SAND2009-0401P

DOE-JAEA PCG Meeting: Physical Protection Project Action Sheets

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Tokyo, Japan

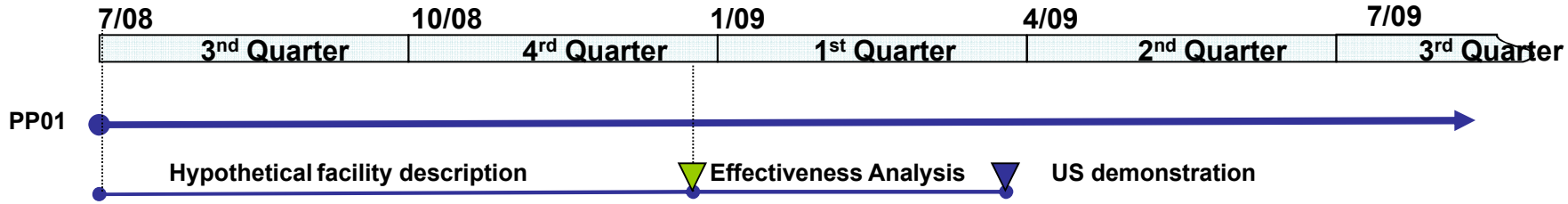
Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy's National Nuclear Security Administration under contract DE-94AL85000.

DOE-JAEA Physical Protection Project Action Sheets

- AS61 Cooperative study and training program focused on JAEA's system of physical protection for nuclear material transport with an emphasis on MOX
  - Final draft reports for Tasks 2 and 3 incorporating comments provided by JAEA have been provided to JAEA. As agreed during meeting between DOE and JAEA on February 22 this closes AS61.
  - DOE remains interested in continuing the technical collaboration in transport security.
- AS68 Physical Protection of Nuclear Materials and Facilities
  - There are no open activities under this AS. As agreed during meeting between DOE and JAEA on February 22 we recommend closing AS68.
- DOE and JAEA are currently collaborating on three physical protection related PAS
  - PP01 Demonstrations of Physical Protection System Effectiveness and Efficiency Analysis
  - PP02 Guard Post Optimization and Automated Access Control Portal Simulation
  - PP03 Video Detection and Tracking Testing and Development

PPO1 - Demonstrations of Physical Protection System Effectiveness and Efficiency Analysis

- This Project Action Sheet (PAS) provides an active demonstration of current methods and tools used to perform a comprehensive physical protection system effectiveness analysis. This demonstration will be in the form of a joint JAEA/SNL analysis of a hypothetical IAEA Category I nuclear facility.



PP01 Status

- Hypothetical Facility Documented
  - Document contains a project DBT, Guard Force (GF) information, physical descriptions with CAD drawings of buildings of interest, and process descriptions.

- Effectiveness & Efficiency Analysis is being conducted based on the hypothetical facility
  - Analysis will be used as the focal point of the System Effectiveness and Efficiency Analysis workshop *(tentatively - Mar 09)*

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Hypothetical Site Data for Security Effectiveness Evaluation & Efficiency Analysis

Plutonium Fuel Development Center (PFDC)

JANICE LEACH, JOSE R. RODRIGUEZ, ADAM WILLIAMS

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May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and category: 2 - Circumvention of Statute.

Department of Energy review required before public release

Name/Org: Janice Leach, Org. 6752 Date: December 16, 2008
Guidance (if applicable) N/A

Program Designated Special Handling: This document contains foreign government information. Modified Handling is required.

