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Venue Assessments and Protection

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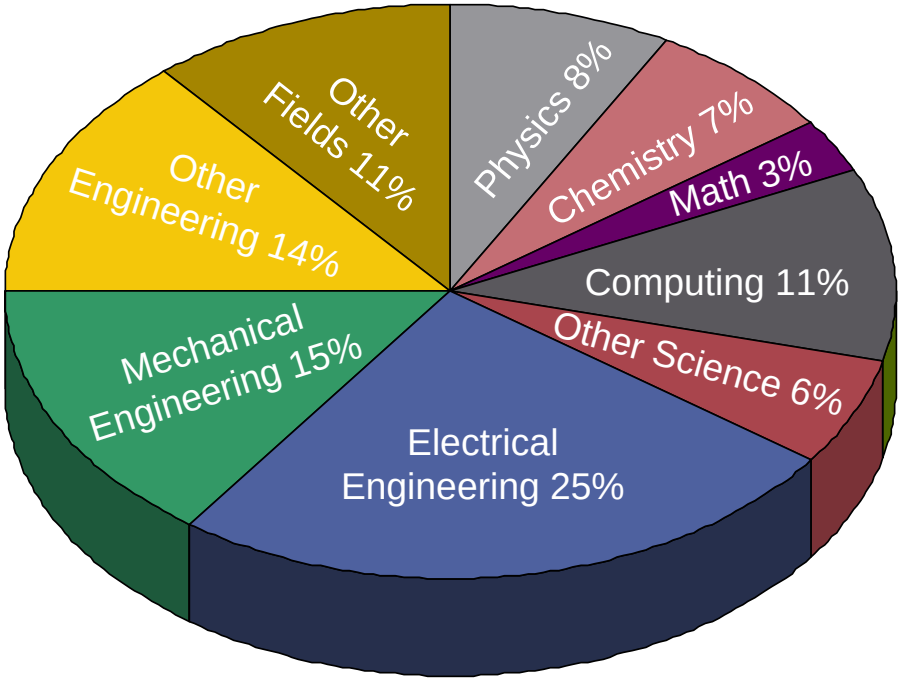
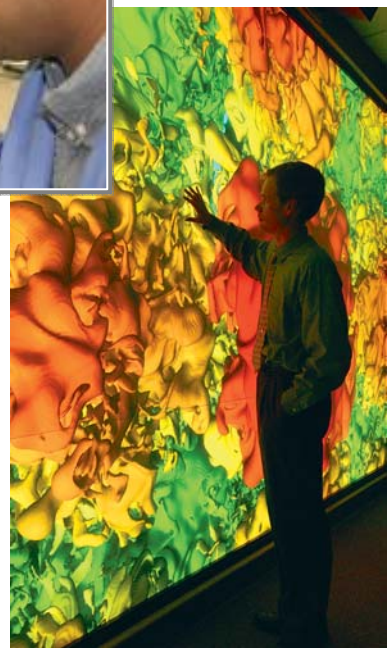
Sandia National Laboratories
Advanced Systems Deployment
“Protecting People and Assets through Technology”

Presentation Overview

- Introduction to Sandia National Laboratories
- CBRN Venue Assessment and Protection methodology
- Sandia's recent experiences with Venue Assessment and Protection
- Summary of our approach
- Summary and considerations for indoor venues

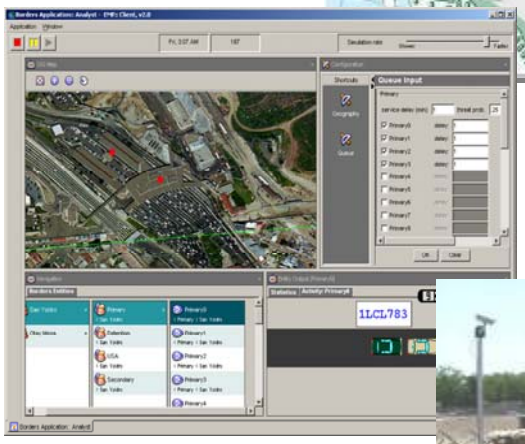
Sandia is a US Department of Energy National Laboratory dedicated to national security





- More than 9,000 employees
- Two principal sites, Albuquerque, NM, and Livermore, CA, and five test sites
- $2.3 billion FY05 operating budget

