FR-H.1, Loss of Secondary Heat Sink, as soon as the procedure tells you to commence monitoring the Critical Safety Function Status Trees D. Continue on in E-0 then Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step in E-0.	D. Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step. LP REF: L88105 EO 9 K/A REF: 000007GENA12 K/A RATING: 3.8/3.9 DIFF: 3 TIME: 6 MIN	
002749	1.0018	1.6	During transfer to two path recirculation, RHR discharge pressure is checked to be greater than 80 psi. Why is this step necessary?	Cavitation Check:(There is a possibility that a foreign object could clog the RHR suction line from containment. This could cause the RHR pump cavitation and low discharge pressure.) (Grader discretion required) LP REF: S87504 EO 4 K/A REF: 000011EK3.08 K/A RATING: 3.9/4.1 DIFF: 2 TIME: 2 MINUTES	
003059	1.0019	1.8	A small-break LOCA has occurred. The operators have completed implementation of procedure EOP E-0 and are implementing procedure E-1, Loss of Reactor or Secondary Coolant. E-1 directs the operators to check the intact S/G water levels. The purpose of this step is to ensure which of the following? a. S/G water levels are sufficient to cover a ruptured S/G tube. b. Sufficient S/G water inventory is available to provide an adequate heat sink. c. S/G water level instrumentation is	B LP: 87-S87504 EO: 4 K/A REF: 000009EK3.22 K/A RATING: 4.4/4.5 DIFF: 2 PROCEDURE: E-1 TIME: 2 MIN	

the AFW throttle valves are adjusted correctly.

d. An excessive S/G cooldown does not complicate the recovery procedure.

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Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003387	1.0020	2.6	The plant is in an emergency condition, and the control room operators are performing ES-0.3, Natural Circulation Cooldown with Steam Void in the Vessel (with RVLIS). The operators try unsuccessfully to start an RCP. They continue the RCS cooldown (cooldown rate is 10 degrees/hour) and intiate RCS depressurization. To keep PZR level within the desired band at this point, an operator establishes charging significantly greater than letdown. With charging significantly greater than letdown, which of the following four cases best describes the system response? PZR PRESSURE / VESSEL VOID / PZR LEVEL a. Increase / Shrink / Decrease b. Decrease / Grow / Increase c. Increase / Grow / Increase d. Decrease / Shrink / Decrease	A LP REF: L88603 K/A REF: 002000A2.03 K/A RATING: 4.1/4.6 EQ: TLO PROC REF: ES-0.3 DIFF: 3 TIME: 3 MINUTES	
003?[illegible]	.0021	2.6	The following questions pertain to a S/G Tube Rupture. a. List two reasons why a ruptured S/G (secondary side) is isolated before starting RCS cooldown in the S/G Tube Rupture procedure E-3? b. Give two reasons why it is desirable to keep a RCP running during the cooldown and depressurization of the RCS?	a. Minimize the radioactivity released to the environment (.25) or prevent overfill(.25)b. Provides a more rapid and even cooldown of the RCS.(.25) or It also provides a better way to reduce RCS pressure using normal spray flow. (.25) LP REF: S87505 EO 5 K/A REF: 000038EK3.06 K/A RATING: 4.2/4.5 DIFF: 3 TIME: 3 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT - RO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890011
002732	1.0022	1.5	You are assigned to the relief crew and are doing surveillance testing when a station blackout occurs. An alert is declared and the evacuation alarm sounds. You should immediately: a. Evacuate the site and report to the EOF. b. Evacuate the site and report to the INFO Center. c. Report to the control room. d. Proceed to the Diesel Room to help the AO restore power.	c(1.0) LP REF:CY-EP-L10 ELO REF: 15 DIFF: 2 TIME: 2 min	K/A REF:194001A1.16 K/A RATING:3.1/4.4 PROC REF:EPIP 1.5-14
002786	1.0023	1.8	During the outage an electrician is electrocuted while working on a 480 Volt bus that he thought was deenergized. Classify the event.	ECHO (100%) REF: EPIP 1.5-1 ATTACHMENT 12.1A LP: CY-EP-L10 EO 7,9 K/A REF: 194001A1.16 K/A RATING 3.1/4.4 TIME: 3 MINUTES DIFF: 2	
002743	1.0024	1.9	Following a line fault on the 1206 line, the plant continues to operate at 100% power with Bus 1-3 being powered from Bus 1-2 via ACB 2T3. CONVEX estimates 9 hours until the 1206 line can be restored. To comply with Technical Specifications, what actions must be performed?	Verify operability of the remaining AC sources within one hour.(1.0) LP REF: AOP-L17 EO 11 K/A REF: 058GENA8 K/A RATING: 2.9/3.4 REF: Tech Spec 3.12.1.1 DIFF: 3 TIME: 3 MINUTESGENA12 002740 5840 5841F 03.60 10.00 19881021198810210AOP-3	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
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05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890011
003292	1.0025	1.3	The plant is operating at 80% power to do flux maps after refueling. PR channel 34 is tagged out of service because of a power supply problem. Subsequently PR channel 32 lower detector fails. Assuming that it will take approximately 12 hours or longer to fix N34, what actions should you take with respect to plant operations? a. Do not change plant power level until at least one PR channel is restored to operable status. b. Proceed to HOT STANDBY condition. The reactor must be shut down under these circumstances. c. Continue normal power operations and increase load to 100% when flux mapping is complete. d. Verify that the plant is above Permissive P7 setpoint, and trip the Overpower Trip bistables on Channel N32.	B LP REF: LB0604 K/A REF: 000033EA2.10 K/A RATING: 3.1/3.8 EO: 5 PROC REF: TS 3.9 DIFF: 3 TIME: 5 MINUTES	
003293	1.0026	2.1	The plant is in STARTUP (MODE 2) with three RCPs in operation. The non-operating pump is operable and the loop is ready to returned to OPERABLE status. State two reasons that the plant is not in the proper mode to restore the isolated loop to service.	You cannot restore an isolated loop unless you are in Mode 3 (.5) and the reactor is subcritical by 1000 pcm (.5) Or(must comply with Tech Spec 3.3.1.6 (.5) and NOP 2.4-7 (.5)) LP REF: LB1007 K/A REF: 003GENK06 K/A RATING: 3.4/3.8 EO: 5 PROC REF: TECH SPECS DIFF: 3 TIME: 3 MINUTES	

NRC MASTER

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT-SRO
Examination Category : 1

Examinee : _____ Final Grade : _____

Examination Number : RO : 890012 Developed : _____

Date Administered : 05/01/89 Approved : _____
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 2.00 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____

Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT-SRO

Examination Number : RO : 890012 Date Administered : 05/01/89

Category Value	% of Total	Student's Score	% of Cat. Value	Category
50.0	100.00	_____	_____	LIMITS AND CONTROLS
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
50.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT-SRO
05/01/89

Ques # / Pts	Question	Exam # : RO : 830012

1.0001 / 2.0 The plant tripped one hour ago from an extended 100% power run. All recovery operations were normal except that when restarting #3 RCP, it tripped on an electrical fault. This is under investigation and the loop stop valve was re-opened. Data is 20 EFPD, Tavg = 535 degrees, the process computer is not available and boron concentration is 840 ppm. Use SUR 5.3-19 to determine if adequate shutdown margin is being maintained. Complete all required data sheets.

1.0002 / 1.9 Core thermal power is calculated using a heat balance. If one neglects the effects of RCP horsepower and SG blowdown being in service,how will the calculated value be affected?

1.0003 / 2.1 The plant has been at 30% power for 48 hrs after being shutdown for RCP seal replacement for 20 days. Prior to shutdown, power level was at 100% for 68 days. Which of the following power ascension guidelines would be used for these conditions?

a. 30% to 100% 3%/hour

b. 30% to 80% 10%/hour
80% to 100% 3%/hour

c. 30% to 80% 15%/hour
80% to 100% 10%/hour

d. 1% hour

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05/01/89

Ques # /	Pts	Question	Exam # : RO : 890012

1.0004 / 1.4 A control room operator is returning from a special assignment which removed him from his watchstanding duties for a period of six and one-half months. Which one of the following best describes the action(s) necessary for the operator to relieve th watch?

a. Stand 8 hours of watch under instruction. Read and sign the turnover sheet, review the previous days Control Room log, and walkdown the main control board prior to relieving the watch.

b. Stand 8 hours of watch under instruction.Read and sign the turnover sheet, review the control room logs back to the last watch stood, and walkdown the main control prior to relieving the watch.

c. Stand 40 hours of watch under instruction, have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover.The turnover includes reviewing the Control Room log back to the last watch, read and sign the turnover sheet, walkdown the main control board prior to relieving the watch.

d. Stand 56 hrs of watch under instruction.Have a letter from the Station Superintendent reinstating the operator's licens to an "Active" status and then conducting a shift turnover. The turnover being review of the Control Room log back to th last watch, read and sign the turnover sheet and walkdown th main control board prior to relieving the watch.

1.0005 / 1.4 A computer repair man from corporate has come to work on the plant computer in the computer room. In his repair kit are two pint bottles of isopropal alcohol. What actions must be taken t allow the repair man to take the entire volume of alcohol into the computer room?

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Ques # /	Pts	Question	Exam # : RO : 890012

1.0006 / 1.6 An approach to criticality is being performed by means of contro rod withdrawl. The RO stops control rod motion when the reactor is close to criticality but still subcritical.

The SR count rate should ...

a. Continue to increase, but at a slower rate. The startup rate should stabilize at a lower positive value.

b. Continue to increase for a short time and then plateau. The startup rate should gradually decrease to zero.

c. Stop increasing and stabilize at its present value. The startup rate should immediately decrease to zero.

d. Begin to slowly decrease. The startup rate should gradually decrease to zero from a slightly negative value.

1.0007 / 2.2 With the plant operating at 100% power a line fault on 1206 line results in 4160V BUS 1-3 being powered from 4160V BUS 1-2 via AC 2T3. What actions should the operator take to reestablish TWO STATION SERVICE TRANSFORMER OPERATION on the 1772 LINE until the 1206 LINE is restored?

1.0008 / 2.1 The plant was operating at 100% power when "A" Vital bus was lost. All equipment responded as expected. The primary side operator notices that pressurizer level on Channels 2 and 3 is increasing. List two reasons why pressurizer level is increasing

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Ques # /	Pts	Question	Exam # : RO : 890012

1.0009 / 2.3 The reactor is at 100% power. The lower detector in PR channel 34 failed low. Channel 34 was removed from service.

Which action must be taken at this time:

a. The overpower trip bistables must be tripped within one hour

b. The rod stop must be reset to allow automatic outward rod motion.

c. Axial offset monitoring must be commenced within 15 minutes.

d. A Quadrant Power Tilt calculation must be done every 24 hour using the remaining operable power range channels.

1.0010 / 1.6 The plant is in a refueling condition with the reactor vessel drained down below the flange level in preparation to lift the head. Flow of the RHR system is increased when taking manual control of RH-FCV-602 (bypass flow control valve). The operator notices that the RHR pump amps are fluctuating 40 amps. Which o the following would best describe the actions that the operator should take?

a. Stop the operating RHR pump and start the non-operating RHR pump.

b. Decrease the flow of the operating RHR pump and start the second pump.

c. Stop the RHR pump that was running, increase the water level in the vessel, vent the pumps prior to restart.

d. Stop operating RHR pump, go solid and remove decay heat with the steam generators.

1.0011 / 1.8 The plant is in MODE 3 when a total loss of offsite power is experienced. Both diesel start and load normally. All other conditions are normal.

a. List four indications of natural circulation flow in the RCS

b. How would you classify this situation, loss of offsite power if these conditions still existed 20 minutes later?

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Ques # /	Pts	Question	Exam # : RO : 890012

1.0012 / 1.3 With the plant operating normal in MODE 1, a fire is reported on Emergency Bus 8. What actions must be taken by the control room operators to deenergize the bus?

1.0013 / 1.7 With POST SOAK completed following a "Response to Imminent Pressurized Thermal Shock Condition" you are required to maintain RCS pressure and cold leg temperatures within certain limits. The event that just occurred was a multiple steam line break in containment. Using the following parameters determine if you are maintaining RCS pressure and cold leg temperatures within the operating zone by plotting parameters on the attached curves.

Loop 1 TC 320 degrees F
Loop 2 TC 322 degrees F PT 403 1015 psig
Loop 3 TC 325 degrees F PT 404 1010 psig
Loop 4 TC 320 degrees F Containment Pressure 3 psig
CD 1/CD 2 reading less than 1 R/Hr

1.0014 / 1.7 During the performance of ECA 2.1 "Uncontrolled Depressurization of all steam generators" it was noted that the Containment Pressure was reading 42 psig. What procedural action is require at this time?

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1.0015 / 2.7 The control room operators are responding to a reactor trip without SI when a red condition is indicated on subcriticality status tree. The operators re-verify that the reactor and turbine have tripped, ensure that that the AFW pumps are running initiate emergency boration, and begin checking for possible causes of the loss of subcriticality. Their investigation reveals the following:

- RCS temperature and pressure are decreasing rapidly.
- The pressure in #1 S/G is decreasing uncontrollably.
- The MSIVs and MSIV bypass valves for all S/Gs are closed
- The normal dilution flow path isolation valve is closed.
- The chemical addition tank inlet and outlet valves are closed.
- The local makeup isolation valve is closed.