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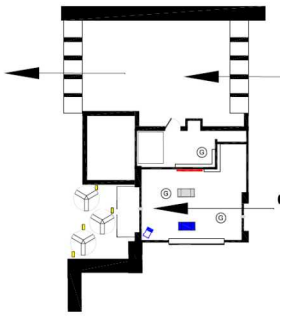
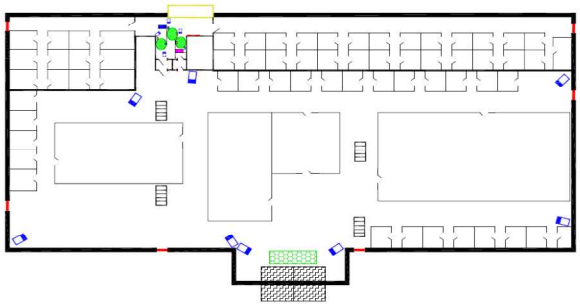
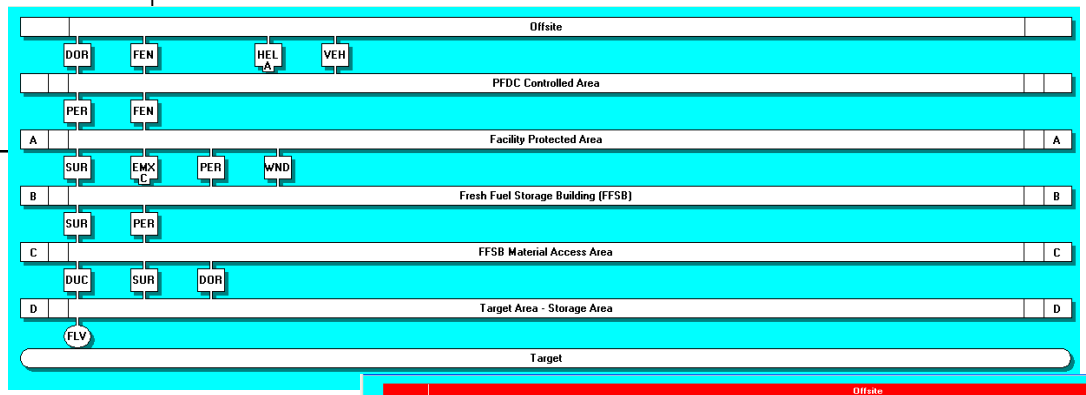
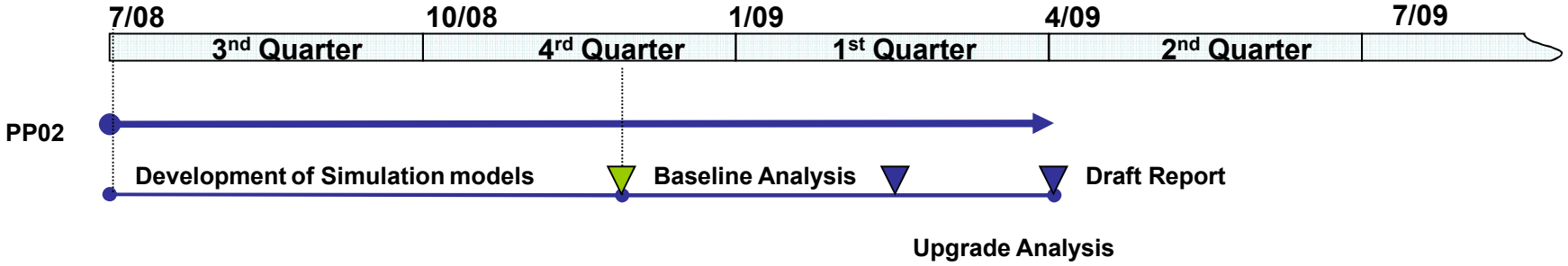






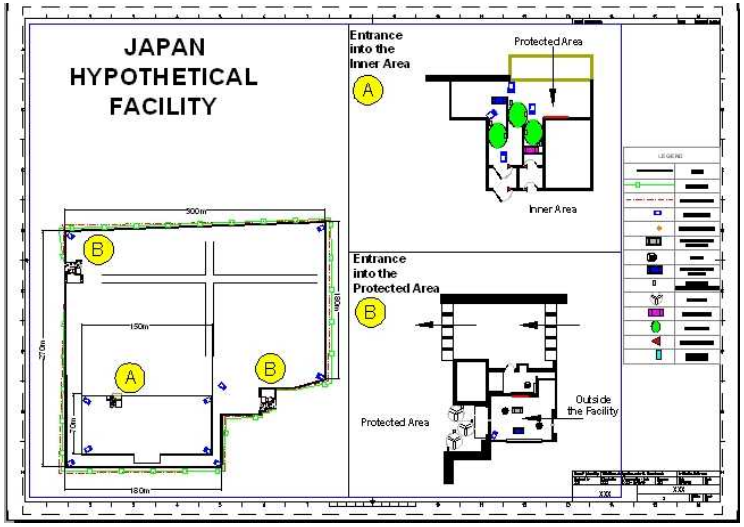
PP-02 Guard Post Optimization and Automated Access Control Portal Simulation

