NMC Committed to Nuclear Excellence	JOB PERFORMANCE MEASURE (JPM)

SITE: MONTICELLO NUCLEAR GENERATING PLANT

JPM TITLE: OFF-GAS HYDROGEN ANALYZER CHECKS

JPM NUMBER: JPM-0000-H-002 **REV.** 1

RELATED PRA INFORMATION: None

TASK NUMBERS / TASK TITLE(S): CR299.349
Perform OPERATIONS DAILY LOG – PARTS A, B, D, E, G, H, & J

K/A NUMBERS: 2.2.37
Ability to determine operability and/or availability of safety related equipment. **RO/SRO:** 3.6/4.6

APPLICABLE METHOD OF TESTING:

Discussion: [ ] Simulate/walkthrough: [ ] Perform: [X]

EVALUATION LOCATION: In-Plant: [ ] Control Room: [ ]

Simulator: [X] Other: [ ]

Lab: [ ]

Time for Completion: 15 Minutes Time Critical: No

Alternate Path: Yes

TASK APPLICABILITY: SRO: [X] RO: [X] NLO [ ]

Additional site-specific signatures may be added as desired.

Developed by:	Developer	Date
Validated by:	Validator (See JPM Validation Checklist, Attachment 1)	Date
Approved by:	Training Supervisor	Date

JPM Number: JPM-0000-H-002

JPM Title: Off-Gas Hydrogen Analyzer Checks

Examinee: _____ **Evaluator:** _____

Job Title: _____ **Date:** _____

Start Time _____ **Finish Time** _____

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

COMMENTS/FEEDBACK: (Make written comments for any steps graded unsatisfactory).

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

(Modify text in Briefing/Turnover Box as necessary)

JPM BRIEFING/TURNOVER
Add required site specific JPM briefing material here: for example: *This section is read once for the entire package of JPMs. It is not required to review this section for every JPM being performed in the package. The initial conditions and initiating cue(s)/tasks to be performed should be read and then provided to the examinee.* *You may use any approved reference materials normally available including logs. Make all written reports, oral reports, and log entries as if the evolution is actually being performed.* *EOP Immediate Actions are required to be performed from memory. After completing immediate action steps without using the procedure, you may then use any approved reference materials.* *If this JPM is performed on the simulator, the JPM administrator should only give cues that are NOT indicated on the simulator. If simulator indication is sufficient to indicate the completion of a step, the JPM administrator should NOT have to give a cue to the trainee to continue the evolution.*

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.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

- The reactor is operating at 100% power.
- The Process Computer and SPDS are unavailable
- The Train ‘A’ Hydrogen Analyzer ‘Z’ is out of service for maintenance.

INITIATING CUES (IF APPLICABLE):

- Perform the daily Off-Gas Hydrogen Analyzer Checks per 0000-H (Operations Daily Log – Part H), Test 0209.

Evaluator Note: Form QF-0023 is used for the determination for the use of not applicable (n/a). If the use of this form is questioned, inform the student that it has been fill out appropriately for the performance of this procedure by the CRS.

EVALUATOR NOTE: Two attachments should be provided to perform this JPM. They are pictures of the H2 chart recorders. These are provided for you to use as a cue whenever the candidate attempts to read the charts. These are used because the simulator doesn’t accurately show the normal unsteady readings of the charts and it also doesn’t show when the analyzers re-zero.

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JPM PERFORMANCE INFORMATION

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

Required Materials: See simulator setup

General References: Procedure 0000-H; Test 0209, Rev 91

Task Standards: Perform the Daily Off-Gas Hydrogen Analyzer Checks

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

IMPORTANT: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step SHALL result in failure of this JPM, per FP-T-SAT-73, Licensed Operator Requalification Program Examinations.