Much of Sandia's homeland security work is focused in Catastrophic Event Mitigation



- Chemical and Biological Countermeasures
- Radiological and Nuclear Countermeasures
- Explosives Countermeasures
- Border and Transportation Security

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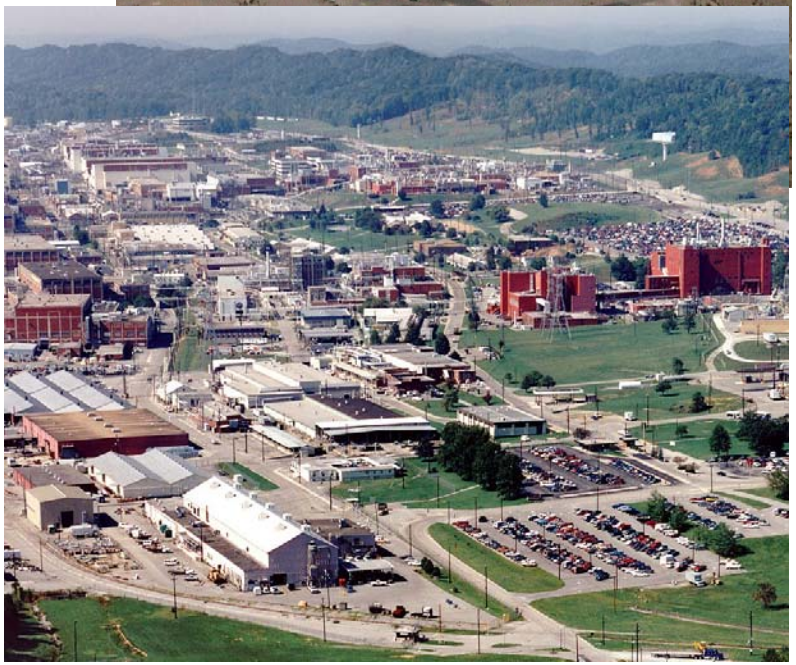
Sandia has been performing Venue Assessments and Protection for the DOE for over a decade

A critical part of our national defense mission is safeguarding high value assets and protecting the people that defend them.



We have applied our DOE venue assessment and protection expertise to the private sector

Sandia has applied the same principals used in performing DOE site assessments on office buildings, at sporting events, and transportation hubs

Chemical, biological, radiological, nuclear and explosive threats require different defense strategies:

Each threat poses a unique security challenge

Chemical threats can be detected in real time so the goal is to detect to warn and treat the impacted population

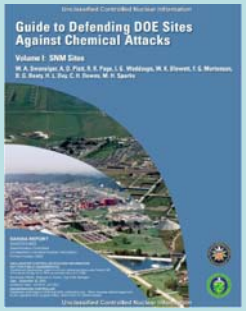
Biological threats are detected post exposure so the goal is also to detect to treat

Radiological and Nuclear threats can be detected before used, so the goal is to detect to interdict

Catastrophic explosive threats may be detected before use, detect to interdict or detect to warn, but are best deterred with using standoff barrier methods

Venue Assessment and Protection uses a single approach to protect against a range of threats

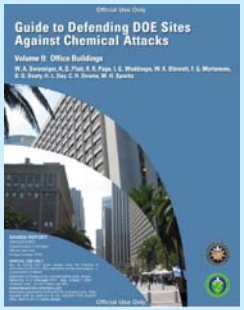
Asset Protection
Protect people defending assets



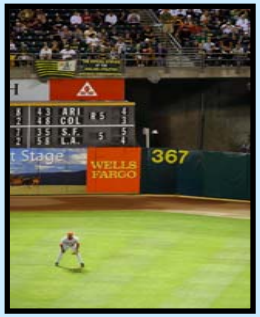
Critical Facilities

Critical Assets

Life Preservation
Protect people



Office Buildings



Special Events

seconds minutes hours days

Venue assessments and Protection uses a three step approach

1. **Prioritize the Threat**
   - What are the most likely threats – what might a terrorist use
   - Determine what is the greatest concern for venues – what are the specific threats and vulnerabilities for venues
2. **Assess the Venue**
   - What are the vulnerabilities – is there a need for additional security?
   - Prevention and mitigation strategies - what can be done for little or no cost?
   - Identify improvements and response plans for heightened security
3. **Deploy Protective Measures**
   - Develop specific response plans
   - Support response training and exercises
   - Provide special event support
   - Recommend technology upgrades

