

Overview of the NRC's HRA Data Program and Recent Activities

Y. James Chang, Erasmia Lois

U.S. Nuclear Regulatory Commission

Presented at the PSAM 11/ESREL 2012 Conference
Helsinki, Finland
June 25 - 29, 2012

HRA Data Program Goal

Bridging human reliability analysis (HRA) applications in the NRC's risk-informed programs and human performance data

Human
Performance Data

HRA
Applications



Objectives

Objective 1: Inform Human Error Probability (HEP) estimates

- Produce data-driven HEPs
- Provide reference HEPs for HRA methods
- Focus on HEPs in the following risk-informed programs
 - Basic probabilistic risk assessment
 - Significance Determination Process (SDP)
 - Accident Sequence Precursor (ASP)

Objective 2: Improve understanding of operators' behavior in responding to plant malfunction(s)

- Learn from past events
- Analyze and document events to address various interests

Current Status

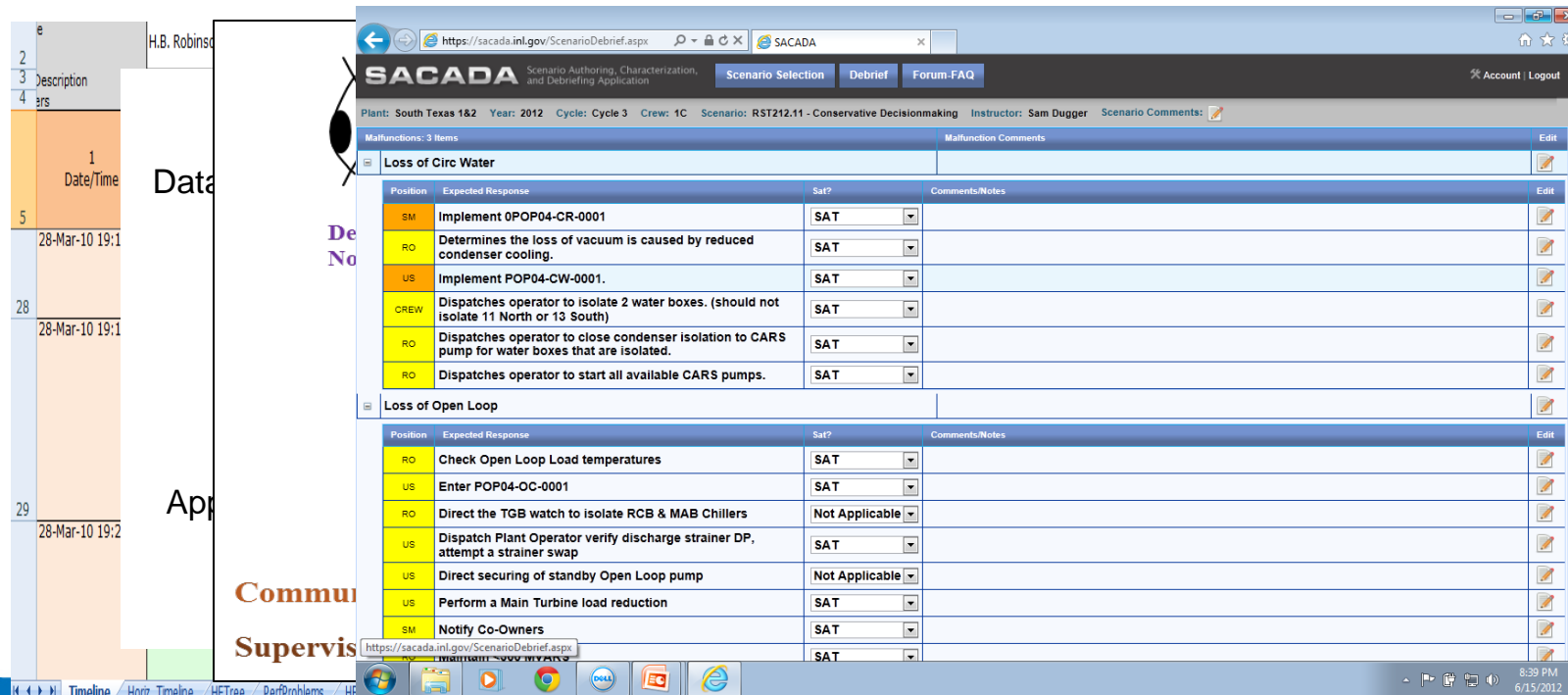
- Collecting licensed operator simulator training data
 - Signed an agreement with a US nuclear power station
- Explore the method/tool suitability for collecting
 - Experimental simulator data (e.g., Halden)
 - Real event data

Support NRC's Missions

- Support the Staff Memorandum Requirement (SRM) – M090204B
“Development of an HRA database”
- Support an NRC program office on enhancing risk-informed methods/tools

Companion Papers

- Enhanced event timeline
- Generate data-driven HEPs
- Human performance model and theoretical basis
- Simulator data fidelity for HRA/PRA



The screenshot displays the SACADA (Scenario Authoring, Characterization, and Debriefing Application) interface. The browser address bar shows <https://sacada.inl.gov/ScenarioDebrief.aspx>. The application title is "SACADA Scenario Authoring, Characterization, and Debriefing Application". The interface includes tabs for "Scenario Selection", "Debrief", and "Forum-FAQ".

Key information displayed includes:

- Plant: South Texas 182
- Year: 2012
- Cycle: Cycle 3
- Crew: 1C
- Scenario: RST212.11 - Conservative Decisionmaking
- Instructor: Sam Dugger
- Scenario Comments: [icon]

Malfunctions: 3 Items

Loss of Circ Water

Position	Expected Response	Sat?	Comments/Notes	Edit
SM	Implement OPOP04-CR-0001	SAT		[icon]
RO	Determines the loss of vacuum is caused by reduced condenser cooling.	SAT		[icon]
US	Implement POP04-CW-0001.	SAT		[icon]
CREW	Dispatches operator to isolate 2 water boxes. (should not isolate 11 North or 13 South)	SAT		[icon]
RO	Dispatches operator to close condenser isolation to CARS pump for water boxes that are isolated.	SAT		[icon]
RO	Dispatches operator to start all available CARS pumps.	SAT		[icon]

Loss of Open Loop

Position	Expected Response	Sat?	Comments/Notes	Edit
RO	Check Open Loop Load temperatures	SAT		[icon]
US	Enter POP04-OC-0001	SAT		[icon]
RO	Direct the TGB watch to isolate RCB & MAB Chillers	Not Applicable		[icon]
US	Dispatch Plant Operator verify discharge strainer DP, attempt a strainer swap	SAT		[icon]
US	Direct securing of standby Open Loop pump	Not Applicable		[icon]
US	Perform a Main Turbine load reduction	SAT		[icon]
SM	Notify Co-Owners	SAT		[icon]
SM	Notify Co-Owners	SAT		[icon]

On the left side of the screenshot, there is a vertical timeline with entries for "28-Mar-10 19:1" and "29-Mar-10 19:2". Labels "Data" and "App" are visible next to the timeline. The bottom of the screenshot shows a Windows taskbar with the system clock at 8:39 PM on 6/15/2012.

Questions?