- This Project Action Sheet (PAS) provides for a joint, evaluation of the current effectiveness and efficiency of existing access control systems from a broad point-of-view and within existing regulations and to explore procedural and technological means for system improvement.

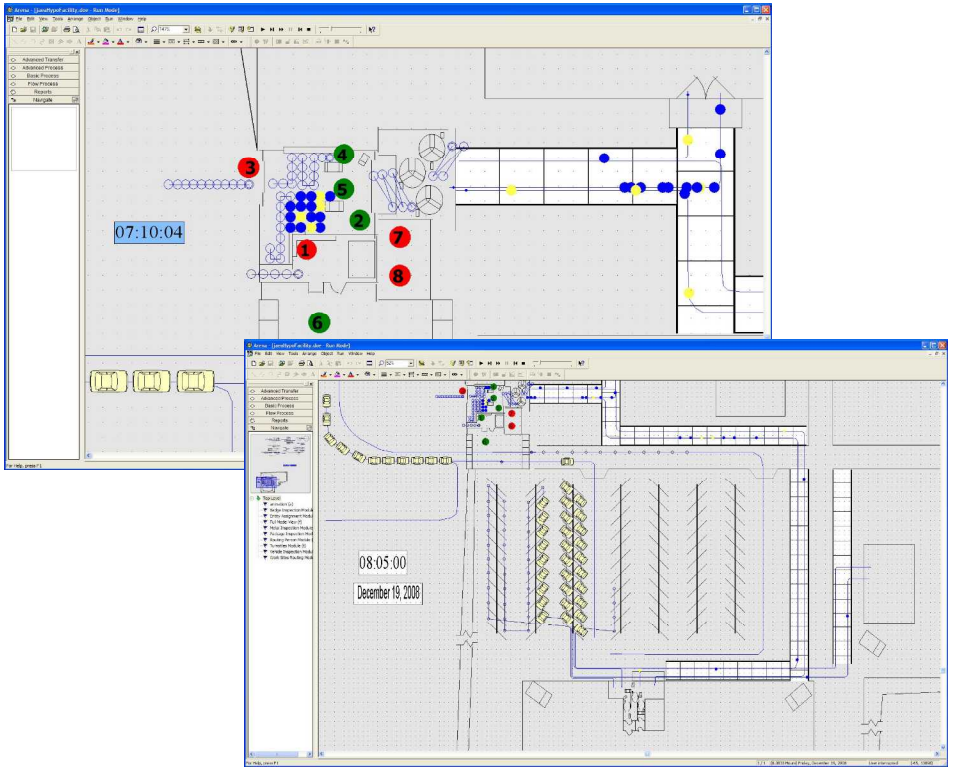


PP02 Status

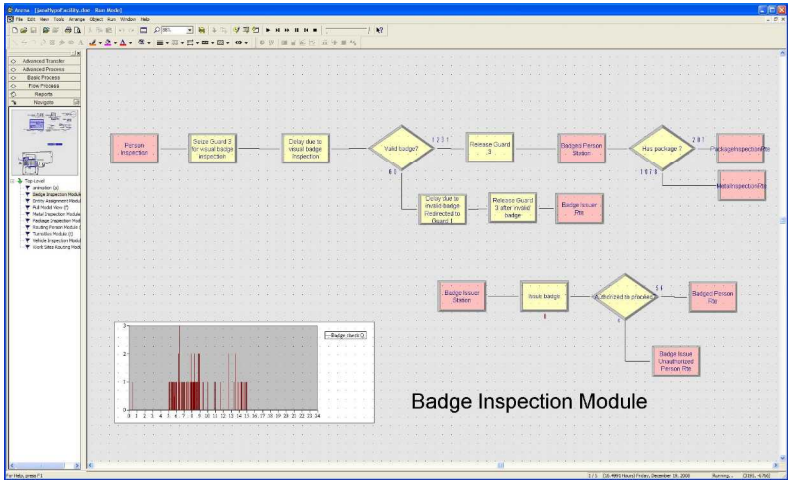
- Baseline model of initial access control portals has been implemented
  - based on generic data to demonstrate capabilities
  - can be scaled up to include additional features
  - conversion from generic data to site specific data can be accomplished easily and securely
  - provides output data and reports on
    - entities (employees, visitor, vehicles)
    - resource (guards, detectors, turnstiles, etc)
    - process queues (badge checking, badge issuing, package searching, metal detection, vehicle inspection, etc)
- Simulations are underway which will yield illustrative analyses to determine and show resource utilization and effectiveness



Physical descriptions



Animation



Process flow

Replication 1 Start Time: 0.00 Stop Time: 3,447.79 Time Units: Minutes

Issue badge Queue

Time	Average	Half Width	Minimum	Maximum
Waiting Time	0.0994	(Insufficient)	0	1.2245
Other	**Average**	**Half Width**	**Minimum**	**Maximum**
Number Waiting	0.00230682	(Insufficient)	0	2.0000

Leaving Portal Queue

Time	Average	Half Width	Minimum	Maximum
Waiting Time	0.8535	(Insufficient)	0	21.1875
Other	**Average**	**Half Width**	**Minimum**	**Maximum**