1. Prioritize the threat

What is the concern for your venue

Viable threats:

- Explosives
- Toxic Industrial Chemicals
- Chemical Warfare Agents
- Biological Agent
- Combination of Methods
- Radiological/Nuclear Device

Threat considerations:

- Lethality
- Ease of access and use
- Dispersal methods
- Persistence
- Fiscal Impact
- Psychological Impact

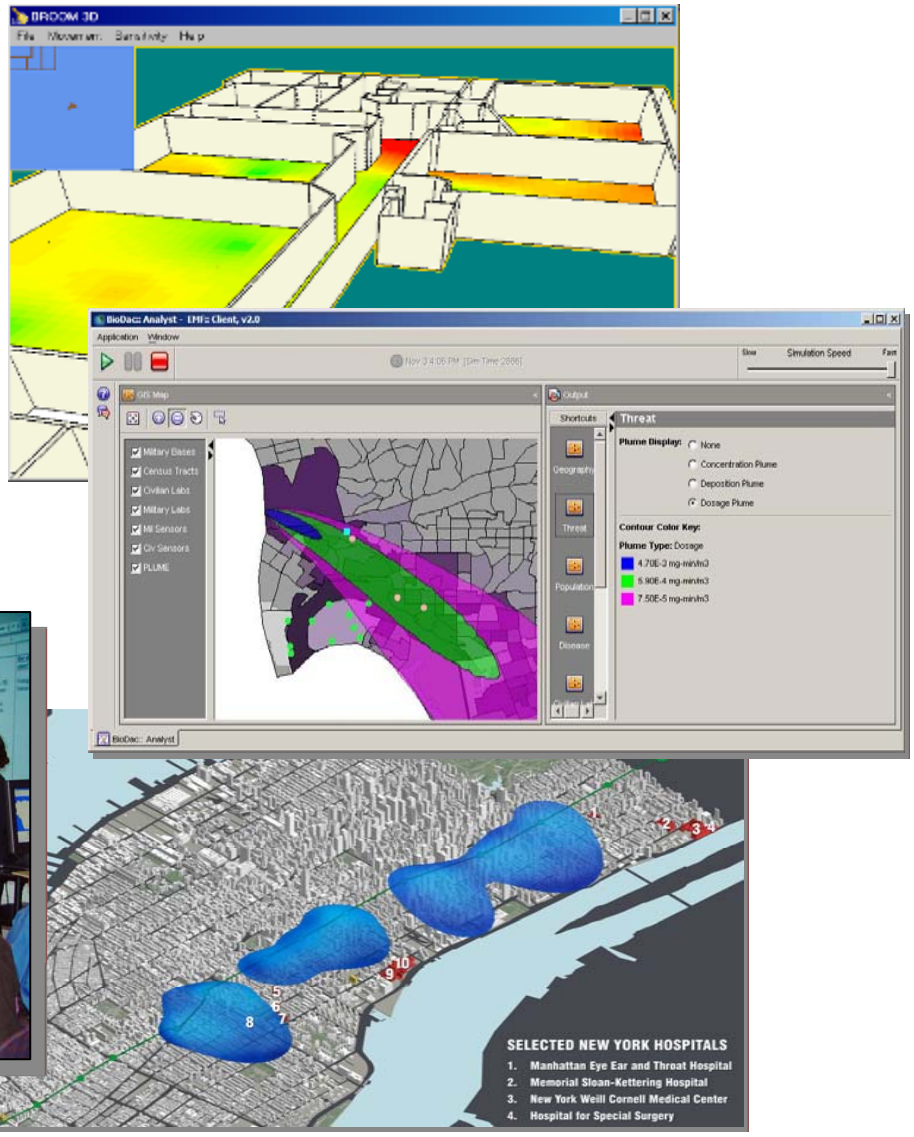
2. Assessing the Venue; Gathering Data

Sandia uses a team of federal and civilian experts to perform venue assessments:

- Potential Targets
- Force deployment/response
- Facility characteristics
  - Location of air intakes, mechanical equipment rooms, etc.
  - Air-change rates
- Relevant site characteristics
  - Meteorology
  - Terrain
  - Proximity to roads
  - Choke points

