NRC REGION III

INITIAL LICENSE EXAM

JOB PERFORMANCE MEASURE

JPM: SRO ADMIN d.

TITLE: DETERMINATION OF WHETHER RADIOLOGICAL DOSE LIMITS WILL BE EXCEEDED

CANDIDATE: _____

EXAMINER: _____

JOB PERFORMANCE MEASURE
DATA PAGE

Task: Determination of whether Radiological Dose Limits Will Be Exceeded

Alternate Path: NO

Facility JPM #: N/A NRC 2005, RO

K/A: G.2.3.4 Importance: RO: N/A SRO: 3.7

K/A Statement: Knowledge of radiation exposure limits under normal or emergency conditions.

Task Standard:

Preferred Evaluation Location: Simulator __X__ In Plant _____

Preferred Evaluation Method: Perform __X__ Simulate _____

References: 10 CFR 20
EN-RP201, Dosimetry Administration
EN-RP205 Prenatal Monitoring
HP 11.1, ALARA Job Performance Reviews
HP 2.6, Containment Entry With The Reactor Critical
Radiological Survey Sheet, Containment 607' (path taken to P-50D and Regen Hx)

Validation Time: 15 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT_____ UNSAT _____

Comments:

Examiner: _____ Date: _____
Signature

EXAMINER COPY ONLY

Tools/Equipment/Procedures Needed:

- Marked up Radiological Survey Sheet, Containment 607'

Also see **Simulator Operator Instructions** (last page of this document).

READ TO CANDIDATE

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:
Two jobs are scheduled inside of containment. One is to inspect the PCP P-50D seal area, and the second is to inspect the Regenerative heat Exchangers for shielding installation. The conditions under which these tasks are to be performed are as follows:

P-50D Seal Inspection:

- A power reduction from 100% to 5% has been performed.
- The Shift Manager has directed you to determine if Worker 1 or Worker 2 can perform a containment entry to inspect the P-50D Primary Coolant Pump seal area for leakage.
- The transit route dose rate is < 6mR/hr except as noted on the provided survey maps.
- Rad Protection has determined the lowest dose route is that which is marked on the survey maps.
- Rad Protection estimates that it will take 30 seconds each way to pass through the field of the Regenerative Heat Exchangers.
- Ops estimates that it will take 5 minutes at the PCP seal area for the inspection.
- Operations estimates that it will take 20 minutes inside Containment including the transit time and the inspection time.
- Worker #1 and Worker #2 have accumulated 1537.2mR and 1516.4mR respectively so far this year.
- A pre-job brief has already been performed.

Regen Heat Exchanger Inspection:

- A power reduction from 100% to 5% has been performed.
- The Shift Manager has directed you to determine if Worker 3 or Worker 4 can perform a containment entry to inspect the Regen Heat Exchangers for shielding installation.
- The transit route dose rate is < 6mR/hr except as noted on the provided survey maps.
- Rad Protection has determined the lowest dose route is that which is marked on the survey maps.
- The inspection will consist of photographing the area around the Regen Heat Exchangers.
- This evolution should take 20 seconds in the high radiation field around the Regen Heat Exchangers to complete.
- Worker #3 is a declared pregnant female who has received a total of 378mR during the year, all of which was received during her pregnancy.
- Worker #4 has accumulated 1922mR so far this year.
- The workers estimate that they will need to be inside containment for less than 3 minutes.
- A pre-job brief has already been performed.

INITIATING CUES:
Your task is to determine if any of these workers will exceed any established dose limits during the performance of these jobs. Report the total accumulated dose for each worker to the Shift Manager and inform him if any limits will be exceeded.

Proc. Step	TASK ELEMENT 1	STANDARD	Grade
n/a	Calculate dose received passing through the Regen Hx radiation field.	Calculate dose received to be 100mR for each time the Regen Hx is passed for a total of 200mR per worker (once going to the PCP and once coming back from PCP after inspection).	**S U**
Comment: **(12000mR/hr) (1hr/3600sec) (30 sec/trip) (2 trips) = 200mR**			

Proc. Step	TASK ELEMENT 2	STANDARD	Grade
n/a	Calculate dose received near P-50D PCP.	Calculate dose received to be 270mR per worker at PCP for the inspection.	**S U**
Comment: **(3240mR/hr) (5min) (1hr/60min) = 270mR**			

