

Security Risk Assessment and Management (SRAM) for Buildings and Infrastructure Protection

Purpose and Background

This seminar will provide a systematic and robust Security Risk Assessment and Management (SRAM) process for the evaluation of buildings and infrastructure protection. This applied SRAM process was originally developed by Sandia National Laboratories for the purpose of evaluating security risks from malevolent attacks at hydro-electric dams and high-voltage power transmission facilities; and was recognized by the Federal Laboratory Council as an outstanding R & D technology transfer project for 2002. Upon completion of this seminar, participants will be able to lead security analysis teams through an actual risk assessment application and arrive at risk reduction alternatives for the decision-makers to review, evaluate, and implement those options that are determined to be cost-effective, justified and realistic. This multi-disciplined seminar will provide the participants with demonstrations of how security upgrades and consequence mitigation options and priorities can be successfully applied to both building structures and infrastructures to improve their security, resilience and to assure overall risk reduction against malevolent threats.

Participants will specifically learn how to systematically: 1) screen for those most critical system as-built assets by using fault-tree analyses techniques, 2) assess an adversarial threat spectrum for likelihood of attack, 3) evaluate consequences resulting from destruction and/or interruption of project facility mission, 4) perform vulnerability analyses using physical security system performance-effectiveness techniques, and 5) achieve a reasonable measure of security risks for an existing building and/or infrastructure. This process will permit decision-makers the selection of risk reduction options that are justified through performance and cost-benefit analyses. Vulnerability logic diagrams and adversarial attack pathway-sequence diagrams will be used to determine most likely attack scenarios and to develop security strategies for effective upgrades and consequence mitigation measures. Because today's challenges to security and performance are constantly changing, the instructor will provide current events material for discussion, and encourage participants to contribute additional information for other viable solutions. A final participant project will provide instruction on how to form multi-disciplined teams to conduct, present and evaluate prototype risk assessment and management case-studies using actual example problems.

Seminar Instructor

RUDOLPH V. MATALUCCI, Ph.D., P.E., M.ASCE, RETIRED Lt. Col. (USAF), is the Managing Director of Risk Assessment Methodology (RAM) Consultants, LLC (RAMC), Specialists in Infrastructure and Architectural Surety® (2002- Present). During his twenty-two years at Sandia National Laboratories (1980- 2002), he served as project manager for DOE and DOD funded R & D programs for deeply buried nuclear waste repositories, advanced nuclear weapons security and survivability facilities, environmental cleanup of contaminated DOE sites, and building and infrastructure protection against malevolent and abnormal threats. In the twenty years with the USAF (1960-1980), he directed R & D for high- explosive blast and shock simulations for evaluation of nuclear and conventional weapons effects on hardened military structures; and directed design, construction, and testing of prototype conventional and specialized military security facilities around the world. At Sandia, Dr. Matalucci was a distinguished member of the technical staff and project manager for Infrastructure and Architectural Surety® Federal and non-Federal programs. He directed the development of the Risk Assessment Methodology for Dams and High-Voltage Power Transmission in cooperation with numerous government agencies. He is a co-author of a 2007 John Wiley & Sons published textbook entitled: "Security Risk Assessment and Management: A Professional Practice Guide for Protecting Buildings and Infrastructures." He has Civil Engineering degrees from University of New Hampshire (BSCE) and Oklahoma State University (MSCE, PhD).

- To register your group, contact John Wyrick (JWyrick@asce.org) or Stephanie Tomlinson (STomlinson@asce.org)

Summary Outline

SEMINAR COURSE TOPICS

- Introduction and Definitions
- Risk Assessment Methodology
- Threat, Consequence, & Vulnerability Assessments
- Physical Protection System Effectiveness
- Risk Reduction Options
- Security Strategies and Cost-Benefit Analyses
- Risk Management Alternative Packages
- Owner and Stakeholder Decisions
- Security-by-Design Procedures and Approvals
- Design Basis Threat (DBT) and Basis of Design (BOD) Criteria
- Engineering Designs and Implementation Phases
- Awareness Training and Security Integrated Operations
- Group Case Studies with Derived Resolutions

TOOLS AND CONCEPTS INCLUDED

- Risk Management Elements and Principles
- Facility Mission and Characterization
- Critical Asset Mission and Identification
- Incident-Threat Characterization and Analysis
- Consequence and Vulnerability Analyses
- Effectiveness of Physical Security Systems
- Adversary Attack Scenarios
- Risk Management for Decision-Makers
- Security Upgrade Strategies and Consequence Mitigation Options
- Performance Metrics and Resource Allocation

TECHNOLOGY TRANSFER

- Security Risk Assessment Principles and Methodology
- Physical Security Systems Performance
- Effects of Explosives, Hand-tools, and other Malevolent Attacks
- Engineered Innovative Materials and Applicable Protection Technologies
- Instrumentation and Non-Destructive Evaluation

GROUP EXERCISES

- Application of Tool-Sets to Case Studies
- Consensus Building through Actual Assessments and Risk Reduction Evaluation Solutions
- Alternative Security Strategies and Solutions for Integrated Designs
- Develop Report Guidelines for Use by Decision-Makers
- Group Presentations and Lessons Learned

Who Should Attend?

Participation is suggested from practicing: a) architects, b) engineers, c) commercial and industrial planners, d) law-enforcement & first responders, e) emergency planners & management, f) security protection professionals, g) infrastructure designers and operators, h) building managers and decision-makers from all disciplines who have a responsibility for the safety, security, reliability and operations of public and/or private buildings, their supporting infrastructures, and the well-being of occupants.

Seminar Benefits

- Learn application of security risk guidelines for critical asset protection that is both practical and user-friendly
- Learn tools and process of the professionals to optimize building resilience
- Experience the advantages of a systematic and robust risk process that has payoffs to owners and stakeholders
- Gain confidence by applying a performance-based security risk reduction approach to actual circumstances
- Address how to apply resilient solutions in multi-threat and multi-hazard environments
- Address challenges to security and performance in the context of risk assessment methodologies
- Prepare to meet any subsequent building security certification requirements arranged by relevant professional associations, such as ASCE.

Why Attend?

- To learn an effective systematic approach to identify, assess, and manage security risks to buildings and infrastructures with a higher level of effectiveness and return on invested capital.
- To evaluate the application and effectiveness of security risk assessment and management techniques and professional certification processes before committing agency or company resources.
- To learn how to adapt a practical and rigorous risk methodology that addresses the full scope of challenges for the protection of buildings and infrastructures.

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