Sandia has developed modeling and analysis tools that support venue assessments

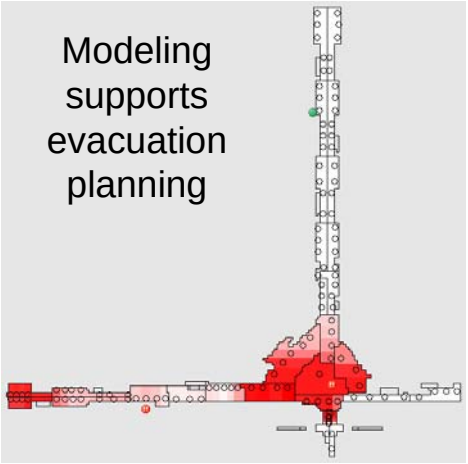
- **Weapons of Mass Destruction Decision Analysis Center (WMD DAC)**
- **Reference Scenarios**
- **Risk analysis**
- **Catastrophic Event Simulation**
- **Dispersion modeling**
- **Reports from past assessments**



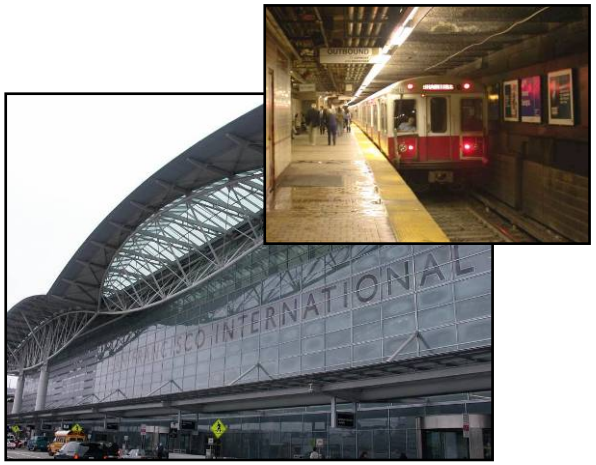
3. Deploying Protective Measures

Venue specific response plans

- Response is the most important aspect of venue protection
- We develop response plans <u>with</u> responders
  - Use the results from the vulnerability and threat assessments
  - Develop threat specific actionable responses
  - Identify and document roles and responsibilities
  - Establish key points of contact and contact information
  - Share exercise results with stakeholders



Deploying Solutions
Leverage previous investments



PROACT and PROTECT – Chem/Bio Protection of Airports and Subways

Explosives Detection Portal

RDCDS – Deployable Chem Detection

Chem Restoration with other National Lab consortium

Liquid-Phase μChemLab rapid, reliable identification of potential bioagent hazards

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Outdoor events require careful siting and response planning

- Response planning – key to protection of people
- Venue Assessment – reduce vulnerabilities, drives sensor placement
- Deployment – multiple orthogonal detection technologies reduce system false alarms

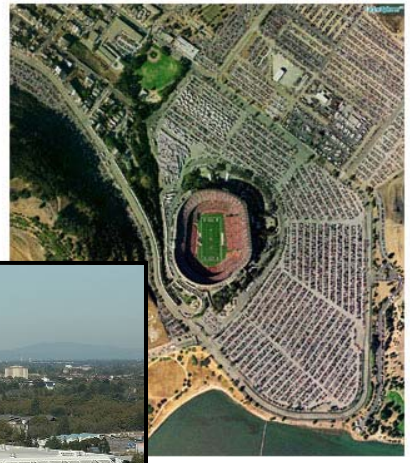
Indoor events require a completely different approach

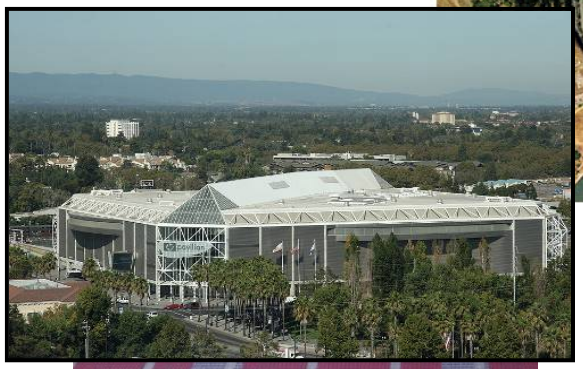
- Increased background chemical signatures
- Wireless communication challenges
- Air flow variations effect detector placement and response plans