Based on these indications, what is the probable cause of this loss of subcriticality?

a. Excessive cooldown caused by an unisolable ruptured S/G
b. Excessive cooldown caused by an unisolable faulted S/G
c. Inadvertent dilution flow path alignment
d. Loss of secondary heat sink

1.0016 / 1.8 A LOCA causes RCS pressure to drop to 1600 psi causing SI. How will the following valves be effected?
(open,close,as is, or throttled)

SI MOV 861A
CD MOV 871A
BA MOV 373
CH MOV 292B
LD MOV 200
CH MOV 257
CH MOV 32
Seal return MOVs

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Ques # / Pts | Question | Exam # : RO : 890012

1.0017 / 2.4 Following a safety injection, you are performing E-0, Reactor Trip or Safety Injection, and have just completed step 5 (Verify Feedwater Isolation) when you discover that there is no feed water flow to the steam generators and the AFW pumps cannot be started. Should you:

A. Immediately go to FR-H.1, Loss of Secondary Heat Sink

B. Complete the immediate actions and then go to FR-H.1, Loss o Secondary Heat Sink

C. Go to FR-H.1, Loss of Secondary Heat Sink, as soon as the procedure tells you to commence monitoring the Critical Safety Function Status Trees

D. Continue on in E-0 then Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step in E-0.

1.0018 / 1.6 During transfer to two path recirculation, RHR discharge pressur is checked to be greater than 80 psi. Why is this step necessary?

1.0019 / 1.8 A small-break LOCA has occurred. The operators have completed implementation of procedure EOP E-0 and are implementing procedure E-1, Loss of Reactor or Secondary Coolant. E-1 direct the operators to check the intact S/G water levels.

The purpose of this step is to ensure which of the following?

a. S/G water levels are sufficient to cover a ruptured S/G tube
b. Sufficient S/G water inventory is available to provide an adequate heat sink.
c. S/G water level instrumentation is functioning properly, and the AFW throttle valves are adjusted correctly.
d. An excessive S/G cooldown does not complicate the recovery procedure.

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Ques # / Pts Question Exam # : RO : 890012

1.0020 / 2.5 The plant is in an emergency condition, and the control room operators are performing ES-0.3, Natural Circulation Cooldown with Steam Void in the Vessel (with RVLIS). The operators try unsuccessfully to start an RCP. They continue the RCS cooldown (cooldown rate is 10 degrees/hour) and intiate RCS depressurization. To keep PZR level within the desired band at this point, an operator establishes charging significantly greater than letdown.

With charging significantly greater than letdown, which of the following four cases best describes the system response?

	PZR PRESSURE	VESSEL VOID	PZR LEVEL
a.	Increase	Shrink	Decrease
b.	Decrease	Grow	Increase
c.	Increase	Grow	Increase
d.	Decrease	Shrink	Decrease

1.0021 / 2.6 The following questions pertain to a S/G Tube Rupture.

a. List two reasons why a ruptured S/G (secondary side) is isolated before starting RCS cooldown in the S/G Tube Rupture procedure E-3?

b. Give two reasons why it is desirable to keep a RCP running during the cooldown and depressurization of the RCS?

1.0022 / 2.7 The plant was operating at 100% power near the beginning of life when a reactor trip and SI occured.Classify the event and justif your answer based on the following indications:

CETS 365 F CONTAINMENT PRESSURE: 41 psig

RCS PRESSURE: 0 psig CONTAINMENT TEMP: 250 F

PZR LEVEL: 0% CONTAINMENT LEVEL: 1.6 FT

PLENUM LEVEL: 100% HEAD LEVEL: 0%

ALL SI pumps running CD-1/CD-2/HATCH:1450R/HR ;1400R/HR;85R/H

SG PRESSURES:413/415/415/405psig SG LEVELS: 62/61/59/62

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Ques # /	Pts	Question	Exam # : RO : 890012

1.0023 / 1.5 While operating at 100% power, the secondary side operator notices that all annunciators are out, including two annunciator which were lit previously. Upon investigation, it is determined that the annunciators have lost power and the power cannot be restored immediately.

a. How would you classify this situation per the Emergency Plan if annunciator power could not be restored for 30 minutes? (Include NRC classification and State Posture Code)

b. How would you classify the situation in part A if a reactor trip occurred while trying to restore annunciator power? (Include NRC Classification and State Posture Code)

1.0024 / 2.0 The plant is operating at 100% power. Reactor Engineering discovers that the linear heat generation rate technical specification limit was exceeded on the monthly incore map. Which of the following parameters monitored below should have prevented this from occuring?

a. Quadrant Power Tilt Ratio
b. Axial Offset
c. Nuclear Enthalpy Rise Hot Channel Factor
d. DNB Parameters(RCS, Tavg, PZR Pressure)

1.0025 / 2.0 While the plant is operating at 88% power, the NIS Channel Deviation annunciator and the Rod Out of Step annunciator are both alarming. The Incore QPTR is calculated and results in a QPTR of 1.03.

In response to the QPTR limits, the control room operators MUST perform which of the following?

a. Calculate the QPTR each hour until it returns to within limits.

b. Reduce thermal power to less than 50% within 2 hours.

c. Reduce PR Overpower Trip setpoint to 91% within 4 hours.

d. Immediately commence a power reduction and be in HOT STANDBY within 6 hours.

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1.0026 / 1.3

While the plant is operating at 100% power, the air operator for letdown containment isolation valve LD-AOV-230 develops a large air leak. To fix the leak, air must be secured to the valve operator. Chemistry has requested that maximum letdown be maintained because of high RCS activity levels. Maintenance suggests locking LD-AOV-230 open by placing a collar on the valv stem. Plant management agrees and grants approval for the work to start.

a. How long can the plant remain in this configuration?

b. What must be done if the time limit is exceeded?

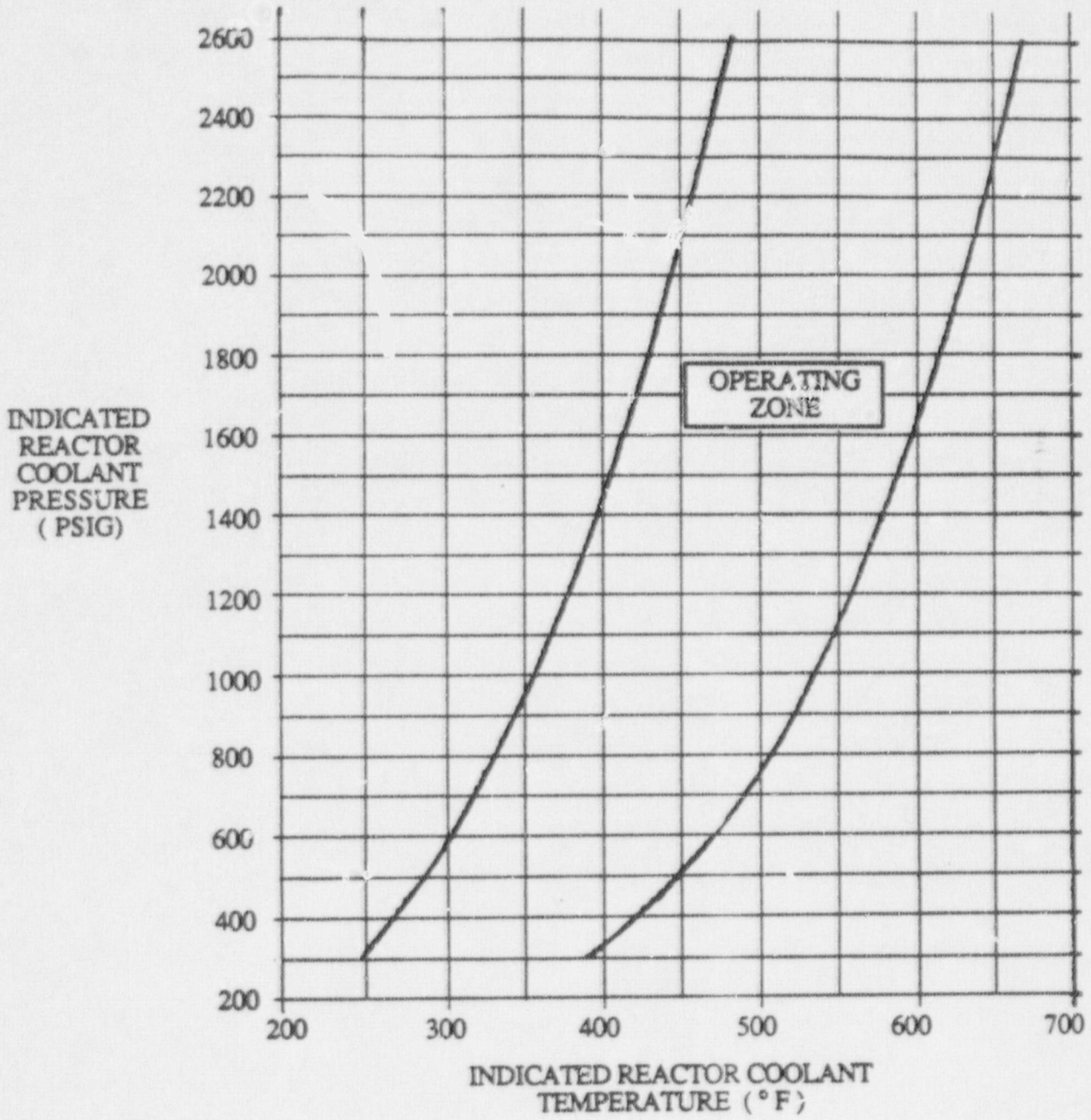

FIGURE FRP2-1.N

COOLDOWN LIMIT
NORMAL CONTAINMENT

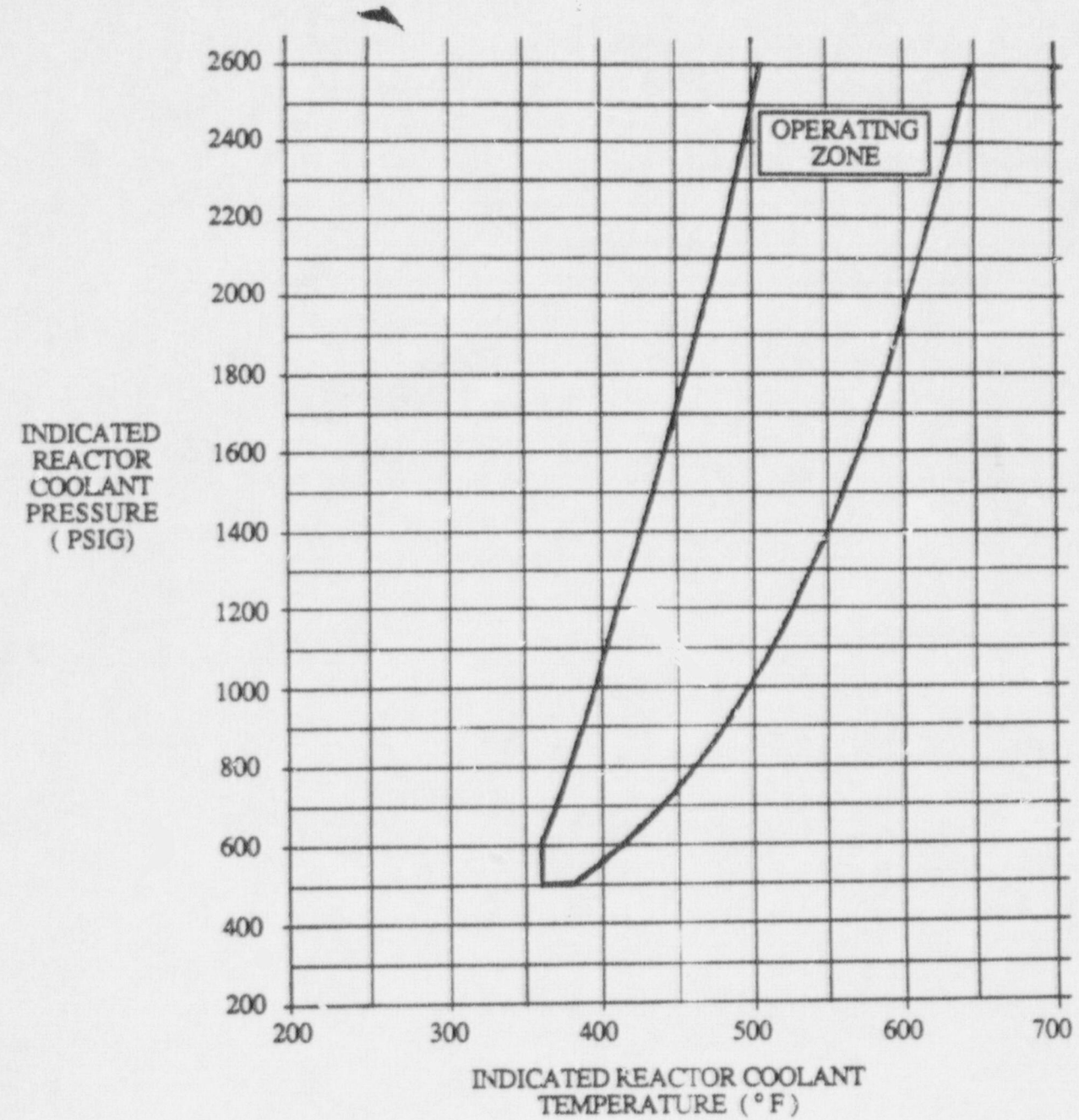

FIGURE FRP2-1.A

COOLDOWN LIMIT
ADVERSE CONTAINMENT

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Item # Ques # Points Question Answer Exam # RO:890012

003169 1.0001 2.0 The plant tripped one hour ago from an extended 100% power run. All recovery operations were normal except that when restarting #3 RCP, it tripped on an electrical fault. This is under investigation and the loop stop valve was re-opened. Data is 200 EFPD, Tavg = 535 degrees, the process computer is not available and boron concentration is 840 ppm. Use SUR 5.3-19 to determine if adequate shutdown margin is being maintained. Complete all required data sheets.