Performance Step: 1 **Critical N**	Locates procedure 0000-H (Operations Daily Log – Part H) step 3.
Standard:	Locates appropriate procedure and step.
Evaluator Cue:	After the candidate describes where to get a copy of the procedure hand the candidate a copy of procedure 0000-H.
Evaluator Note:	Procedure 0000-H is normally kept on a clipboard within the Control Room.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 2 **Critical Y**	Procedure Step 3 If an Off-Gas System air ejector is in operation, Or if within 24 hours of expected conditions requiring air ejector operating, Then perform the following: a. Using Ops Man B.07.02.01-05 (Recombiner System – System Operation), determine and check the box for each train's operable H_2 analyzer channels. Train A: X ☐ Y ☐ Z ☐ Train B: X ☐ Y ☐ Z ☐ B.07.02.01-05 2. Plant Operating Requirements e. In order to consider Hydrogen Analyzers operable, the following criteria should be met: 1) Hydrogen readings should have unsteady indication greater than or equal to -0.1 %. Hydrogen readings may be taken from AR-7554A/B, SPDS Display 570 or 571, or process computer points OGR121-OGR126. 2) Rotometer readings should be greater than 50 CCM, AND less than full scale. Bypass flow 1800 to 2800 CCM.
Standard:	1. Checks for unsteady hydrogen readings > -0.1% on AR-7554A/B 2. Calls TBO for rotometer and bypass flow readings.
Evaluator Cue:	1. If candidate attempts to use the Process Computer or SPDS, remind them that they are unavailable. The simulator is unable to provide unsteady indications on AR-7554A/B. 2. **Hold up the provided attachments of the chart recorders that show them that the readings are unsteady.** 3. Report as the TBO that all off-gas hydrogen analyzer rotameter readings are **65 CCM** and bypass flow is **2200 CCM**.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

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Performance Step: 3 **Critical N**	Procedure Step 3.a.1) If an operating train has one or less operable channel, Then initiate required actions per ODCM-03.01, Table 3.
Standard:	Determines that a sufficient number of Off-Gas H_2 Analyzers are in operation.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 4 **Critical Y**	Procedure Step 3.b In matrix below perform the following: 1) Check Yes or No for Train Operating status.
Standard:	Places a check in the 'Yes' block for Train A and Train B.
Evaluator Cue:	None
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 5 **Critical Y**	STEP 3.b.2) Record channel analyzer % H_2 indications. Indications may be obtained from AR-7554A/B, SPDS display 572, or process computer points OGR121 – OGR126.
Standard:	Records the following from AR-7554A/B: 1. 0.7 for Train A H_2 Analyzer X 2. 0.1 for Train A H_2 Analyzer Y 3. 0.2 for Train B H_2 Analyzer X 4. 0.3 for Train B H_2 Analyzer Y 5. 0.1 for Train B H_2 Analyzer Z
Evaluator Cue:	If the candidate attempts to monitor SPDS display 572 or check process computer points OGR121-OGR126, inform the candidate that the hydrogen analyzer readings should be taken from the recorder.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 6 **Critical Y**	STEP 3.b.3) Check Yes or No for each analyzer re-zeroing within past 8.5 hours.
Standard:	1. Determines that analyzer Y on Train B has NOT re-zeroed. 2. Checks NO box for analyzer Y on Train B.
Evaluator Cue:	**Display the two chart recorder pictures so the candidate can determine which analyzers have re-zeroed.**
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

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Deleted: If re-zero spikes are NOT present, inform candidate that all analyzers have re-zeroed except the Y analyzer

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Performance Step: 7 **Critical Y**	STEP 3.b.3).a) If an analyzer has NOT re-zeroed, Then perform manual re-zeroing of analyzer per Ops Man B.07.02.01-05, And notify System Engineer during normal working hours.
Standard:	1. Directs the Turbine building operator to re-zero analyzer Y on train B. 2. Informs the system engineer.
Evaluator Cue:	State that the Turbine building operator has re-zeroed the analyzer. Also, inform him that another operator will inform the system engineer and that he is to continue with the procedure.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 8 **Critical Y**	STEP 3.b.4) For each train record the difference between its Channel X, Y and Z Highest and Lowest % H_2 indications, and record reactor power.
Standard:	Records Train A H_2 Analyzer 'Highest-Lowest' difference of 0.6, Train B H_2 Analyzer 'Highest-Lowest' difference of 0.2, and reactor power of 100%.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Performance Step: 9 **Critical Y**	STEP 3.b.4).a) If difference is > 0.5%, Then notify System Engineer during normal working hours, And notify Shift Supervision to determine actions and notifications.
Standard:	1. Determines that the 'Highest-Lowest' difference recorded is > 0.5% and notifies the System Engineer. 2. Informs the CRS that Train 'A' Hydrogen Analyzer 'A' is NOT operating within design tolerances.
Evaluator Cue:	Acknowledge the report as the System Engineer and CRS that Train 'A' Hydrogen Analyzer X is NOT operating within design tolerances.
Evaluator Note:	The candidate should make an entry in the comments section of the procedure stating that Train 'A' Hydrogen Analyzer 'A' is NOT operating within design tolerances. He may wait to the completion of procedure to perform this step.
Performance:	**SATISFACTORY** ☐ **UNSATISFACTORY** ☐
Comments:	

