JOB PERFORMANCE MEASURE

STATION: SALEM

SYSTEM: Generic Administrative - Conduct of Operations

TASK: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

TASK NUMBER: N1220400302

JPM NUMBER: 17-01 NRC SRO-A2

ALTERNATE PATH: [ ]

K/A NUMBER: G 2.1.26

IMPORTANCE FACTOR: RO: ____ SRO: 3.6

APPLICABILITY:

EO [ ] RO [ ] STA [ ] SRO [X]

EVALUATION SETTING/METHOD: Classroom

REFERENCES: SA-AA-111 Rev. 12 (checked 9-5-18)

TOOLS AND EQUIPMENT: Calculator

VALIDATED JPM COMPLETION TIME: 10 min

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: N/A

Developed By: R. Chan Rudolph Chan **Date:** 9-6-18
Instructor

Validated By: R. LAWTON R. Lawton J. BATES **Date:** 9/6/18
SME or Instructor

Approved By: M. McHugh **Date:** 10/30/18
Training Department

Approved By: J. MYERS **Date:** 10-23-18
Operations Representative

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

PERFORMED BY: _____

GRADE: [ ] SAT [ ] UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: **DATE:**

REVISION HISTORY

JPM NUMBER: 17-01 NRC SRO-A2

Rev #	Date	Description	Validation Required
00	10-3-17	New JPM. Added revision history and simulator setup pages. Editorial comments from IP 71111.11 FASA.	Yes
01	12-11-17	Incorporated NRC Prep week comments. Added information in Initial Conditions to better describe task as a High Work rate.	No

JOB PERFORMANCE MEASURE

SIMULATOR SETUP INSTRUCTIONS

SYSTEM: Generic Administrative - Conduct of Operations

TASK: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

TASK NUMBER: N1220400302

SIMULATOR IC: **N/A**

MALFUNCTIONS / REMOTES: N/A

OVERRIDES: N/A

SPECIAL INSTRUCTIONS: None

JOB PERFORMANCE MEASURE

SYSTEM: Generic Administrative - Conduct of Operations

TASK: Determine Heat Stress Requirements for Containment Entry IAW SA-AA-111

TASK NUMBER: N1220400302

INITIAL CONDITIONS:

- Unit 2 is at 100% power.
- 2PS3, PZR Spray Valve, is operating erratically and a decision has been made to enter containment to isolate the 2PS3 by closing the manual isolation valve (2PS28).
- The 2PS28 is located inside the PZR housing (dog house), upper elevation, and is known to be very physically demanding on the operators to operate. Two operators will be required to simultaneously operate the valve using a valve wrench during the entire valve operation. Operators will also have to climb ladders to access the 2PS28 in the dog house.
- The Shift Manager needs to determine the amount of resources needed to close this valve given the Heat Stress conditions.
- Rad Pro has provided a Wet Bulb Globe Thermometer (WBGT) temperature of 89 F for the work area.
- Rad Pro has determined that operators will need to wear double PCs.

INITIATING CUE:

- You are the Unit 2 Control Room Supervisor.
- **DETERMINE** the following using SA-AA-111, Heat Stress Control for the two workers:
  - What is the **Stay Time**?
  - Assume the task will need more time. What is the **Maximum Extended Stay Time**?
  - Assume the task will **NOT** use the Maximum Extended Stay Time. What is the **Recovery Time**?

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

Task Standard for Successful Completion:

1. **Determines; Stay Time = 20 mins, Maximum Extended Stay Time = 30 mins, and Recovery Time = 60 mins.**

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Name:
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* #	STEP NO.	STEP (Shaded area denotes Critical Step) (* Critical Step) (# Sequential Critical Step)	STANDARD (Bolded area identifies Task Standard)	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Provide blank copy of SA-AA-111, Heat Stress Control procedure.			
	CUE:	**PROVIDE** the operator the initiating cue AND **ENTER** START TIME AFTER operator repeats back the Initiating Cue. **START TIME:**_____			

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	4.1.1	**OBTAIN** the Dry Bulb **or** Wet Bulb Globe Temperatures in the location where employees will be physically performing work activities. Heat Stress surveys may be conducted in conjunction with radiation surveys. Remote temperature monitors may be used to obtain dry bulb temperatures. **RECORD** the temperatures in lines 1 **and** 2 of Attachment 4. 1. For locations such as the drywell, areas with multiple elevations, areas with changing ventilation or areas where work is being performed in various physical locations, temperatures should be obtained, at a minimum, at the location where most work activities will be performed (>50% of work time). 2. In areas where varied environmental conditions exist or if the worker may be exposed to varied environmental conditions, due to the type of activity performed, the worst case area WBGT must be used for determining Stay Times. This method represents the only practical solution to this set of circumstances.	CRS records Wet Bulb Globe Temperature given from Initiating Cue as 89 F on Attachment 4.		