For given data required Cb = 800 ppm +- 5ppm(75%),
therefore SDM is adequate (25%)

LP REF: L35011 K/A REF: 004000K5.19 K/A
RATING: 3.5/3.9 EO: 5 PROC REF: 5.3-19
DIFF: 3 TIME: 5 MINUTES

003243 1.0002 1.9 Core thermal power is calculated using a heat balance. If one
neglects the effects of RCP horsepower and SG blowdown being in service, how will the calculated value be affected?

Both effects make the calculated values higher (1.0) or RCPs higher (.5) and blowdown higher (.5)

concept applied 1

LP REF: 87-6-L03 K/A REF: 193007K1.08 K/A
RATING: 3.1/3.4 EO: 3 PROC REF: HTFF MAN
DIFF: 3 TIME: 5 MINUTES

003359 1.0003 2.1 The plant has been at 30% power for 48 hrs after being shutdown
for RCP seal replacement for 20 days. Prior to shutdown, power
level was at 100% for 68 days. Which of the following power
ascension guidelines would be used for these conditions?

a. 30% to 100% 3%/hour

b. 30% to 80% 10%/hour
80% to 100% 3%/hour

c. 30% to 80% 15%/hour
80% to 100% 10%/hour

d. 1% hour

d

LP REF: S87303 K/A REF: 001000K5.10 K/A
RATING: 3.6 3.7 EO: 2 PROC REF: NOP 2.2-1
DIFF: 3 TIME: 3 MINUTES

WRITTEN EXAMINATION ANSWER KEY
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Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003302	1.0004	1.4	A control room operator is returning from a special assignment which removed him from his watchstanding duties for a period of six and one-half months. Which one of the following best describes the action(s) necessary for the operator to relieve the watch? a. Stand 8 hours of watch under instruction. Read and sign the turnover sheet, review the previous days Control Room log, and walkdown the main control board prior to relieving the watch. b. Stand 8 hours of watch under instruction.Read and sign the turnover sheet, review the control room logs back to the last watch stood, and walkdown the main control prior to relieving the watch. c. Stand 40 hours of watch under instruction, have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover.The turnover includes reviewing the Control Room log back to the last watch, read and sign the turnover sheet, walkdown the main control board prior to relieving the watch. d. Stand 56 hrs of watch under instruction.Have a letter from the Station Superintendent reinstating the operator's license to an "Active" status and then conducting a shift turnover. The turnover being review of the Control Room log back to the last watch, read and sign the turnover sheet and walkdown the main control board prior to relieving the watch.	C LP REF: LB8101 K/A REF: 294001A1.03 K/A RATING: 2.5/3.4 EO: 4 PROC REF: ODI-1/ACP 1.0-8 DIFF: 2 TIME: 3 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
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Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003242	1.0005	1.4	A computer repair man from corporate has come to work on the plant computer in the computer room. In his repair kit are two pint bottles of isopropal alcohol. What actions must be taken to allow the repair man to take the entire volume of alcohol into the computer room?	Written permission by SCO or SS (.33); Contained in a suitable container not to exceed 1 quart(.33); Must have a dedicated fire watch assigned to the activity.(.33) LP REF: ADMSG K/A REF: 194001K1.16 K/A RATING: 3.5/4.2 EO: N/A PROC REF: ACP 1.0-33 DIFF: 2 TIME: 2 MINUTES	
003240	1.0006	1.6	An approach to criticality is being performed by means of control rod withdrawl. The RO stops control rod motion when the reactor is close to criticality but still subcritical. The SR count rate should ... a. Continue to increase, but at a slower rate. The startup rate should stabilize at a lower positive value. b. Continue to increase for a short time and then plateau. The startup rate should gradually decrease to zero. c. Stop increasing and stabilize at its present value. The startup rate should immediately decrease to zero. d. Begin to slowly decrease. The startup rate should gradually decrease to zero from a slightly negative value.	B LP REF: 87-1-L02 K/A REF: 192008K1.03 K/A RATING: 3.9/4.0 EO: 5 PROC REF: RXTH MAN DIFF: 2 TIME: 3 MINUTES	

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Item #	Ques #	Points	Question	Answer	Exam # RO:890012
002901	1.0007	2.2	With the plant operating at 100% power a line fault on 1206 line results in 4160V BUS 1-3 being powered from 4160v BUS 1-2 via ACB 2T3. What actions should the operator take to reestablish TWO STATION SERVICE TRANSFORMER OPERATION on the 1772 LINE until the 1206 LINE is restored?	1. NOTIFY CONVEX, REQUEST A SWITCHING ORDER(.2) 2. OPEN 1206-12R-5 (.2) 3. CLOSE 12R-1T-2 (389T399) (.2) 4. CLOSE 12R-22S3-2 (3991) (.2) 5. OPEN 2T3 (.2) (must be in correct sequence for full credit) LP. REF: S87504 K/A REF 056000 GEN K.5 E OBJ TERM K/A RATING 3.3/3.6 DIFF 3 PROCEDURE REF: ANN 4.13-4 TIME 10	
002718	1.0008	2.1	The plant was operating at 100% power when "A" Vital bus was lost. All equipment responded as expected. The primary side operator notices that pressurizer level on Channels 2 and 3 is increasing. List two reasons why pressurizer level is increasing?	The letdown valves shut (.5) and the selected charging flow control valve has failed open (.5). LP REF:CY-OP-LOCT-88-1-L88104 K/A REF:001000A3.01 ELO REF: 3 K/A RATING:3.2/3.4 DIFF: 3 PROC REF: AOP3.2-15 TIME: 3 min	

WRITTEN EXAMINATION ANSWER KEY
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05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003289	1.0009	2.3	The reactor is at 100% power. The lower detector in PR channel 34 failed low. Channel 34 was removed from service. Which action must be taken at this time: a. The overpower trip bistables must be tripped within one hour. b. The rod stop must be reset to allow automatic outward rod motion. c. Axial offset monitoring must be commenced within 15 minutes. d. A Quadrant Power Tilt calculation must be done every 24 hours using the remaining operable power range channels.	C LP REF: L88604 K/A REF: 015000K4.07 K/A RATING: 3.7/3.8 EO: 5 PROC REF: AOP 3.2-14 DIFF: 3 TIME: 3 MINUTES	
003303	1.0010	1.[illegible]	The plant is in a refueling condition with the reactor vessel drained down below the flange level in preparation to lift the head. Flow of the RHR system is increased when taking manual control of RH-FCV-602 (bypass flow control valve). The operator notices that the RHR pump amps are fluctuating 40 amps. Which of the following would best describe the actions that the operator should take? a. Stop the operating RHR pump and start the non-operating RHR pump. b. Decrease the flow of the operating RHR pump and start the second pump. c. Stop the RHR pump that was running, increase the water level in the vessel, vent the pumps prior to restart. d. Stop operating RHR pump, go solid and remove decay heat with the steam generators.	C LP REF: [illegible]-L04 K/A REF: 000025EK3.03 K/A RATING: 3.[illegible]/4.1 EO: 9 PROC REF: AOP 3.2-12 DIFF: 2 TIME: 3 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003325	1.0011	1.8	The plant is in MODE 3 when a total loss of offsite power is experienced. Both diesel start and load normally. All other conditions are normal. a. List four indications of natural circulation flow in the RCS? b. How would you classify this situation, loss of offsite power, if these conditions still existed 20 minutes later?	(-.25 If wrong procedure used) a.1. Steam release from S/Gs is effectively maintaining S/G pressure constant or decreasing 2. Average reading of CETs is being maintained or decreasing less than saturation temperature for the pressurizer pressure 3. Cold leg temperature stabilized at or decreasing below saturation temperature for S/G pressure 4. Observed differential temperature across each active loop should be no greater than full power forced flow delta T. (.125 each)(credit for given AOP 3.2-30 and appropriate steps) b. Unusual Event (.25), D-1(.25) LP REF: L88603 K/A REF: 000017EA1.21 K/A RATING: 4.4/4.5 EO: 13 PROC REF: AOP 3.2-30 DIFF: 2 TIME: 3 MINUTES
003354	1.0012	1.3	With the plant operating normal in MODE 1, a fire is reported on Emergency Bus 8. What actions must be taken by the control room operators to deenergize the bus?	. Open circuit 5 on DC panel (.2) . Close the 4T5 breaker.(.2) . Open 4834/4850 (.2) . Defeat auto start of "A" Emergency Diesel by openning AC contro power breaker on MCC-5 and DC control power breaker on DC Bus "A" or TPO (.2). . Open ACB 8T2 breaker.(.2) (concept applied for AOP 3.2.-35 steps 4.5.4 a-h) LP REF: T12000 K/A REF: 000067EK3.04 K/A RATING: 3.3/4.1 KR: B PROC REF: AOP 3.2-35 DIFF: 2 TIME: 4 MINUTES

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
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05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003002	1.0013	1.7	With POST SOAK completed following a "Response to Imminent Pressurized Thermal Shock Condition" you are required to maintain RCS pressure and cold leg temperatures within certain limits. The event that just occurred was a multiple steam line break in containment. Using the following parameters determine if you are maintaining RCS pressure and cold leg temperatures within the operating zone by plotting parameters on the attached curves. Loop 1 TC 320 degrees F Loop 2 TC 322 degrees F PT 403 1015 psig Loop 3 TC 325 degrees F PT 404 1010 psig Loop 4 TC 320 degrees F Containment Pressure 3 psig CD 1/CD 2 reading less than 1 R/Hr	Outside the operating zone . See plots for correct data point (1.0) LP REF: CY-OP-LO-EOP-L88606 K/A REF: 000-009 EK 3.08 E. OBJ: 6 K/A RATING: 3.6/4.1 DIFF: 2 PROCEDURE REF:FR-p.1 TIME:3 minutes	
003047	1.0014	1.7	During the performance of ECA 2.1 "Uncontrolled Depressurization of all steam generators" it was noted that the Containment Pressure was reading 42 psig. What procedural action is required at this time?	Exit ECA 2.1 and conduct FR-Z.1 because a orange path exits. 1.0) LP REF: EOP-L38 K/A REF: 000-040-EA1.20 E. OBJ: EO 7 K/A RATING: 4.1/4.2 DIFF: 2 PROCEDURE REF: ECA-2.1 TIME: 3 MIN	