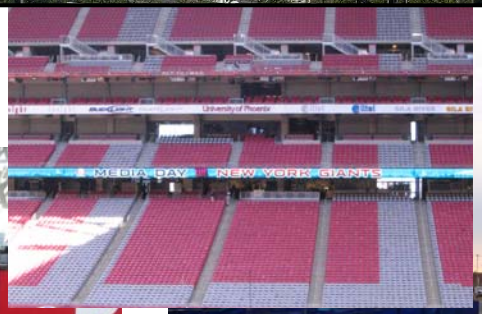
HP Pavilion, San Jose, Ca

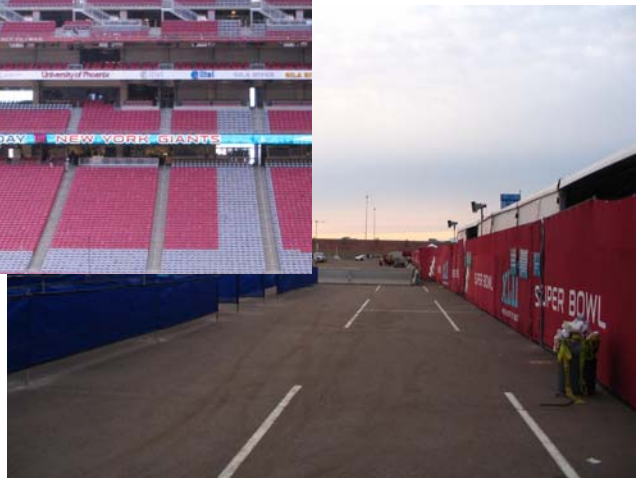
Large venues include indoor and outdoor events

- **Resource limitations require careful vulnerability assessment**
- **Sensor placement and relocation are essential**
- **Wireless and cell phone communications requires careful evaluation**
- **Communications center must be versatile**









KPIX News Story

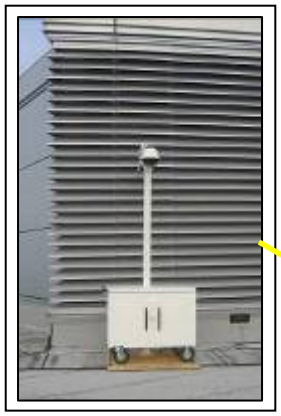
San Francisco International Airport Deployment

Goals

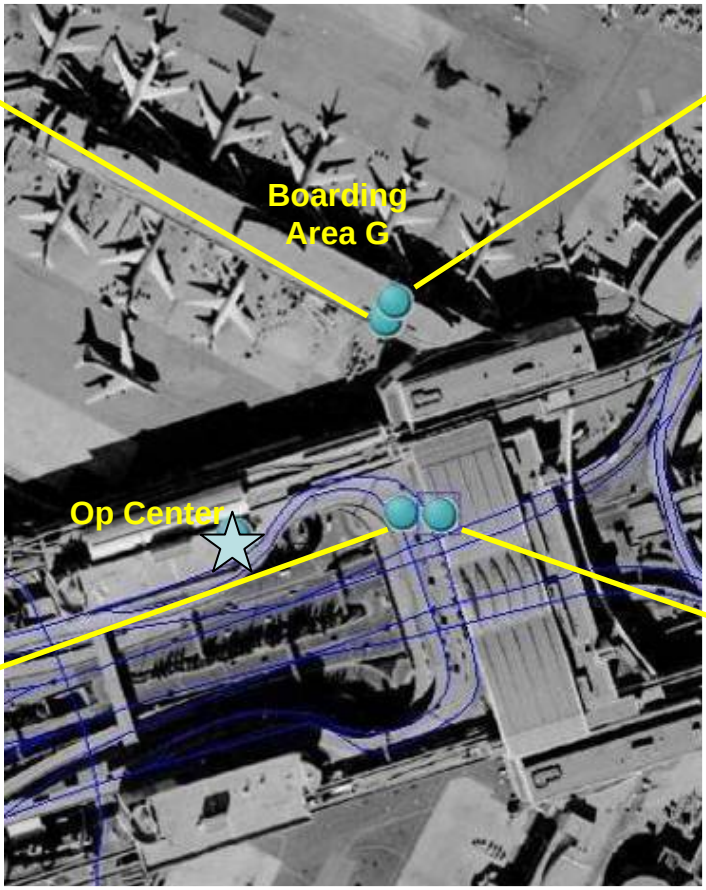
- Demonstrate indoor and outdoor chemical detection implementation