Number Waiting	0.03218329	(Insufficient)	0	2.0000

Package Inspection Guard Seize Queue

Time	Average	Half Width	Minimum	Maximum
Waiting Time	0.2121	(Insufficient)	0	3.3638
Other	**Average**	**Half Width**	**Minimum**	**Maximum**
Number Waiting	0.01531749	(Insufficient)	0	5.0000

Regroup vehicle and driver for home Queue

Time	Average	Half Width	Minimum	Maximum
Waiting Time	574.14	(Insufficient)	0	1,854.32
Other	**Average**	**Half Width**	**Minimum**	**Maximum**
Number Waiting	43.2960	(Insufficient)	0	102.00

Model Filename: C:\home\JAEA\models\jaeaHypoFacility

11:28:30AM **Resources** December 19, 2008

Hypothetical Facility Replications: 5

Replication 1 Start Time: 0.00 Stop Time: 3,447.79 Time Units: Minutes

Resource Detail Summary

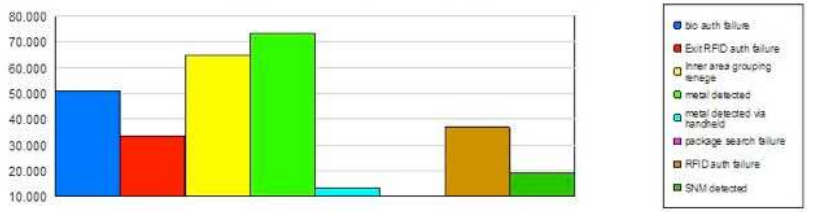
Usage

	Inst Util	Num Busy	Num Sched	Num Seized	Sched Util
Entry badge	0.06	0.06	1.00	747.00	0.06
Entry_Exit	0.07	0.07	1.00	1,397.00	0.07
Exit Badge	0.01	0.01	1.00	670.00	0.01
Guard ECP1 1	0.00	0.00	1.00	0.00	0.00
Guard ECP1 2	0.00	0.00	1.00	0.00	0.00
Guard ECP1 3	0.00	0.00	1.00	0.00	0.00
Guard ECP1 4	0.00	0.00	1.00	0.00	0.00
Guard ECP1 5	0.00	0.00	1.00	0.00	0.00
Guard ECP1 6	0.00	0.00	1.00	0.00	0.00
Guard G1	0.02	0.02	1.00	80.00	0.02
Guard G2	0.07	0.07	1.00	404.00	0.07
Guard G3	0.03	0.03	1.00	1,596.00	0.03
Guard G4	0.08	0.08	1.00	205.00	0.08
Guard G5	0.15	0.15	1.00	1,217.00	0.15
Guard G6	0.27	0.27	1.00	152.00	0.27
Guard G7	0.00	0.00	1.00	0.00	0.00
				.00	0.00
				.00	0.09
				.00	0.31