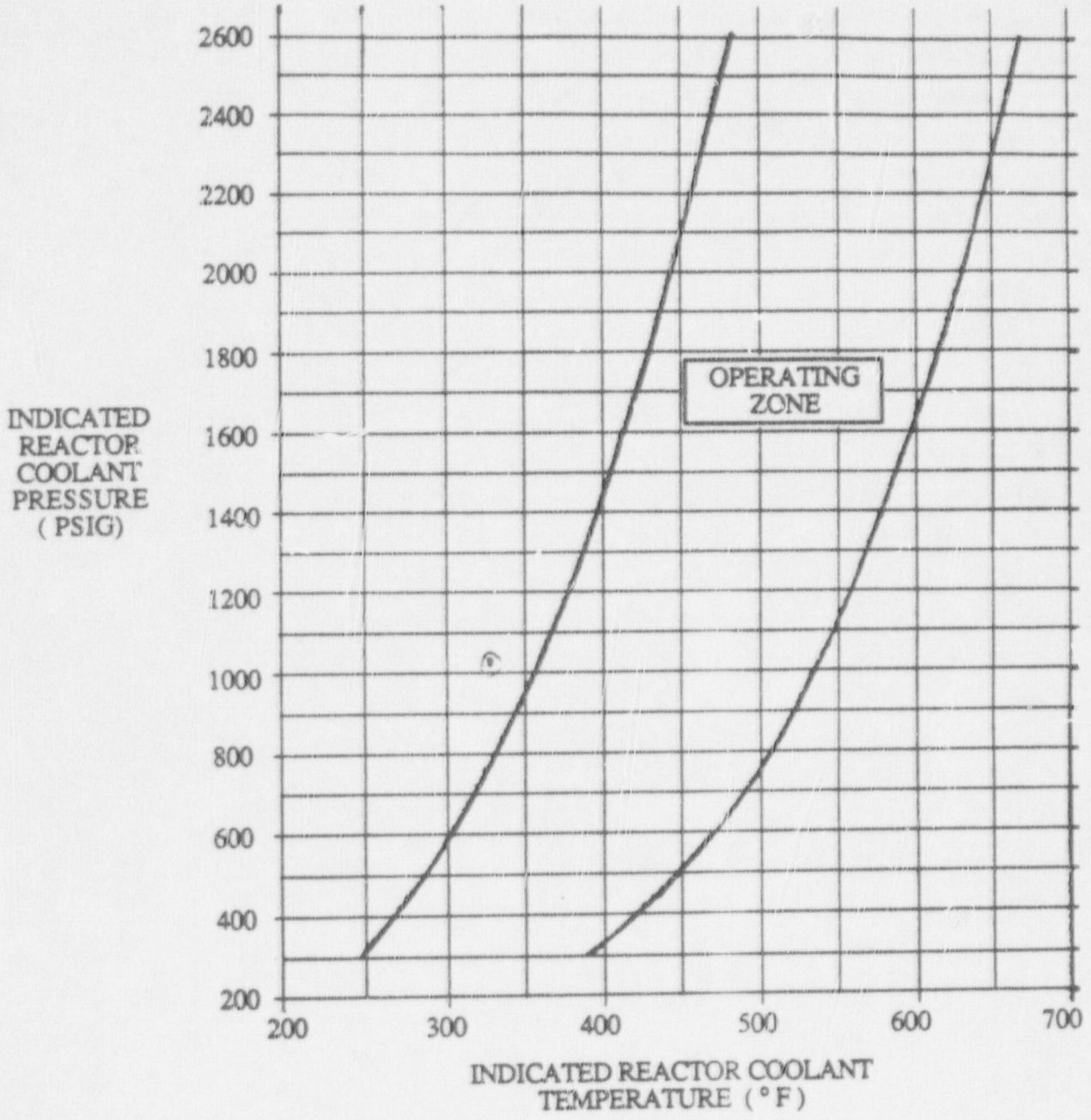

FIGURE FRP2-1.N

COOLDOWN LIMIT
NORMAL CONTAINMENT

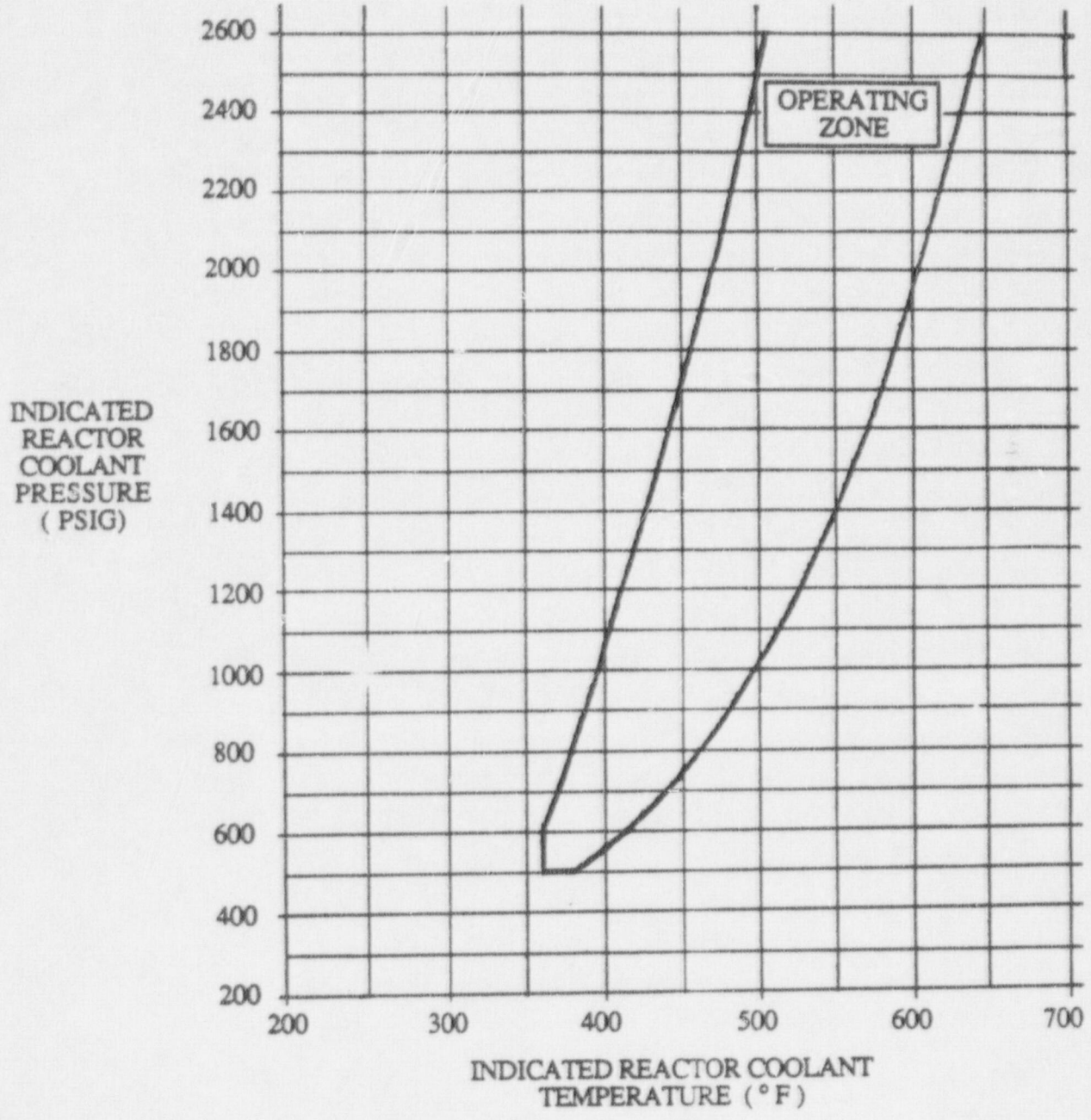

FIGURE FRP2-1.A

COOLDOWN LIMIT
ADVERSE CONTAINMENT

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003173	1.0015	2.7	The control room operators are responding to a reactor trip without SI when a red condition is indicated on subcriticality status tree. The operators re-verify that the reactor and turbine have tripped, ensure that that the AFW pumps are running, initiate emergency boration, and begin checking for possible causes of the loss of subcriticality. Their investigation reveals the following: . RCS temperature and pressure are decreasing rapidly. . The pressure in #1 S/G is decreasing uncontrollably. . The MSIVs and MSIV bypass valves for all S/Gs are closed. . The normal dilution flow path isolation valve is closed. . The chemical addition tank inlet and outlet valves are closed. . The local makeup isolation valve is closed. Based on these indications, what is the probable cause of this loss of subcriticality? a. Excessive cooldown caused by an unisolable ruptured S/G b. Excessive cooldown caused by an unisolable faulted S/G c. Inadvertent dilution flow path alignment d. Loss of secondary heat sink	B LP REF: S87503 K/A REF: 000029EK3.12 K/A RATING: 4.4/4.7 EO: 7 PROC REF: FR-S.1 DIFF: 3 TIME: 3 MINUTES	
002738	1.0016	1.8	A LOCA causes RCS pressure to drop to 1600 psi causing SI. How will the following valves be effected? (open,close,as is, or throttled) SI MOV 861A CD MOV 871A BA MOV 373 CH MOV 292B LD MOV 200 CH MOV 257 CH MOV 32 Seal return MOVs	MOV 861A-OPENS MOV 871A-OPENS MOV 373-OPENS MOV 292B-OPENS MOV 200-CLOSES MOV 257-CLOSES MOV 32-AS IS SEAL RETURNS-as is (.125 each) LP REF:CY-OP-LOCT-87-3-S87302 K/A REF: [illegible]A4.03 ELO REF: 13 K/A RATING:4.5/4.7 DIFF:3 PROC REF: E-0	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
002741	1.0017	2.4	Following a safety injection, you are performing E-0, Reactor Trip or Safety Injection, and have just completed step 5 (verify Feedwater Isolation) when you discover that there is no feed water flow to the steam generators and the AFW pumps cannot be started. Should you: A. Immediately go to FR-H.1, Loss of Secondary Heat Sink B. Complete the immediate actions and then go to FR-H.1, Loss of Secondary Heat Sink C. Go to FR-H.1, Loss of Secondary Heat Sink, as soon as the procedure tells you to commence monitoring the Critical Safety Function Status Trees D. Continue on in E-0 then Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step in E-0.	D. Go to FR-H.1, Loss of Secondary Heat Sink, when specifically directed by a procedure step. LP REF: L88105 EO 9 K/A REF: 000007GENA12 K/A RATING: 3.8/3.9 DIFF: 3 TIME: 6 MIN	
002749	1.0018	1.6	During transfer to two path recirculation, RHR discharge pressure is checked to be greater than 80 psi. Why is this step necessary?	Cavitation Check:(There is a possibility that a foreign object may clog the RHR suction line from containment. This could cause the RHR pump cavitation and low discharge pressure.) (Grader discretion required) LP REF: S87504 EO 4 K/A REF: 000011EK3.08 K/A RATING: 3.9/4.1 DIFF: 2 TIME: 2 MINUTES	
003059	1.0019	1.8	A small-break LOCA has occurred. The operators have completed implementation of procedure EOP E-0 and are implementing procedure E-1, Loss of Reactor or Secondary Coolant. E-1 directs the operators to check the intact S/G water levels. The purpose of this step is to ensure which of the following? a. S/G water levels are sufficient to cover a ruptured S/G tube. b. Sufficient S/G water inventory is available to provide an adequate heat sink. c. S/G water level instrumentation is	B LP: B7-S87504 EO: 4 K/A REF: 000009EK3.22 K/A RATING: 4.4/4.5 DIFF: 2 PROCEDURE: E-1 TIME: 2 MIN	

the AFW throttle valves are adjusted correctly.

d. An excessive S/G cooldown does not complicate the recovery procedure.

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003387	1.0020	2.5	The plant is in an emergency condition, and the control room operator, are performing ES-0.3, Natural Circulation Cooldown with Steam Void in the Vessel (with RVLIS). The operators try unsuccessfully to start an RCP. They continue the RCS cooldown (cooldown rate is 10 degrees/hour) and intiate RCS depressurization. To keep PZR level within the desired band at this point, an operator establishes charging significantly greater than letdown. With charging significantly greater than letdown, which of the following four cases best describes the system response? a. Increase / Shrink / Decrease b. Decrease / Grow / Increase c. Increase / Grow / Increase d. Decrease / Shrink / Decrease	A or D LP REF: L88603 K/A REF: 002000A2.03 K/A RATING: 4.1/4.6 EO: TLO PROC REF: ES-0.3 DIFF: 3 TIME: 3 MINUTES	
002754	1.0021	2.6	The following questions pertain to a S/G Tube Rupture. a. List two reasons why a ruptured S/G (secondary side) is isolated before starting RCS cooldown in the S/G Tube Rupture procedure E-3? b. Give two reasons why it is desirable to keep a RCP running during the cooldown and depressurization of the RCS?	a. Minimize the radioactivity released to the environment (.25) and to prevent overfill(.25)b. Provides a more rapid and even cooldown of the RCS.(.25) or and It also provides a better way to reduce RCS pressure using normal spray flow. (.25) LP REF: S87505 EO 5 K/A REF: 000038EK3.06 K/A RATING: 4.2/4.5 DIFF: 3 TIME: 3 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
002910	1.0022	2.7	The plant was operating at 100% power near the beginning of life when a reactor trip and SI occured.Classify the event and justify your answer based on the following indications: CETS 365 F CONTAINMENT PRESSURE: 41 psig RCS PRESSURE: 0 psig CONTAINMENT TEMP: 250 F PZR LEVEL: 0% CONTAINMENT LEVEL: 1.6 FT PLENUM LEVEL: 100% HEAD LEVEL: 0% ALL SI pumps running CD-1/CD-2/HATCH:1450R/HR ;1400R/HR;85R/HR SG PRESSURES:413/415/415/405psig SG LEVELS: 62/61/59/62	Site Area Emergency (.5) LOSS OF TWO BARRIERS (.5) (Loss of RCS barrier and Cont barrier) LP REF:CY-EP-L10 K/A REF:194001A1.16 ELO REF: 1,7 K/A RATING:3.1/4.4 DIFF: 3 PROC REF:EPIP1.5-1 TIME: 4 minutes	
003319	1.0023	1.5	While operating at 100% power, the secondary side operator notices that all annunciators are out, including two annunciators which were lit previously. Upon investigation, it is determined that the annunciators have lost power and the power cannot be restored immediately. a. How would you classify this situation per the Emergency Plan if annunciator power could not be restored for 30 minutes? (Include NRC classification and State Posture Code) b. How would you classify the situation in part A if a reactor trip occurred while trying to restore annunciator power? (Include NRC Classification and State Posture Code)	a. Alert (.25), C-1 (.25) b. Site Area Emergency (.25), C-2 (.25) LP REF: LB3001 K/A REF: 062GENK3 K/A RATING: 2.7/3.6 EO: 2 PROC REF: EPIP 1.5-1 DIFF: 2 TIME: 1 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT-SRO
05/01/89