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*	4.1.2	**CLASSIFY** the work environment as High Temperature (HT), Very High Temperature (VHT) or Extremely High Temperature (EHT). **RECORD** in line 3 of Attachment 4. 1. High Temperature: Environmental **and** work conditions that result in a calculated Stay Time. 2. Very High Temperatures: Work areas with dry bulb temperatures between 145°F and 160°F **or** WBGT between 110°F and 115°F. 3. Extremely High Temperature: Dry bulb temperatures great than 160°F **or** WBGT greater than 115°F refer to Attachment 7.	**CRS classifies the work environment as High Temperature based on work area temperature of 89 F.**		
	4.2	Evaluation of Work Rate as Low, Moderate or High			
	4.2.1	**DETERMINE** Work Rate through the use of Attachment 2, Work Rate Metabolism Guideline. **RECORD** results in line 4 of Attachment 4.			
		1. When determining the work rate, the clothing ensemble for the exposed employees should **not** be considered. Determination should be limited to the physical effort of activities.			

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		2. Low Work Rate activities involving the use of negative pressure, air-purifying respirators should, at minimum, be classified as Moderate Work Rate activities. Moderate Work Rate activities should be classified as High Work Rate if they involve the use of negative pressure, air-purifying respirators.			
		3. When determining the work rate using Attachment 2, Work Rate Metabolism Guideline, the evaluator should use the most frequent workload activity (>50% of work time) to characterize the overall activity as being Low, Moderate or High exertion. Higher exertion levels result in higher metabolic body heat generation. A. Low Work Rate is defined as sedentary activities involving sitting, standing still, and low physical effort. These include inspections **and** operation of instruments **and** powered equipment. B. Moderate Work Rate is defined as activities that are easily accomplished in a thermally comfortable environment. These types of tasks include pump **and** valve rebuilds **and** the sorting of materials. Additionally, heavy exertion activities that are broken up by periods of light activity or rest **and** do **not** involve the use of negative pressure, air-purifying respirators should be classified as Moderate Work Rate.			

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*		C. High Work Rate is defined as demanding physical work for greater than 50% of work time. Activities characterized as High Work Rate include lifting **and** movement of heavy objects **and** manual decontamination of internal plant locations. Additionally, all Moderate Work Rate activities involving the use of negative pressure, air-purifying respirators should be classified as High Work Rate activities.	**CRS determines that this task is a HIGH work rate.** This can be based on the initial condition provided that the 2PS28 is historically very hard to operate and physically demanding on them giving the high temperatures inside the PZR dog house.		
*	4.3	Identification of Clothing Ensemble	**Determines the clothing ensemble to be Double Cloth Coveralls (also known as double PCs) and the adjustment factor to add 9 F to the WBGT.**		
	4.4	Determination of Stay Times			

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*	4.4.1	**DETERMINE** the Stay Time by using the WBGT/Dry Bulb values obtained in 4.1, the work rate determined in 4.2, **and** the clothing ensemble identified in 4.3 by the following step-by-step process: 1. **LOCATE** the table in Attachment 3, Heat Stress Stay Time Limits. 2. **LOCATE** the clothing ensemble most applicable to the work activity as described in 4.3. 3. The left side of the table has WBGT/Dry Bulb value. **FIND** the WBGT/Dry Bulb value. 4. **DETERMINE** the Stay Time by adding the WBGT/Dry Bulb plus the Clothing Adjustment Factor **and** determining the work demand. Record this value in line 6 of Attachment 4.	**CRS uses the following information and Attachment 3 to determine Stay Time:** **4.1 – WBGT = 89 F** **4.2 – Work Rate = High** **4.3 – Clothing = Double PCs** **CRS adds adjustment factor to WBGT (89 F + 9 F = 98 F)** **Using Attachment 3; CRS uses the WBGT value of 98 F and a High work demand to determine a Stay Time = 20 min.**		
	4.6	Extending the Stay Time through the use of Check Times			