User Specified

Counter

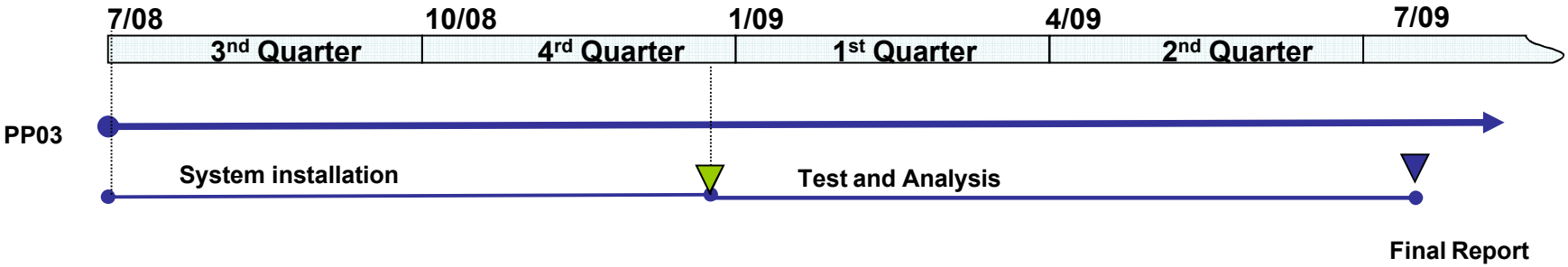
Count	Average	Half Width	Minimum Average	Maximum Average
bio auth failure	50.8000	10.25	43.0000	62.0000
Exit RFID auth failure	33.2000	9.06	25.0000	45.0000
Inner area grouping renege	64.6000	7.98	55.0000	71.0000
metal detected	73.2000	13.12	63.0000	89.0000
metal detected via handheld	13.2000	6.04	8.0000	20.0000
package search failure	10.0000	2.91	8.0000	14.0000
RFID auth failure	36.8000	10.21	24.0000	45.0000
SNM detected	19.0000	3.17	15.0000	22.0000



Example reports

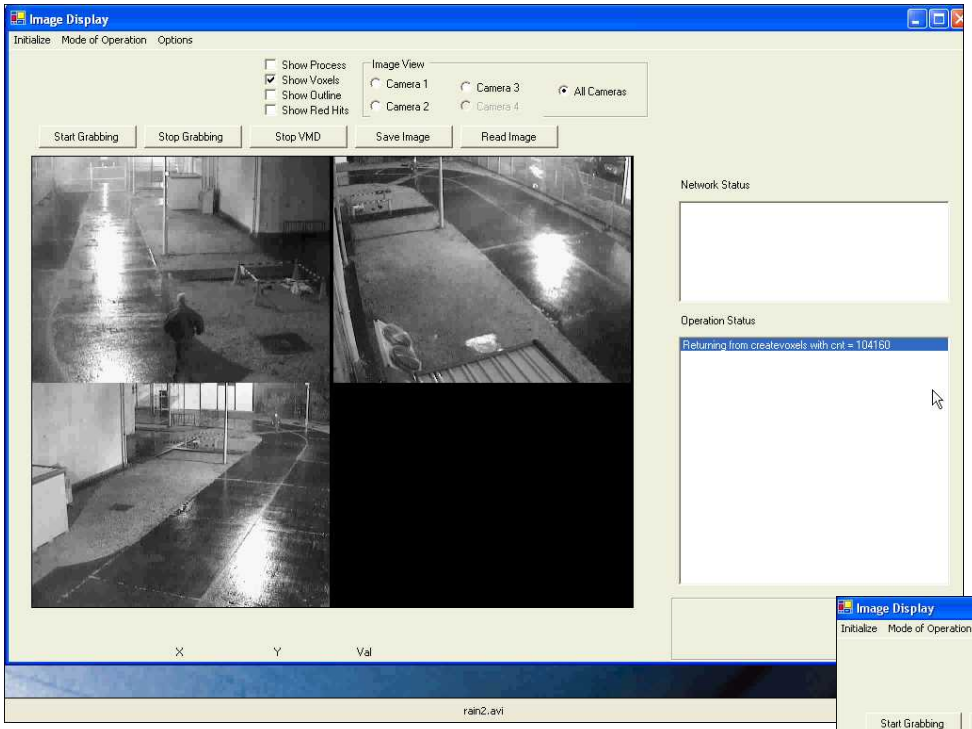
PP-03 Video Detection and Tracking Testing and Development