Item #	Ques #	Points	Question	Answer	Exam # RO:890012
003055	1.0024	2.0	The plant is operating at 100% power. Reactor Engineering discovers that the linear heat generation rate technical specification limit was exceeded on the monthly incore map. Which of the following parameters monitored below should have prevented this from occuring? a. Quadrant Power Tilt Ratio b. Axial Offset c. Nuclear Enthalpy Rise Hot Channel Factor d. DNB Parameters(RCS, Tavg, PZR Pressure)	B LP: 88-1-L88107 EO: 9 K/A REF: 015020K5.03 K/A RATING: 3.3/3.7 DIFF: 3 TIME: 5 MIN PROCEDURE: TECH SPEC 3.17	
003291	1.0025	2.0	While the plant is operating at 88% power, the NIS Channel Deviation annunciator and the Rod Out of Step annunciator are both alarming. The Incore QPTR is calculated and results in a QPTR of 1.03. In response to the QPTR limits, the control room operators MUST perform which of the following? a. Calculate the QPTR each hour until it returns to within limits. b. Reduce thermal power to less than 50% within 2 hours. c. Reduce PR Overpower Trip setpoint to 91% within 4 hours. d. Immediately commence a power reduction and be in HOT STANDBY within 6 hours.	A LP REF: L88604 K/A REF: 015020K5.04 K/A RATING: 3.2/3.6 EO: 5 PROC REF: TS 3.17 DIFF: 3 TIME: 4 MINUTES	
003224	1.0026	1.3	While the plant is operating at 100% power, the air operator for letdown containment isolation valve LD-AOV-230 develops a large air leak. To fix the leak, air must be secured to the valve operator. Chemistry has requested that maximum letdown be maintained because of high RCS activity levels. Maintenance suggests locking LD-AOV-230 open by placing a collar on the valve stem. Plant management agrees and grants approval for the work to start. a. How long can the plant remain in this configuration?	a. 4 hours (TS 3.11.G) (.5) b. Isolate letdown by shutting letdown AOVs or MOV 200 (.5) or Be in Hot Standby in next 6 Hrs and in ~~Hot~~ Cold Shutdown within 30 hrs (.5) LP REF: 87-6-L05 K/A REF: 000069GA9.0 K/A RATING: 3.3/3.9 EO: 6 PROC REF: TS 3.11.G DIFF: 2 TIME: 5 MINUTES	

b. What must be done if the time limit is exceeded?

NRC MASTER

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : SE 6
Examination Category : 1

Examinee : _____ Final Grade : _____

Examination Number : RO : 890007 Developed : CY/NRC STAFFS

Date Administered : 5/4/89 Approved : _____
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 0.75 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____
Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : SE 6

Examination Number : RO : 890007 Date Administered : 5/4/89

Category Value	% of Total	Student's Score	% of Cat. Value	Category
25.0	100.00	_____	_____	MINOR-#4 SG LEVEL TRANSMITTER FAILURE
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
25.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : SE 6
5/4/89

Ques # /	Pts	Question	Exam # : RO : 890007
1.0001 /	0.7	What MCB alarm was a direct result of the S/G narrow range level transmitter failing high?	
1.0002 /	1.6	What will trip the Reactor if no operator actions are taken?	
1.0003 /	1.4	During the transient MWe had increased to 650 MWe. Explain why this occured.	
1.0004 /	1.8	Given that steam line isolation will occur, will the RCS pressure drop be GREATER THAN, LESS THAN or THE SAME as a manual reactor trip from 100% power? Explain.	
1.0005 /	1.0	Explain why charging flow has decreased.	
1.0006 /	1.2	Explain why has the loop delta T for the affected S/G decreased?	
1.0007 /	1.0	What turned on all PZR backup heaters?	
1.0008 /	1.3	Indicate the procedural flow path from the point of reactor trip to the point of exit from the EOP network.Only indicate the procedure and the step at which a transition to another procedure will occur.	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : SE 6
5/9/89

Ques # /	Pts	Question	Exam # : RO : 890007
1.0009 /	2.1	Prior to the reactor trip if you were to manually spray the pressurizer which spray valve would be more effective. Justify your answer.	
1.0010 /	1.0	Upon the reactor trip from this event will the feed regulating valves stay open a shorter or longer period of time when compared to a manual reactor trip. Explain your answer.	
1.0011 /	1.4	As the secondary side operator how would you have mitigated this malfunction at the time of the instrument failure.	
1.0012 /	1.2	Why is Channel 4 VLPT setpoint so low if its' Tavg input is so high?	
1.0013 /	0.9	How are Channels 1, 2, & 3 VLPT setpoints affected by the following: (Increase, Decrease, No effect) a. Delta T b. PZR Pressure c. Tavg	
1.0014 /	1.0	Why has steam flow increased on #1, 2, & 3 S/Gs?	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : SE 6
5/4/89

Ques # /	Pts	Question	Exam # : RO : 890007
1.0015 /	1.3	Why would opening #4 S/G FRV bypass valve have very little effect on mitigating this accident ?	
1.0016 /	1.1	Why have the levels in #1, 2, & 3 S/Gs increased?	
1.0017 /	1.0	List 6 MCB individual indications where we can see an effect from the decreased charging flow.	
1.0018 /	1.1	In which direction should rod motion be at this time?	
1.0019 /	1.1	A. Just prior to the reactor trip, why were rods moving? B. Why is rod speed > 5 in. per minute?	
1.0020 /	0.8	After the reactor trip how many FRV's will open ?	
1.0021 /	1.0	If the RO. were to open #4 FRV. the same amount as #1 ,2 & 3, why would feed flow to #4 S/G be higher than to #1 ,2 & 3 S/Gs ?	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department - Connecticut Yankee Operator Training
SE 6

Item #	Ques #	Points	Question	Answer	Exam # PO 88107
002766	1.0001	0.7	What MCB alarm was a direct result of the S/G narrow range level transmitter failing high?	E-1-1-9 or S/G Level Transmitter Signal High.	
				LP REF: CY-OP-LOCT-87-1-L06	N/A
				REF:059-000-A2.11	
				ELO REF:	N/A
				RATING:3.0/3.9	
				DIFF: 2	PROC REF:
				Time: 1 minute	
002767	1.0002	1.6	What will trip the Reactor if no operator actions are taken?	High steam flow gt 110% or VLPT (1.0)	
				LP REF:CY-OP-LOCT-87-5-S87505	N/A
				REF:000-[illegible]-EA2.02	
				ELO REF:	K/A RATING:
				4.6/4.7	
				DIFF: 2	PROC REF:
				TIME: 2 MINUTES	
002768	1.0003	1.4	During the transient Mwe had increased to 650 Mwe. Explain why this occured.	Main steam header pressure increased(.33) which increased [illegible] steam flow to the turbine(.33) which increased turbine power(.33)	
				Concepts applied	
				LP REF:CY-[illegible]-LOCT-87-5-S87505	K/A
				REF:039-00[illegible]-A1.06	
				ELO REF:	N/A RATING:
				3.0/3.1	
				DIFF: 3	PROC REF:
				TIME: 1 MINUTE	

tem #	Ques #	Points	Question	Answer Exam # [illegible]
02769	1.0004	1.8	Given that steam line isolation will occur, will the RCS pressure drop be GREATER THAN, LESS THAN or THE SAME as a manual reactor trip from 100% power? Explain.	The decrease will be less than usual after the trip (.05) Because steam line isolation will isolate the steam dumps. (Thus Tave and therefore RCS pressure will not drop as far. [illegible] Concepts applied LP REF:CY-OP-LOCT-87-5-SBT505 K/A REF:041-020-K3.02 ELO REF: 3 K/A RATING:3.6/3.9 DIFF: 3 TIME: 1 MINUTE
002770	1.0005	1.0	Explain why charging flow has decreased.	Tave increased which caused pressurizer level to increase (.5) however program level is limited or clipped at 50% level (.25) thus the controller cut back charging flow to maintain level.(.25 LP REF:C[illegible]-LOCT-87-1-L05 K/A REF:011-[illegible].04 ELO REF: [illegible] K/A RATING:3.1/3.3 DIFF: 2 TIME: 1 MINUTE
002771	1.0006	1.2	Explain why has the loop delta T for the affected S/G decreased?	The level decrease has reduced the area available in the steam generator for heat transfer.(1.2) or(due to decrease in steam flow from #4 Steam Generator the heat removed, ΔT, from the primary system will decrease) Concepts applied. LP REF: CY-OP-LOCT-87-5-SBT505 K/A REF: 002020K5.05 ELO REF: 4 K/A RATING: 3.8/4.1 DIFF: 2

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
SE 6

tem #	Ques #	Points	Question	Answer	Exam # RO:890007
02772	1.0007	1.0	What turned on all PZR backup heaters?	PZR Level Channel 1 > 52% or (PZR level high) LP REF:CY-OP-LOCT-87-3-S87303 K/A REF: 011000K4.04 ELO REF: 10 K/A RATING: 3.0/3.3 DIFF: 2 TIME: 1 MINUTE	
002773	1.0008	1.3	Indicate the procedural flow path from the point of reactor trip to the point of exit from the EOP network.Only indicate the procedure and the step at which a transition to another procedure will occur.	E-0 to step 4 (.33) Transition to ES-0.1 (.33) ES-0.1 until step 17 (NOP 2.1-4) (.33) or ES-0.1 STEP 10 to loss of vacuum. LP REF:CY-OP-LOCT-87-3-S87302 K/A REF:000-000-EK3.01 ELO REF: [illegible] K/A RATING:4.[illegible] 4.6 DIFF: 2 TIME: 3 MINUTES	
002774	1.0009	2.1	Prior to the reactor trip if you were to manually spray the pressurizer which spray valve would be more effective. Justify your answer.	Loop 3 spray flow (.5) would be more effective because the water is colder (.5) LP REF:CY-[illegible]-LOCT-88-4-L88403 K/A REF:035-010-K3.01 ELO REF: 2 K/A RATING:4.4 4.6 DIFF: 3 TIME: 1 MINUTE	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
SE 6

Item #	Ques #	Points	Question	Answer	Exam # RO:990007
002775	1.0010	1.0	Upon the reactor trip from this event will the feed regulating valves stay open a shorter or longer period of time when compared to a manual reactor trip. Explain your answer.	They will stay open a longer period of time.(.25) Because Tave will remain higher than 545 Deg F for a longer period of time. (.75) Concepts applied LP REF:CY-OP-LOCT-87-3-S87302 K/A REF: 035010K3.03 ELO REF: 13 K/A RATING: 3.0/3.1 DIFF: 2 TIME: 2 MINUTES	
002776	1.0011	1.4	As the secondary side operator now would you have mitigated this malfunction at the time of the instrument failure.	Take manual control of the feed reulating valve. (1.0)LP REF: S87304 EO: 3 K/A REF:059-000-A2.11 TIME: 1 MINUTE K/A RATING:3.[illegible] 3.3 DIFF: 3	
003488	1.0012	1.2	Why is Channel 4 VLPT setpoint so low if its' Tavg input is so high?	It's delta T component dropped significantly with an overriding effect. LP REF: S87304 K/A REF: 002000A1.08 K/A RATING: 3.[illegible] 3.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
003489	1.0013	0.9	How are Channels 1, 2, & 3 VLPT setpoints affected by the following: (Increase, Decrease, No effect) a. Delta T b. PZR Pressure c. Tavg	a. Increase (.33) b. No affect (.33) c. Increase (.33) LP REF: S87304 K/A REF: 012000K6.11 K/A RATING: 2.9/2.9 EO: 3 PROC REF: DIFF: 2 TIME: 2 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
SE 6

Item #	Ques #	Points	Question	Answer	Exam # RO:890907
003490	1.0014	1.0	Why has steam flow increased on #1, 2, & 3 S/Gs?	Three Steam Generators trying to supply the same amount of steam as four Steam Generators. (Concepts applied) LP REF: S87304 K/A REF: 035010A2.05 K/A RATING: 3.2/3.4 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
003491	1.0015	1.3	Why would opening #4 S/G FRV bypass valve have very little effect on mitigating this accident ?	Bypass flow will not support steam demand for this power. (1.0) LP REF: S87304 K/A REF: 000054EA2.06 K/A RATING: 4.0/4.3 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
003492	1.0016	1.1	Why have the levels in #1, 2, & 3 S/Gs increased?	The effects of swell (due to higher steaming rate) LP REF: S87304 K/A REF: 035010A2.03 K/A RATING: 3.4/3.6 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
003493	1.0017	1.0	List 6 MCB individual indications where we can see an effect from the decreased charging flow.	Any 6 from this list. (.166 ea.) . PZR level . VCT level . VCT pressure . Chg Header Pressure . Chg Pp Amps . L/D Reg Hx Outlet Temp . Chg Temp Regen Hx outlet . Labyrinth delta P indications . Chg flow indication loop 2 . Chg flow indication controller(s) . PZR pressure . VCT Rate of Change LP REF: 87-2-L06 K/A REF: 004000A1.08 K/A RATING: 3.0/3.0EO: 1 PROC REF: DIFF: 2 TIME: 1 MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
SE 6

tem #	Ques #	Points	Question	Answer	Exam # RO:890007
03494	1.0018	1.1	In which direction should rod motion be at this time?	Inward LP REF: S87304 K/A REF: 001000K4.03 K/A RATING: 3.5/3.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
03495	1.0019	1.1	A. Just prior to the reactor trip, why were rods moving? B. Why is rod speed > 5 in. per minute?	A. Tavg Tref deviation (>1.5 deg F) (0.5) B. Pressure compensation (NI. compensation) (0.5) (anticapatory signals) LP REF: S87304 K/A REF: 001000K4.03 K/A RATING: 3.5/3.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
03496	1.0020	0.8	After the reactor trip how many FRVs. will open ?	4 (1.0 LP REF: S[illegible]4 K/A REF: 059000K4.17 K/A RATING: 2.[illegible] 2.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
03497	1.0021	1.0	If the RO. were to open #4 FRV. the same amount as #1 ,2 & 3, why would feed flow to #4 S/G be higher than to #1 ,2 & 3 S/Gs ?	#4 S/G pressure is less than the other three (Flow takes the path of least restiance or Flow is proportional to the square of the D/P .) LP REF: S[illegible] K/A REF: 059000A2.11 K/A RATING: 3.[illegible] EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	