Proc. Step	TASK ELEMENT 3	STANDARD	Grade
n/a	Calculate dose received for transit inside containment.	Calculate dose received to be < 6mR per worker for transit time within containment.	**S U**
Comment: **(<6mR/hr) (14min) (1hr/60min) = 1.4mR**			

Proc. Step	TASK ELEMENT 4	STANDARD	Grade
n/a	Calculate total dose received by each worker during inspection.	Calculate total dose received by each worker during inspection of approx. 471.4mR.	**S U**
Comment: **200mR + 270mR + 1.4mR = 471.4mR**			

Proc. Step	TASK ELEMENT 5	STANDARD	Grade
n/a	Calculate total dose each worker has accumulated.	Calculates accumulated dose received after inspection to be 2008.6mR for Worker #1and 1987.8mR for Worker #2.	**S U**
Comment: **Worker 1 471.4mR + 1537.2mR = 2008.6mR** **Worker 2 471.4mR + 1516.4mR = 1987.8mR**			

Proc. Step	TASK ELEMENT 6	STANDARD	Grade
n/a	Determine and inform the Shift Manager that the annual admin dose limit will be exceeded by Worker 1, but not by Worker 2.	Inform the Shift Manager Worker #1 will exceed annual dose limit if allowed to perform inspection (2008.6mR > 2000mR annual admin limit).	**S U**
Comment: **CRITICAL STEP**			

Proc. Step	TASK ELEMENT 7	STANDARD	Grade
n/a	Calculate total dose received by each worker during photographing at the Regen Hx.	Calculate total dose received by each worker during photographing Regen Hx of approx. 66.7mR.	**S U**
Comment: **(12000mR/hr) (1hr/3600sec) (20 sec/trip) = approx. 66.7mR**			

Proc. Step	TASK ELEMENT 8	STANDARD	Grade
n/a	Calculate dose received for transit inside containment.	Calculate dose received to be < 0.3mR per worker for transit time within containment.	**S U**
Comment: **(<6mR/hr) (3min) (1hr/60min) = 0.3mR (may be neglected)**			

Proc. Step	TASK ELEMENT 9	STANDARD	Grade
n/a	Calculate total dose each worker has accumulated.	Calculates accumulated dose received after inspection to be 445.7mR for Worker #3 and 1989.7mR for Worker #4.	**S U**
Comment: **Worker #3: 378mR + 67.7mR = 445.7mR** **Worker #4: 1922mR + 67.7mR = 1989.7mR**			

Proc. Step	TASK ELEMENT 10	STANDARD	Grade
n/a	Determine and inform the Shift Manager that monthly dose limit to the declared pregnant worker will be exceeded.	Inform Shift Manager that Worker #3 can't perform this work, the monthly limit of 50 mr to a declared pregnant worker will be exceeded. Worker #4 will receive 67.3 mR if permitted to perform this job. Worker #4 can perform the job.	S U
Comment: **CRITICAL STEP**			

END OF TASK

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER TO UPON COMPLETION OF TASK)

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- Rad Protection has determined the lowest dose route is that which is marked on the survey maps.
- Rad Protection estimates that it will take 30 seconds each way to pass through the field of the Regenerative Heat Exchangers.
- Ops estimates that it will take 5 minutes at the PCP seal area for the inspection.
- Operations estimates that it will take 20 minutes inside Containment including the transit time and the inspection time.
- Worker #1 and Worker #2 have accumulated 1537.2mR and 1516.4mR respectively so far this year.
- A pre-job brief has already been performed.

Regen Heat Exchanger Inspection:

- A power reduction from 100% to 5% has been performed.
- The Shift Manager has directed you to determine if Worker 3 or Worker 4 can perform a containment entry to inspect the Regen Heat Exchangers for shielding installation.
- The transit route dose rate is < 6mR/hr except as noted on the provided survey maps.
- Rad Protection has determined the lowest dose route is that which is marked on the survey maps.
- The inspection will consist of photographing the area around the Regen Heat Exchangers.
- This evolution should take 20 seconds in the high radiation field around the Regen Heat Exchangers to complete.
- Worker #3 is a declared pregnant female who has received a total of 378mR during the year, all of which was received during her pregnancy.
- Worker #4 has accumulated 1922mR so far this year.

- The workers estimate that they will need to be inside containment for less than 3 minutes.
- A pre-job brief has already been performed.

INITIATING CUES:
Your task is to determine if any of these workers will exceed any established dose limits during the performance of these jobs. Report the total accumulated dose for each worker to the Shift Manager and inform him if any limits will be exceeded.