- The goal of this project is to conduct evaluations of two, commercial, Video Motion Detectors (VMD). A commercial model selected by JAEA and the 3D-VMD developed by Sandia National Laboratories. The two VMD systems will be evaluated to determine their capabilities and limitations in specific applications and under actual site and operational conditions.

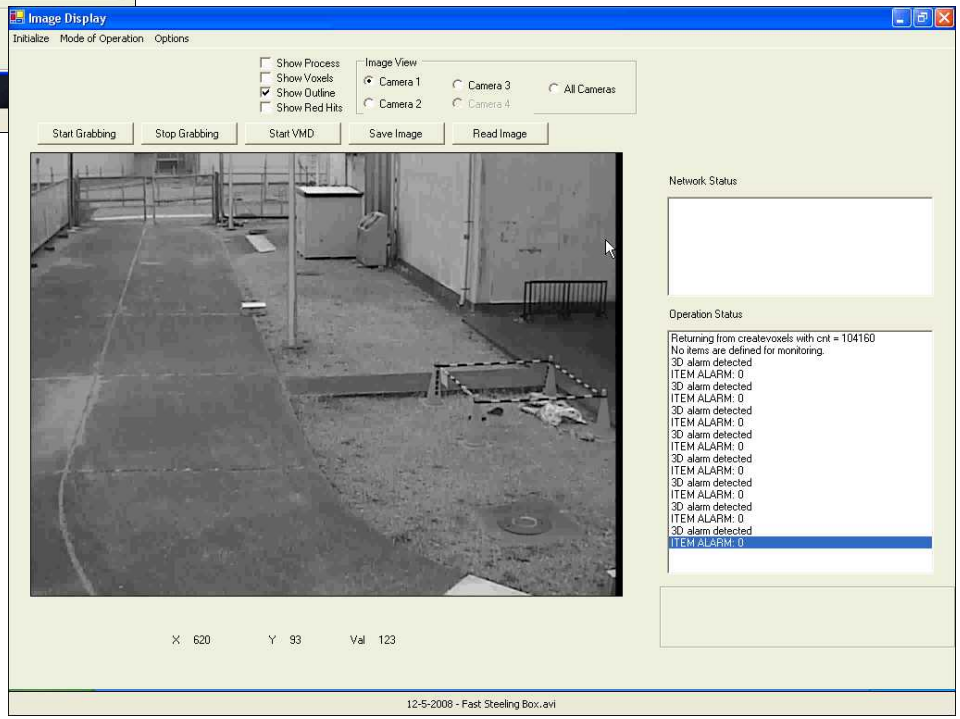


PP03 Status

- A 3DVMD system was configured and tested at a Sandia facility. Initial calibrations and configurations were completed and verified.
- The system was transported to Japan where it was installed at JAEA's VMD test facility in December 2008.
- Final calibrations, configurations and system testing was conducted.
- System is currently ready for formal testing



Night testing during rain



Item monitoring testing