NRC MASTER

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-6a
Examination Category : 1

Examinee : _____ Final Grade : _____

Examination Number : RO : 890017 Developed : CY/NRC STAFFS

Date Administered : 5/4/89 Approved : Bob Heidelberg
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 0.75 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____

Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-6a

Examination Number : RO : 890017 Date Administered : 5/4/89

Category Value	% of Total	Student's Score	% of Cat. Value	Category
25.0	100.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
25.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-6a
/ /

Ques # /	Pts	Question	Exam # : RO : 890017
1.0001 /	1.1	As the secondary side operator how would you have mitigated this malfunction at the time of the instrument failure.	
1.0002 /	1.2	Why is Channel 4 VLPT setpoint so low if its' Tavg input is so high?	
1.0003 /	0.9	How are Channels 1, 2, & 3 VLPT setpoints affected by the following: (Increase, Decrease, No effect) a. Delta T b. PZR Pressure c. Tavg	
1.0004 /	1.0	Why has steam flow increased on #1, 2, & 3 S/Gs?	
1.0005 /	1.3	Why would opening #4 S/G FRV bypass valve have very little effect on mitigating this accident ?	
1.0006 /	1.1	Why have the levels in #1, 2, & 3 S/Gs increased?	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-6a
/ /

Ques # /	Pts	Question	Exam # : RO : 890017
1.0007 /	1.0	List 6 MCB individual indications where we can see an effect from the decreased charging flow.	
1.0008 /	1.1	In which direction should rod motion be at this time?	
1.0009 /	1.1	A. Just prior to the reactor trip, why were rods moving? B. Why is rod speed > 5 in. per minute?	
1.0010 /	0.8	After the reactor trip how many FRVs. will open ?	
1.0011 /	1.0	If the RO. were to open #4 FRV. the same amount as #1 ,2 & 3, why would feed flow to #4 S/G be higher than to #1 ,2 & 3 S/Gs ?	
1.0012 /	1.0	What MCB alarm was a direct result of the S/G narrow range level transmitter failing high?	
1.0013 /	1.6	What will trip the Reactor if no operator actions are taken?	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-6a
/ /

Ques # /	Pts	Question	Exam # : RO : 890017
1.0014 /	1.4	During the transient MWe had increased to 650 MWe. Explain why this occured.	
1.0015 /	1.8	Given that steam line isolation will occur, will the RCS pressure drop be GREATER THAN, LESS THAN or THE SAME as a manual reactor trip from 100% power? Explain.	
1.0016 /	1.0	Explain why charging flow has decreased.	
1.0017 /	1.2	Explain why has the loop delta T for the affected S/G decreased?	
1.0018 /	1.0	What turned on all PZR backup heaters?	
1.0019 /	1.3	Indicate the procedural flow path from the point of reactor trip to the point of exit from the EOP network.Only indicate the procedure and the step at which a transition to another procedure will occur.	
1.0020 /	2.1	Prior to the reactor trip if you were to manually spray the pressurizer which spray valve would be more effective. Justify your answer.	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-6a
/ /

Ques # /	Pts	Question	Exam # : RO : 890017
1.0021 /	1.0	Upon the reactor trip from this event will the feed regulating valves stay open a shorter or longer period of time when compared to a manual reactor trip. Explain your answer.	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department - Connecticut Yankee Operator Training
LORT 88-6a

Item #	Ques #	Points	Question	Answer
002776	1.0001	1.1	As the secondary side operator how would you have mitigated this malfunction at the time of the instrument failure.	Take manual control of the feed regulating valve. LP REF: S87304 EO: 1 REF:059-003-A2.11 TIME: 1 MINUTE RATING:3.0/3.3 DIFF: 3
003488	1.0002	1.2	Why is Channel 4 vLPT setpoint so low if its' Tavg input is so high?	It's delta T component dropped significantly with an overriding effect. LP REF: S87304 K/A REF: 002000A1.08 K/A RATING: 3.7/3.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES
003489	1.0003	0.9	How are Channels 1, 2, & 3 vLPT setpoints affected by the following: (Increase, Decrease, No effect) a. Delta T b. PZR Pressure c. Tavg	a. Increase (.33) b. No affect (.33) c. Increase (.33) LP REF: S87304 K/A REF: 012000K6.11 K/A RATING: 2.9/2.9 EO: 3 PROC REF: DIFF: 2 TIME: 2 MINUTES
003498	1.0004	1.0	Why has steam flow increased on #1, 2, & 3 S/Gs?	Three Steam Generators trying to supply the same amount of steam as four Steam Generators. (Concepts applied.) LP REF: S87304 K/A REF: 035U10A2.05 K/A RATING: 3.3/3.4 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department - Connecticut Yankee Operator Training
LOPT SE-6a

Item #	Ques #	Points	Question	Answer	Exam #

03491 1.0005 1.3 Why would opening #4 S/G PRV bypass valve have very little effect on mitigating this accident?

Answer: Bypass flow will not support steam demand for this power. [illegible]

LP REF: S87004 K/A REF: 000054EA2.05 K/A
RATING: 4.0/4.3 EO: 3 PROC REF:
DIFF: 2 TIME: 1 MINUTES

03492 1.0006 1.1 Why have the levels in #1, 2 & 3 S/Gs increased?

Answer: The effects of swell (due to higher steaming rate)

LP REF: S87004 K/A REF: 035010A2.03 K/A
RATING: 3.4/3.6 EO: 3 PROC REF:
DIFF: 2 TIME: 1 MINUTES

03493 1.0007 1.0 List 6 MCB individual indications where we can see an effect from the decreased charging flow.

Answer: Any 6 from this list. (.166 ea.)

- PZR level
- VCT level
- VCT pressure
- Chg Header Pressure
- Chg Pp [illegible]
- L/D Regen Hx Outlet Temp
- Chg Temp Regen Hx outlet
- Labyrinth delta P indications
- Chg Flow indication loop 2
- Chg Flow indication controller(s)
- PZR pressure
- VCT rate of change

LP REF: [illegible] K/A REF: 004000A1.06 K/A
RATING: [illegible] EO: [illegible] PROC REF:
DIFF: 2 TIME: 1 MINUTES

03494 1.0008 1.1 In which direction should rod motion be at this time?

Answer: Inward

LP REF: S87004 K/A REF: 001000K4.03 K/A
RATING: 3.5/3.8 EO: 3 PROC REF:
DIFF: 2 TIME: 1 MINUTES

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-6a

tem #	Ques #	Points	Question	Answer	Exam # RO:890017
03495	1.0009	1.1	A. Just prior to the reactor trip, why were rods moving? B. Why is rod speed 5 in. per minute?	A. Tavg Tref deviation (>1.5 deg F) (0.5) B. Pressure compensation (NI. compensation) (0.5) (anticapatory signals) LP REF: S87304 K/A REF: 001000K4.03 K/A RATING: 3.5/3.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
03496	1.0010	0.8	After the reactor trip how many FRVs. will open ?	4 (1.0) LP REF: S87304 K/A REF: 059000K4.17 K/A RATING: 2.5/2.8 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
03497	1.0011	1.0	If the RO. were to open #4 FRV. the same amount as #1 ,2 & 3, why would feed flow to #4 S/G be higher than to #1 ,2 & 3 S/Gs ?	#4 S/G pressure is less than the other three (Flow takes the path of least restiance or Flow is proportional to the square of the D/P .) LP REF: S87304 K/A REF: 059000A2.11 K/A RATING: 3.1 3.3 EO: 3 PROC REF: DIFF: 2 TIME: 1 MINUTES	
02786	1.0012	1.0	What MCB alarm was a direct result of the S/G narrow range level transmitter failing high?	E-1-1-9 or S/G Level Transmitter Signal High. LP REF: [illegible]-LOCT-87-1-L05 K/A REF:059-00[illegible]-A2.11 ELO REF: K/A RATING:3.[illegible] DIFF: 2 PROC REF: Time: 1 minute	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department : Connecticut Yankee Operator Training
LORT SE-6a

tem #	Ques #	Points	Question	Answer	Exam # RO:89001
02767	1.0013	1.6	What will trip the Reactor if no operator actions are taken?	High steam flow gt 110% or VLPT (1.0) LP REF:CY-OP-LOCT-87-5-S87505 K/A REF:000-040-EA2.02 ELO REF: 4 K/A RATING: 4.6/4.7 DIFF: 2 PROC REF: TIME: 2 MINUTES	
002768	1.0014	1.4	During the transient Mwe had increased to 650 Mwe. Explain why this occured.	Main steam header pressure increased(.33) which increased main steam flow to the turbine(.33) which increased turbine power(.33) Concepts applied LP REF:CY-OP-LOCT-87-5-S87505 K/A REF:039-000-A1.06 ELO REF: 2 K/A RATING: 3.0/3.1 DIFF: 3 PROC REF: TIME: 1 MINUTE	
002769	1.0015	1.8	Given that steam line isolation will occur, will the RCS pressure drop be GREATER THAN, LESS THAN or THE SAME as a manual reactor trip from 100% power? Explain.	The decrease will be less than usual after the trip (.25) because steam line isolation will isolate the steam dumps. (Thus Tave and therefore RCS pressure will not drop as far.) (.75) Concepts applied LP REF:CY-OP-LOCT-87-5-S87505 K/A REF:041-020-A3.02 ELO REF: 3 K/A RATING:3.8/3.9 DIFF: 3 TIME: 1 MINUTE	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-6a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890017
02770	1.0016	1.0	Explain why charging flow has decreased.	Tave increased which caused pressurizer level to increase (.5) however program level is limited or clipped at 50% level (.25) thus the controller cut back charging flow to maintain level.(.25) LP REF:CY-OP-LOCT-87-1-L05 K/A REF:011-000-A1.04 ELO REF: 7 K/A RATING:3.1/3.3 DIFF: 2 TIME: 1 MINUTE	
02771	1.0017	1.2	Explain why has the loop delta T for the affected S/G decreased?	The level decrease has reduced the area available in the steam generator for heat transfer. (.6) or (due to decrease in the steam flow from #4 Steam Generator the heat removed, ΔT, from the primary system will decrease) Concepts applied. LP REF: CY-OP-LOCT-87-5-S87505 K/A REF: 002020K5.03 ELO REF: 4 K/A RATING: 3.8/4.1 DIFF: 2 TIME: 1 MINUTE	
02772	1.0018	1.0	What turned on all PZR backup heaters?	PZR Level Channel 1 > 52% or (PZR level high) LP REF:CY-OP-LOCT-87-3-S87303 K/A REF: 011000K4.04 ELO REF: 10 K/A RATING: 3.0/3.3 DIFF: 2 TIME: 1 MINUTE	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-6a

Item #	Ques #	Points	Question	Answer	Exam # RO:890017
002773	1.0019	1.3	Indicate the procedural flow path from the point of reactor trip to the point of exit from the EOP network.Only indicate the procedure and the step at which a transition to another procedure will occur.	E-0 to step 4 (.33) Transition to ES-0.1 (.33) ES-0.1 until step 17 (NOP 2.1-4) (.33) or ES-0.1 STEP 10 to loss of vacuum. LP REF:CY-OP-LOCT-87-3-S87302 K/A REF:000-007-EK3.01 ELO REF: 13 K/A RATING:4.0/4.6 DIFF: 2 TIME: 3 MINUTES	
002774	1.0020	2.1	Prior to the reactor trip if you were to manually spray the pressurizer which spray valve would be more effective. Justify your answer.	Loop 3 spray fow (.5) would be more effective because the water is colder (.5) LP REF:CY-OP-LOCT-88-4-L88403 K/A REF:035-[illegible]-K3.01 ELO REF: [illegible] K/A RATING:4.4 4.6 DIFF: 3 TIME: 1 MINUTE	
002775	1.0021	1.0	Upon the reactor trip from this event will the feed regulating valves stay open a shorter or longer period of time when compared to a manual reactor trip. Explain your answer.	They will stay open a longer period of time.(.25 Because Tave will remain higher than 545 Deg F for a longer period of time. (.75) Concepts applied LP REF:CY-OP-LOCT-87-3-S87302 K/A REF: 035010K3.01 ELO REF: 13 K/A RATING: 3.0/3.1 DIFF: 2 TIME: 2 MINUTES	