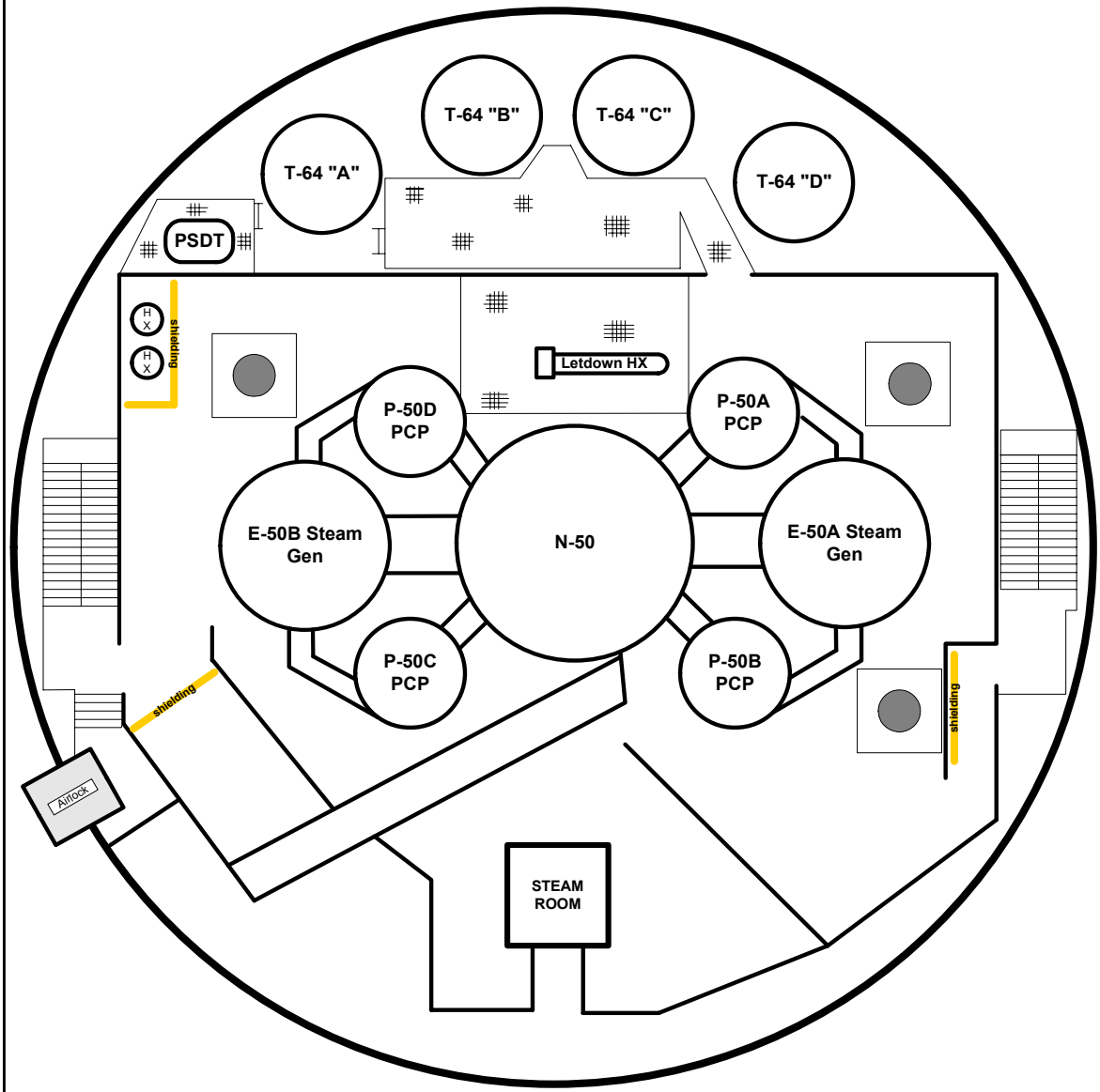
RADIOLOGICAL SURVEY SHEET

Room ID	RWP#	Item Description	Date/Time
800		CONTAINMENT 607'	

☐ Smear	☐ Gamma	Status Sheet/RWP Updated	Meter Type/Serial No.	Meter Type/Serial No.	Meter Type/Serial No.
☐ Masslinn	☐ Beta	Yes / No			
☐ Frisk	☐ Neutron	Surveyed/Recorded by	Reviewed by		Date

Note: All Dose Rates in mRem/hr unless otherwise noted.

Comments: _____



Smears dpm 100/cm^2	
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