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	4.6.1	The following limitations apply to the use of Check Times. 1. **USE** Check Times **only** for work activities involving Stay Times contained in Attachment 3, Heat Stress Stay Time Limits. 2. Check Times **cannot** be used to extend beyond 1.5 times the established Stay Time for a given work activity. (1.5 X ST) 3. The Check Time process is designed to supplement self-determination by employees. Essentially, the process allows Stay Times to be extended if a set method of determining the physical condition of employees has been established. 4.....	CRS reads step and continues on.		
*	4.6.3	**RECORD** the Maximum Extended Stay Time in line 8 of Attachment 4, Job Evaluation Worksheet. 1. The maximum extended Stay Time when using the Check Time Process is 1.5 times the Stay Time determined in 4.4.1. (1.5 X ST)	**CRS calculates Maximum Extended Stay Time (1.5 x ST) of:** **1.5 x 20 mins = <u>30 mins</u>**		
	4.8	Determination and Application of Recovery Times			

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	4.8.1	**DETERMINE** the Recovery Time. **RECORD** the Recovery Time in line 12 of Attachment 4, Job Evaluation Worksheet.			
*	4.8.1.1	The Recovery Time calculation is used to determine the amount of time necessary for employees to recover from a high temperature job exposure. **A. CALCULATE** the Recovery Time (RT) as follows: 1. (Actual Work Time / Stay Time) x 60 minutes 2. When using liquid cooling garments under high metabolic rate conditions or when using ice vests, use four times the Attachment 3 Stay Time for computing recovery time. 3. **If** the Attachment 3 Stay Time is less than 15 minutes and cooling garments are worn, **then** use a Stay Time of 60 minutes for calculating Recovery Time.	Stay Time (ST) = 20 mins Actual Work Time = Stay Time **Recovery Time = 20/20 x 60** **Recovery Time = <u>60 mins</u>**		

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	CUE:	WHEN operator informs you the task is complete, OR the JPM has been terminated for other reasons, THEN **RECORD** the STOP TIME. **REPEAT BACK** any message from the operator on the status of the JPM and then state **"This JPM is complete"** **STOP TIME:**_____	**JPM is complete when the candidate submits the CUE SHEET.**		

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R 9-6-18

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

JPM#: 17-01 NRC SRO-A2

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 and 11 below.

R 1. Task description and number, JPM description and number are identified.

R 2. Knowledge and Abilities (K/A) references are included.

R 3. Performance location specified. (in-plant, control room, or simulator)

R 4. Initial setup conditions are identified.

R 5. Initiating and terminating Cues are properly identified.

R 6. Task standards identified and verified by SME review.

R 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

R 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure: Procedure Rev. 12 Date 9-6-18
SA-AA-111

R 9. Pilot test the JPM:
   a. verify Cues both verbal and visual are free of conflict, and
   b. ensure performance time is accurate.

NA 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

NA 11. When JPM is revalidated, SME or Instructor sign and date JPM cover page.

SME/Instructor: R. Chan Rudolph Chan Date: 9-6-18

SME/Instructor: [signature] Date: 9/6/18

SME/Instructor: [signature] BARES Date: 9/24/18

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- Unit 2 is at 100% power.
- 2PS3, PZR Spray Valve, is operating erratically and a decision has been made to enter containment to isolate the 2PS3 by closing the manual isolation valve (2PS28).
- The 2PS28 is located inside the PZR housing (dog house), upper elevation, and is known to be very physically demanding on the operators to operate. Two operators will be required to simultaneously operate the valve using a valve wrench during the entire valve operation. Operators will also have to climb ladders to access the 2PS28 in the dog house.
- The Shift Manager needs to determine the amount of resources needed to close this valve given the Heat Stress conditions.
- Rad Pro has provided a Wet Bulb Globe Thermometer (WBGT) temperature of 89 F for the work area.
- Rad Pro has determined that operators will need to wear double PCs.
- Cooling Garments will not be used.

INITIATING CUE:

1. You are the Unit 2 Control Room Supervisor.
2. **DETERMINE** the following using SA-AA-111, Heat Stress Control for the two workers:
    1. What is the **Stay Time**?
    2. Assume the task will need more time. What is the **Maximum Extended Stay Time**?
    3. Assume the task will **NOT** use the Maximum Extended Stay Time. What is the **Recovery Time**?

[Provide your answers on this sheet]