NRC MASTER

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-9a
Examination Category : 1

Examinee : _____ Final Grade : _____

Examination Number : RO : 890015 Developed : CY/NRC STAFFS

Date Administered : / / Approved : Bob Hedrick
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 0.75 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____

Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-9a

Examination Number : RO : 890015 Date Administered : / /

Category Value	% of Total	Student's Score	% of Cat. Value	Category
25.0	100.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
25.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9a
/ /

Ques # /	Pts	Question	Exam # : RO : 890015
1.0001 /	1.0	Why have the RCP labrynith seal d/p indications decreased ?	
1.0002 /	1.0	List two different indications that confirm that the turbine has tripped.	
1.0003 /	1.3	List four of the RPS trip signals present up to now that should alone been able to trip the reactor.	
1.0004 /	1.4	Classify the event. A manual reactor tripped has been attempted. (Assume all efforts have been attempted to trip the RX and were unsuccessful .)	
1.0005 /	1.3	The primary RO upon receipt of RCS Low Flow at 100% pwr and noticing the RX did not trip pushed the RX trip button. Is the RX in the process of tripping at this time. Explain.	
1.0006 /	0.8	List two indications that #4 RCP did not trip ?	
1.0007 /	1.4	The RCP Low Flow alarm was due to which of the following events: A. Undervoltage B. Bkr opening C. Rotor Shear D. Seized Rotor	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9a
/ /

Ques # /	Pts	Question	Exam # : RO : 890015
1.0008 /	1.3	For the following parameters indicate if they would be higher than, lower than or the same if this accident had occurred at EO conditions. a. RX pwr b. Tavg	
1.0009 /	1.3	The SRO based on feedback from his operators has told the SS "I have completed E-O am transiting to ES-0.1." What procedure should he be in at this time.	
1.0010 /	2.0	List 3 different methods that could be taken at this time in the control room to shutdown the Reactor? (Assume both Reactor trip buttons have been pushed.)	
1.0011 /	1.1	Steam line isolation occurred on high stm flow Delta P. Explain how loss of flow in loop 4 led to this condition.	
1.0012 /	1.4	Determine the status of the four feed regulating valves and explain any differences.	
1.0013 /	1.2	After verifying >320 gpm AFW flow what effect, if any, would the RO have on S/G level if he shuts the feed line MOVs and leaves them shut. Assume no other changes to plant conditions take place.	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9a
/ /

Ques # /	Pts	Question	Exam # : RO : 890015
1.0014 /	0.8	Why are all four feed regulating valve auto control signals on the controllers indicating 0% output?	
1.0015 /	1.4	Why is PZR level setpoint 50% at this time?	
1.0016 /	1.0	Why is charging flow at a minimum?	
1.0017 /	2.0	Neglecting the effects of control rods , What is presently controlling Reactorpower ?	
1.0018 /	1.4	Using all loop Taves calculate the actual plant tavg?	
1.0019 /	0.8	Why were Pzr. spray valves ineffective in mitigating the RCS. pressure transient prior to the turbine trip?	
1.0020 /	1.1	A. Which RCS loops have reverse flow? B. Which RCS loops will develop reverse flow? Assume all automatic actions associated with the turbine trip occurs.	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:8900015
003452	1.0001	1.0	Why have the RCP labrynith seal d/p indications decreased ?	RCS pressure has increased. (to greater than that of seal supply) (1.0)	
				LP REF:87-2-L06 K/A REF: 004000A1.03 K/A RATING: 3.6/3.8 EO: TLO PROC REF: DIFF:2 TIME: 2 MINUTES	
003451	1.0002	1.0	List two different indications that confirm that the turbine has tripped.	Stop valves shut Gov valves shut Low auto stop oil pressure (.5 each)	
				LP REF:87-5-S87502 K/A REF:045000A3.04 K/A RATING: 3.4/3.6 EO:3 PROC REF:E-0 DIFF: 2 TIME: 1 MINUTES	
003450	1.0003	1.3	List four of the RPS trip signals present up to now that should alone been able to trip the reactor.	RX Manual trip Push Button. Low auto stop oil Low RCS flow 1 of 4 (≥ 90%) steam line trip valve shut turbine stop valves shut pressurizer high pressure High steam flow 110% 2 of 4 (.25 each) RCP Bkr open. LP REF:87-5-S87501 K/A REF:000007EA2.02 K/A RATING: 4.3/4.6 EO:3 PROC REF:E-0 DIFF:2 TIME:1MINUTES Low RCS Flow 2 of 4 (≥ 90%)	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a

Item #	Ques #	Points	Question	Answer	Exam # RO:85
003449	1.0004	1.4	Classify the event. A manual reactor tripped has been attempted. (Assume all efforts have been attempted to trip the RX and were unsuccessful .)	Site Area Emergency (C-2) (1.0) LP REF:EP-L10 K/A REF:000029EN2 K/A RATING:3.1/4.3 ED: 7 PROC REF:EHIP 1-5.1 DIFF: 3 TIME: 1 MINUTES	
002924	1.0005	1.3	The primary RO upon receipt of RCS Low Flow at 100% pwr and noticing the RX did not trip pushed the RX trip button. Is the RX in the process of tripping at this time. Explain.	No. (.5) Scram bkrs still shut (0.5) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-029-EA2.07 E. OBJ: #7 K/A RATING: 4.2/4.3 DIFF: 2 PROCEDURE REF: TIME:1 minute	
002925	1.0006	0.8	List two indications that #4 RCP did not trip ?	BkR. ind. (Red light) (.5) Pump amps . (.5) LP REF: CY-OP-LOCT-87-3-S87305 K/A REF: 003-000-A3.02 E. OBJ: #8 K/A RATING: 2.6/2.5 DIFF: 2 PROCEDURE REF: TIME:1 minute	
002926	1.0007	1.4	The RCP Low Flow alarm was due to which of the following events: A. Undervoltage B. Bkr opening C. Rotor Shear D. Seized Rotor	(Rotor Shear) C (1.0) LP REF: CY-OP-LOCT-87-3-S87305 K/A REF: 000-015-EA2.01 E. OBJ: #5 K/A RATING: 3.0/3.5 DIFF:3 PROCEDURE REF: TIME:1 minute	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890015
002939	1.0008	1.3	For the following parameters indicate if they would be higher than, lower than or the same if this accident had occurred at EOL conditions. a. RX pwr b. Tavg	a. Lower. (.50) b. Lower. (.50) LP REF: CY-OP-LOCT-88-4-L88402 000-029-EK1.01 E. OBJ: #16 2.8/3.1 DIFF: 3 REF: TIME: 1 minute	K/A REF: K/A RATING: PROCEDURE
002938	1.0009	1.3	The SRO based on feedback from his operators has told the SS "I have completed E-0 am transiting to ES-0.1." What procedure should he be in at this time.	Should be in FR-S.1. (1.0) LP REF: CY-OP-LOCT-88-1-L88105 000-029-EK1.12 E. OBJ: #8 4.4/4.7 DIFF: 2 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE
002937	1.0010	2.0	List 3 different methods that could be taken at this time in the control room to shutdown the Reactor? (Assume both Reactor trip buttons have been pushed.)	Drive Rods. Emergency boration.Open Bus 4941 & 4971 Bkrs. Trip turbine. (.33 each-3 req'd) LP REF: CY-OP-LOCT-87-5-S87503 000-029-EK1.12 E. OBJ: #7 4.4/4.7 DIFF: 3 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890015
002926	1.0011	1.1	Steam line isolation occurred on high stm flow Delta P. Explain how loss of flow in loop 4 led to this condition.	As flow in loop 4 decreased temp in that loop decreased stm flow went down, the other 3 S/Gs picked up the stm flow thus tripping the MSIs. (Concept applied) LP REF: CY-OP-LOCT-88-4-L88403 K/A RATING: 003-000-K3.02 E. OBJ: #2 K/A RATING: 3.5/3.8 DIFF: 2 TIME:2 minutes	
002933	1.0012	1.4	Determine the status of the four feed regulating valves and explain any differences.	#1, 2 & #3 are wide open (.25) #4 is shut. #4 is shut (.25) because of high level override at 69% (.5) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 059-000-A4.08 E. OBJ: #6 K/A RATING: 3.0/2.9 DIFF: 3 PROCEDURE REF: TIME:1 minute	
002934	1.0013	1.2	After verifying >320 gpm AFW flow what effect, if any, would the RO have on S/G level if he shuts the feed line MOVs and leaves them shut. Assume no other changes to plant conditions take place.	Level decrease in all S/Gs (1.0)or Eventual dry out of the S/Gs (1.0) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-029-EA2.15 E. OBJ: #6 K/A RATING: 4.1/3.9 DIFF: 2 PROCEDURE REF: TIME:1 minute	

WRITTEN EXAMINATION ANSWER KEY
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/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890015
002935	1.0014	0.8	Why are all four feed regulating valve auto control signals on the controllers indicating 0% output?	The output signal is controlled by the Auto setpoint, and this is based upon SF/FF & S/G level, #1,2 & 3 SF is low (.5) #4 Level is high (or other low) thus all four output signals are low (.5) (Concept applied) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 059-000-K4.18 E. OBJ: #6 K/A RATING: 2.8/3.0 DIFF: 2 PROCEDURE REF: TIME:3 minutes	
002932	1.0015	1.4	Why is PZR level setpoint 50% at this time?	Level ref is clipped at 562 deg F (1.0) or We are in remote auto (1.0) concepts applied. LP REF: CY-OP-LOCT-87-3-S87302 K/A REF: 011-000-A1.04 E. OBJ: #5 K/A RATING: 3.1/3.3 DIFF: 3 PROCEDURE REF: TIME:1 minute	
002931	1.0016	1.0	Why is charging flow at a minimum?	PZR level exceeding programmed value. (1.0) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 011-000-K5.13 E. OBJ: #5 K/A RATING: 3.2/3.4 Diff: 2 PROCEDURE REF: TIME:1 minute or Pzr level in remote manual for 1) R. Reeves 2) M White 3) R Brown 4) M Baca 5) C. Carnella 6) J Banks	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890015
OC2930	1.0017	2.0	Neglecting the effects of control rods , what is presently controlling Reactorpower ?	Feed flow and S/G safeties are controlling RX pwr. (0.5 each) concepts applied MTC, FTC, voids LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-029-EA2.01 E. OBJ: #7 K/A RATING: 4.4/4.7 DIFF: 3 PROCEDURE REF: TIME:2 minutes	
002929	1.0018	1.4	Using all loop Taves calculate the actual plant tavg?	Loop #1 + Loop #2 + loop #3 + Loop #4 Tave. devided by four. Value to be determined on the day of exam +/- 5 Deg F. 5 degrees = (.5) LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-017-EA1.09 E. OBJ: #6 K/A RATING: 3.2/3.2 DIFF: 3 PROCEDURE REF: TIME: 2 minutes $\frac{585 + 586 + 584 + 533}{4} = 572$	
002928	1.0019	0.8	Why were Pzr. spray valves ineffective in mitigating the RCS. pressure transient prior to the turbine trip?	Short cycling (No flow in loop #4 , spray flow from loop #1 back through loop #4 spray line.) or Loop 4 spray not available LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-029-EA1.01 E. OBJ: #7 K/A RATING: 2.8/3.1 DIFF: 2 PROCEDURE REF: TIME:1 minute or Pzr Press controller in Remote/Manual for the following: 1) R. Reeves 2) C. Cannella 3) M. Baca 4) M. White 5) R. Brown 6) J. Banks	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9a
/ /

Item #	Ques #	Points	Question	Answer	Exam # RO:890015
002927	1.0020	1.1	A. Which RCS loops have reverse flow?	A. #4 (0.5)	
			B. Which RCS loops will develop reverse flow? Assume all automatic actions associated with the turbine trip occurs.	B. #1 & #3 (0.5)	
				LP REF: CY-OP-LOCT-87-5-S87503	K/A REF:
				000-007-EA1.04	
				E. OBJ: #6	K/A
				RATING: 3.6/3.7	
				DIFF: 2	
				PROCEDURE REF:	
				TIME:1 minute	

NRC MASTER

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-9
Examination Category : I

Examinee : _____ Final Grade : _____

Examination Number : RO : 880045 Developed : CY/NRC STAFF

Date Administered : 5/4/88 Approved : Bob Hasdell
N.T.D. Supervisor

Instructions to the Examinee :

1. Talking during the examination is strictly forbidden.
2. If a question is not understood, raise your hand so that a proctor/examiner may assist you.
3. All required reference materials will be provided by the proctor/examiner.
4. Cheating in any form may result in a recommendation for disciplinary action.
5. Each examination response sheet shall be numbered by you. You shall write your name or initials on each examination response sheet.
6. The passing grade requires a final grade of at least 80%.
7. The total duration of this examination shall be 0.75 hours.

All work done on this examination is my own; I have neither given nor received aid.