Terminating Cues: Operator informs the evaluator that the task is complete.

Stop Time: _____

Historical Record: Procedure revision and editorial updates for 2009 NRC Exam

JPM SETUP INFORMATION

Instructor Actions Prior to JPM Administration:

SIMULATOR SETUP:

- Initialize the simulator to 100% power (IC-286 for 2009 NRC Exam).
- Verify annunciator C-252A-28 is forced into alarm.
- Verify a T.I.T. is hanging on Panel C-252 stating that Train 'A' Hydrogen Analyzer 'Z' is out of service for maintenance.
- Verify that chart recorder paper contains a re-zero spike within the past 4 hours for each analyzer except Train A Analyzer 'Z' and Train B Analyzer 'Y'.
- Verify a copy of the 0000-H procedure is located on a clipboard and located at the Leads desk.
- Verify the Off-gas hydrogen analyzers are reading as follows:
  - 0.7 for Train A H2 Analyzer X
  - 0.1 for Train A H2 Analyzer Y
  - Failed high on Train A H2 Analyzer Z
  - 0.2 for Train B H2 Analyzer X
  - 0.3 for Train B H2 Analyzer Y
  - 0.1 for Train B H2 Analyzer Z

Simulator Setup: (Modify tables as necessary)

SIMULATOR - MALFUNCTIONS:

	MALF ID	MALFUNCTION TITLE	DELAY	RAMP	EVENT	VALUE	FINAL.
1.	C-252A-28	A HYD ANALYZER TROUBLE	00:00:00	00:00:00	None	1	1
2.							

SIMULATOR - OVERRIDES:

	OVERRIDE ID.	OVERRIDE DESCRIPTION	DELAY	RAMP	EVENT	VALUE	FINAL
1.	08-A4AR2(X1)	AR-7554A Pen 1	00:00:00	00:00:00	None	14	14
2.	08-A4AR2(X2)	AR-7554A Pen 2	00:00:00	00:00:00	None	2	2
3.	08-A4AR2(X3)	AR-7554A Pen 3	00:00:00	00:00:00	None	100	100
4.	08-A4AR3(X1)	AR-7554B Pen 1	00:00:00	00:00:00	None	4	4
5.	08-A4AR3(X2)	AR-7554B Pen 2	00:00:00	00:00:00	None	6	6
6.	08-A4AR3(X3)	AR-7554B Pen 3	00:00:00	00:00:00	None	2	2

SIMULATOR - REMOTE FUNCTIONS:

	REMOTE FUNC. No.	REMOTE FUNCTION TITLE	DELAY	RAMP	EVENT	VALUE	FINAL
1.							
2.							

TURNOVER SHEET

INITIAL CONDITIONS:

- The reactor is operating at 100% power.
- The Process Computer and SPDS are unavailable
- The Train ‘A’ Hydrogen Analyzer ‘Z’ is out of service for maintenance.

INITIATING CUES (IF APPLICABLE):

- Perform the daily Off-Gas Hydrogen Analyzer Checks per 0000-H (Operations Daily Log – Part H), Test 0209.