_____

Student's Signature

ATTACHMENT 1

WRITTEN EXAMINATION COVER SHEET
Nuclear Training Department / Connecticut Yankee Operator Training
Operator Training
Course Exam : LORT SE-9

Examination Number : RO : 880045 Date Administered : 5/4/89

Category Value	% of Total	Student's Score	% of Cat. Value	Category
25.0	100.00	_____	_____	MAJOR EVENT- RCP SHAFT SHEAR/ATWS
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
0.0	0.00	_____	_____	
25.0	100.00	_____		Totals

Final Grade _____ %

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9
/ /

Ques # /	Pts	Question	Exam # : RO : 880045

1.0001 / 1.2 The primary RO upon receipt of RCS Low Flow at 100% pwr and noticing the RX did not trip pushed the RX trip button. Is the RX in the process of tripping at this time. Explain.

1.0002 / 0.8 List two indications that #4 RCP did not trip ?

1.0003 / 1.4 The RCP Low Flow alarm was due to which of the following events:

A. Undervoltage
B. Bkr opening
C. Rotor Shear
D. Seized Rotor

1.0004 / 1.1 A. Which RCS loops have reverse flow?

B. Which RCS loops will develop reverse flow? Assume all automatic actions associated with the turbine trip occurs.

1.0005 / 0.8 Why were Pzr. spray valves ineffective in mitigating the RCS. pressure transient prior to the turbine trip?

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9
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Ques # /	Pts	Question	Exam # : RO : 880045
1.0006 /	1.4	Using all loop Taves calculate the actual plant tavg?	
1.0007 /	2.0	Neglecting the effects of control rods , What is presently controlling Reactorpower ?	
1.0008 /	1.0	Why is charging flow at a minimum?	
1.0009 /	1.4	Why is PZR level setpoint 50% at this time?	
1.0010 /	1.4	Determine the status of the four feed regulating valves and explain any differences.	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
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Ques # /	Pts	Question	Exam # : RO : 880045
1.0011 /	1.2	After verifying >320 gpm AFW flow what effect, if any, would the RO have on S/G level if he shuts the feed line MOVs and leaves them shut. Assume no other changes to plant conditions take place.	
1.0012 /	0.8	Why are all four feed regulating valve auto control signals on the controllers indicating 0% output?	
1.0013 /	1.1	Steam line isolation occurred on high stm flow Delta P. Explain how loss of flow in loop 4 led to this condition.	
1.0014 /	2.0	List 3 different methods that could be taken at this time in the control room to shutdown the Reactor? (Assume both Reactor trip buttons have been pushed.)	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
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Ques # /	Pts	Question	Exam # : RO : 880045
1.0015 /	1.3	The SRO based on feedback from his operators has told the SS "I have completed E-0 am transiting to ES-0.1." What procedure should he be in at this time.	
1.0016 /	1.3	For the following parameters indicate if they would be higher than, lower than or the same if this accident had occurred at EOL conditions. a. RX pwr b. Tavg	
1.0017 /	1.4	Classify the event. A manual reactor tripped has been attempted. (Assume all efforts have been attempted to trip the RX and were unsuccessful .)	
1.0018 /	1.3	List four of the RPS trip signals present up to now that should alone been able to trip the reactor.	
1.0019 /	1.0	List two different indications that confirm that the turbine has tripped.	

WRITTEN EXAMINATION
Nuclear Training Department / Connecticut Yankee Operator Training
Course Exam : LORT SE-9
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Ques # / Pts	Question	Exam # : RO : 880045
1.0020 / 1.1	Why have the RCP labrynith seal d/p indications decreased ?	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9

Item #	Ques #	Points	Question	Answer	Exam # RO:880045
002924	1.0001	1.2	The primary RO upon receipt of RCS Low Flow at 100% pwr and noticing the RX did not trip pushed the RX trip button. Is the RX in the process of tripping at this time. Explain	No. (.6) Scram bkrs still shut (.6) LP REF: CY-OP-LOCT-87-3-S87303 000-028-EA2.07 E. OBJ: #7 4.2/4.3 DIFF: 2 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE
002925	1.0002	0.8	List two indications that #4 RCP did not trip ?	BkR. ind. (Red light) (.5) Pump amps . (.5) LP REF: CY-OP-LOCT-87-3-S87305 003-000-A3.02 E. OBJ: #5 2.6/2.5 DIFF: 2 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE
002926	1.0003	1.4	The RCP Low Flow alarm was due to which of the following events: A. Undervoltage B. Bkr opening C. Rotor Shear D. Seized Rotor	(Rotor Shear C (1.0) LP REF: CY-OP-LOCT-87-3-S87305 000-015-E2.01 E. OBJ: #5 3.0/3.5 DIFF:3 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9

tem #	Ques #	Points	Question	Answer	Exam # RO-887045
002927	1.0004	1.1	A. Which RCS loops have reverse flow?	A. #4 (0.6)	
			B. Which RCS loops will develop reverse flow? Assume all automatic actions associated with the turbine trip occurs.	B. #1 & #3 (0.5)	
				LP REF: CY-OP-LOCT-87-5-S87503 000-007-EA1.04	K/A REF:
				E. OBJ: #6	K/A
				RATING: 3.8/3.7	
				DIFF: 2	
				PROCEDURE REF:	
				TIME:1 minute	
002928	1.0005	0.8	Why were Pzr. spray valves ineffective in mitigating the RCS. pressure transient prior to the turbine trip?	Short cycling (No flow in loop #4 , spray flow from loop #3 back through loop #4 spray line.) or Loop 4 spray not available or PZR Press controller in Remote Manua	
				LP REF: CY-OP-LOCT-87-5-S87503 000-029-EA1.01	K/A REF:
				E. OBJ: #7	K/A
				RATING: 2.8 3.1	
				DIFF: 2	
				PROCEDURE REF:	
				TIME:1 minute	

for the following.
1. R Reaves.
2. C Cannella.
3. M Baca
4. M White
5. R Braun
6. J Banks.

002929	1.0006	1.4	Using all loop Taves calculate the actual plant tavg?	Loop #1 + Loop #2 + loop #3 + Loop #4 Tave. devided by four. Value to be determined on the day of exam +/- 5 Deg F. 5 degrees F (1.5)	
				LP REF: CY-OP-LOCT-87-5-S87503 000-017-EA1.09	K/A REF:
				E. OBJ: #6	K/A
				RATING: 3.2/3.2	
				DIFF: 3	
				PROCEDURE REF:	
				TIME: 2 minutes	

$$\frac{585 + 586 + 584 + 533}{4} = 572$$

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department Connecticut Yankee Operator Training
LOP 12-9

Item #	Ques #	Points	Question	Answer	Exam # RO:880045
002930	1.0007	2.0	Neglecting the effects of control rods , what is presently controlling Reactorpower ?	Feed flow and S/G safeties are controlling RX pwr. (0.5 each) concepts applied. MTC, FTU, VOIDS LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 000-029-EA2.01 E. OBJ: #7 K/A RATING: 4.4/4.7 DIFF: 3 PROCEDURE REF: TIME:2 minutes	
002931	1.0008	1.0	Why is charging flow at a minimum?	PZR level exceeding programmed value. (1.0) or PZR level on Remote manual for LP REF: CY-OP-LOCT-87-5-S87503 K/A REF: 011-000-A1.13 E. OBJ: #8 K/A RATING: 3.1/3.4 Diff: 2 PROCEDURE REF: TIME:1 minute 1. R Reeves. 2. M. White. 3. R Brown 4. M Baca 5. C Cannella 6. J Banks.	
002932	1.0009	1.4	Why is PZR level setpoint 50% at this time?	Level ref is clipped at 562 deg F (1.0) or we are in temp comp auto (1.0) concepts applied LP REF: CY-OP-LOCT-87-3-S87302 K/A REF: 011-000-A1.04 E. OBJ: #6 K/A RATING: 3.1/3.3 DIFF: 3 PROCEDURE REF: TIME:1 minute	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9

tem #	Ques #	Points	Question	Answer	Exam # RO:880045
002933	1.0010	1.4	Determine the status of the four feed regulating valves and explain any differences.	#1, 2 & #3 are wide open (.25) #4 is shut. #4 is shut (.25) because of high level override at 69% (.5)	
				LP REF: CY-OP-LOCT-87-5-S87503 059-000-A4.08 E. OBJ: #6 RATING: 3.0/2.9 DIFF: 3 PROCEDURE REF: TIME:1 minute	K/A REF: K/A
002934	1.0011	1.2	After verifying >320 gpm AFW flow what effect, if any, would the RO have on S/G level if he shuts the feed line MOVs and leaves them shut. Assume no other changes to plant conditions take place.	Level decrease in all S/Gs (1.0)or Eventual dry out of the S/Gs (1.0)	
				LP REF: CY-OP-LOCT-87-5-S87503 000-029-EA1.15 E. OBJ: #5 4.1/3.9 DIFF: 2 REF: TIME:1 minute	K/A REF: K/A RATING: PROCEDURE
002935	1.0012	0.8	Why are all four feed regulating valve auto control signals on the controllers indicating 0% output?	The output signal is controlled by the Auto setpoint, and this is based upon SF/FF & S/G level, #1, 2 & 3 SF is low (.5) #4 Level is high thus all four output signals are low (.5) (Concept applied) (or stm Loss)	
				LP REF: CY-OP-LOCT-87-5-S87503 059-000-K4.18 E. OBJ: #6 2.8/3.0 DIFF: 2 REF: TIME:3 minutes	K/A REF: K/A RATING: PROCEDURE

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9

Item #	Ques #	Points	Question	Answer	Exam # RO:880045
002936	1.0013	1.1	Steam line isolation occurred on high stm flow Delta P. Explain how loss of flow in loop 4 led to this condition.	As flow in loop 4 decreased temp in that loop decreased stm flow went down, the other 3 S/Gs picked up the stm flow thus tripping the MLs. (Concept applied) LP REF: CY-OP-LOCT-88-4-L88403 K/A RATING: 003-000-K3.02 E. OBJ: #2 K/A RATING: 3.5/3.8 DIFF: 2 TIME:2 minutes	
002937	1.0014	2.0	List 3 different methods that could be taken at this time in the control room to shutdown the Reactor? (Assume both Reactor trip buttons have been pushed.)	Drive Rods, Emergency boration, Open Bus 4841 & 4971 Bkrs, Trip turbine. (.33 each-3 req'd) LP REF: CY-OP-LOCT-87-5-S875U3 K/A REF: 000-029-E[illegible]12 E. OBJ: #[illegible] K/A RATING: 4.4/4.7 DIFF: 3 PROCEDURE REF: TIME:1 minute	
002938	1.0015	1.3	The SRO based on feedback from his operators has told the SS "I have completed E-0 am transiting to ES-0.1." What procedure should he be in at this time.	Should be in FR-S.1. (1.0) LP REF: CY-OP-LOCT-88-1-L88105 K/A REF: 000-029-E[illegible]12 E. OBJ: #9 K/A RATING: 4.4/4.7 DIFF: 2 PROCEDURE REF: TIME:1 minute	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9

tem #	Ques #	Points	Question	Answer	Exam # RO:880045
02939	1.0016	1.3	For the following parameters indicate if they would be higher than, lower than or the same if this accident had occurred at EOL conditions. a. RX pwr b. Tavg	a. Lower. (.50) b. Lower. (.50) LP REF: CY-OP-LOCT-88-4-L88402 K/A REF: 000-029-EK1.01 E. OBJ: #16 K/A RATING: 2.8/3.1 DIFF: 3 PROCEDURE REF: TIME. 1 minute	
003449	1.0017	1.4	Classify the event. A manual reactor tripped has been attempted. (Assume all efforts have been attempted to trip the RX and were unsuccessful .)	Site Area Emergency (C-2) (1.0) LP REF:EP-[illegible]0 K/A REF:000029GEN2 K/A RATING:3.[illegible] 4.3 EO: 7 PROC REF:EPIP 1-5.1 DIFF: 3 TIME: 1 MINUTES	
003450	1.0018	1.3	List four of the RPS trip signals present up to now that should alone been able to trip the reactor.	RCP BKR open. Rx Trip Push button (manual) Low auto stop oil Low RCS flo[illegible] 1/4 steam line [illegible]p valve shut turbine st[illegible] valves shut pressurize[illegible] high pressure High steam [illegible]ow 110% 2 of 4 (.25 each) Low RCS flow 2/4 LP REF:87-E-S875D1 K/A REF:000007EA2.02 K/A RATING: 4.[illegible] 4.6 EO:3 PROC REF:E-0 DIFF:2 TIME:1MINUTES	

WRITTEN EXAMINATION ANSWER KEY
Nuclear Training Department / Connecticut Yankee Operator Training
LORT SE-9
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Item #	Ques #	Points	Question	Answer	Exam # RO:880045
003451	1.0019	1.0	List two different indications that confirm that the turbine has tripped.	Stop valves shut Gov valves shut Low auto stop oil pressure (.5 each)	
				LP REF:87-5-S87502 K/A REF:045000A3.04 K/A RATING: 3.4/3.6 EO:3 PROC REF:E-0 DIFF: 2 TIME: 1 MINUTES	
003452	1.0020	1.1	Why have the RCP labrynith seal d/p indications decreased ?	RCS pressure has increased. (to greater than that of seal supply) (1.0)	
				LP REF:87-[illegible]-L06 K/A REF: 004000A1.03 K/A RATING: [illegible] 3.8 EO: TLO PROC REF: DIFF:2 TIME: 2 MINUTES	