JPM-0000-H-002 (Off-Gas Hydrogen Analyzer Checks) Rev. 1

ATTACHMENT 1

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED UPON INITIAL VALIDATION AND PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the cover page filled in correctly?	☐	☐	
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	
6. If the task is NOT time critical, has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the Licensee level appropriate for the task being evaluated if required? NOT applicable to Non-Licensed Operators	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required? NOT applicable to Non-Licensed Operators	☐	☐	☐
10. Have the performance steps been identified and typed (Critical / Sequence / Time Critical) appropriately?	☐	☐	
11. Have all special tools and equipment needed to perform the task been identified?	☐	☐	
12. Are all references identified, current, and accurate?	☐	☐	
13. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	

All applicable questions must be answered "YES" or the JPM is NOT valid for use. If all applicable questions are answered "YES" then the JPM is considered valid and can be performed as written. The individual(s) performing the validation sign and date this form.

_____ _____
Validation Personnel /Date Validation Personnel/Date

_____ _____
Validation Personnel /Date Validation Personnel/Date

_____ _____
Validation Personnel /Date Validation Personnel/Date

_____ _____
Validation Personnel /Date Validation Personnel/Date

Retention: Life of Plant
Retain in: Training Record
Form retained in accordance with record retention schedule identified in FP-G-RM-01.

To be able to use the macros, after opening Word go to: Tools/Macro/Security and set the security level at either Low or Medium, close completely out of Word and reopen Word to activate Macros. If you are concerned with macro viruses, check with your site to be assured of active virus scanning.

Buttons	Results from pressing toolbar buttons
	Update JPM Information - Runs the macro for inputting information into the cover sheet. [Note: - The JPM Title and Number is automatically added to the top of the second page by the use of Cross Reference fields.]
	Add JPM Step - Adds a Performance Step table at the end of that section, prior to the 'Terminating Cues:'.
	Insert JPM Step - Inserts a Performance Step table in front of an existing Performance Step table. [NOTE: - You must have your cursor inside a Performance Step table, otherwise; you will get an error message if your cursor is anywhere else.]
	Critical Step - Toggles the Performance Step to 'Critical'. Removes **all** of the text to the right of the words '**Critical**' and replaces them with the text string ' **Y (SEQ-)**'. The cursor is placed between the '**-**' and the '**)**', to allow you to insert the sequence number for the performance step. [NOTE - You must have your cursor inside the Performance Step table you want to make into a critical step otherwise you get an error message.]
	Non-Critical Step - Toggles the Performance Step to 'Non-Critical'. Removes **all** of the text to the right of the words '**Critical**' and replaces them with the text string ' **N (SEQ-)**'. The cursor is placed between the '**-**' and the '**)**', to allow you to insert the sequence number for the performance step. [NOTE - You must have your cursor inside the Performance Step table you want to make into a non-critical step otherwise you get an error message.]
	Evaluator Note - Adds a row to the Performance Step table under the '**Standard:**' line, to allow you to enter any notes for the Evaluator.
	Remove Evaluator Note - Removes the '**Evaluator Note:**' line if it was added to the Performance Step table. [NOTE - You must have your cursor inside the Performance Step you want to remove the Evaluator Note from otherwise it removes two lines from the table above the cursor.]
	Evaluator Cue - Adds a row to the Performance Step table above the '**Performance:**' line, to allow you to enter any cues for the Evaluator.
	Remove Evaluator Cue - Removes the '**Evaluator Cue:**' line if it was added to the Performance Step table. [NOTE - You must have your cursor inside the Performance Step you want to remove the Evaluator Cue from otherwise it removes two lines from the table above the cursor.]
	Simulator Setup Page - Adds a Simulator Setup page near the end.
	Remove Simulator Setup Page - Removes the inserted Simulator Setup page.
	Update Turnover Sheet - Takes the turnover information from page 3 (JPM Briefing / Turnover page) and updates the Trainee's version of the turnover page, located prior to Attachment 1 (the last page of the JPM).
	Not For Exam Use - Places a shaded Word Art text box diagonally across the first page. To remove the text, place your cursor near the top right side of the coversheet and select the Word Art text and delete.

Retention: Life of Plant
Retain in: Training Record
Form retained in accordance with record retention schedule identified in FP-G-RM-01.

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Retain in: Training Record
Form retained in accordance with record retention schedule identified in FP-G-RM-01.

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Evaluator Note:	Re-zero is determined by a spike on the chart recorder paper within the past 8.5 hours for each hydrogen analyzer. Depending on simulator run time, these spikes may NOT appear.