- Determine false alarm rate

Result: No system false alarms



HVAC
INTAKE

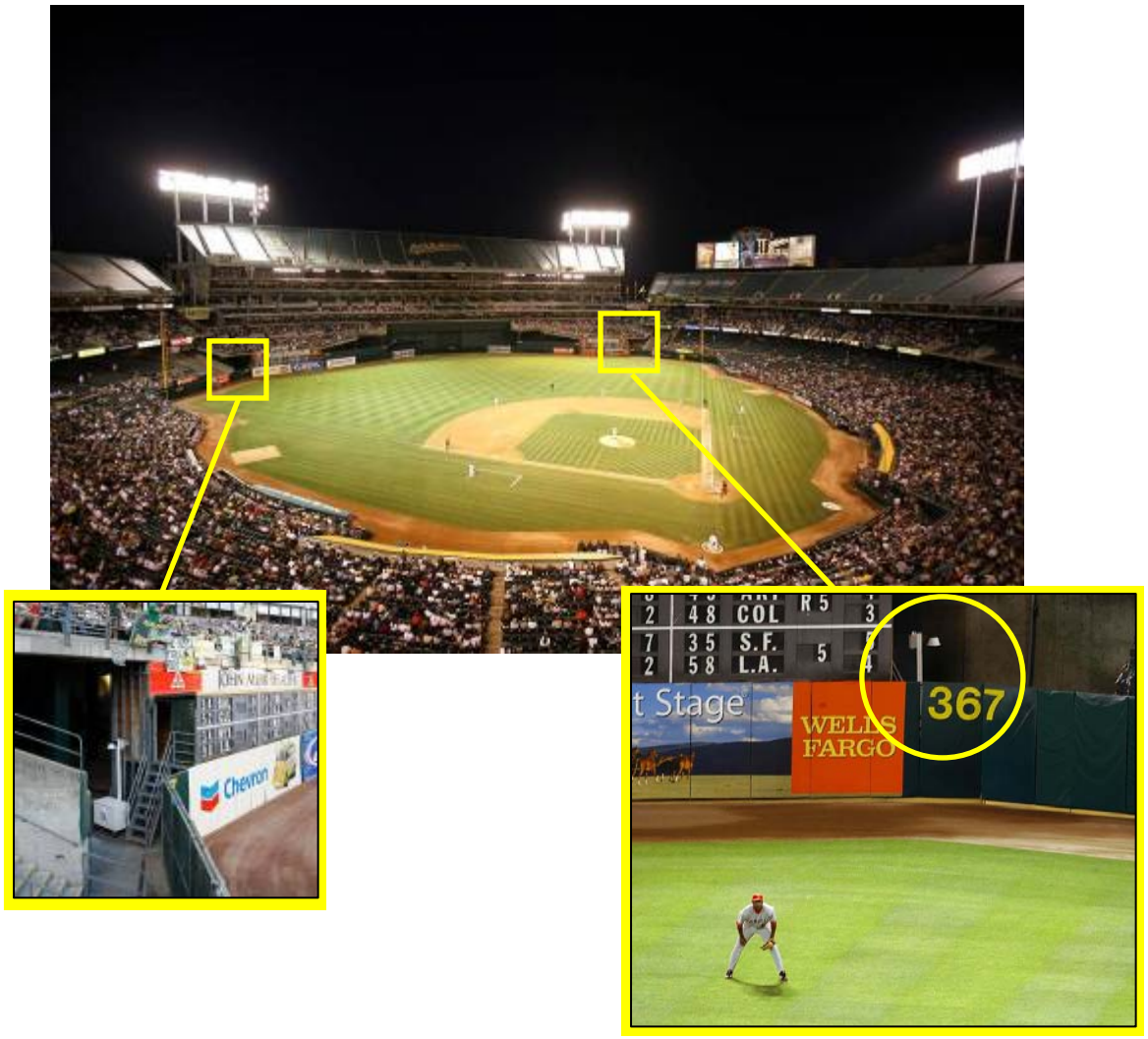


HVAC
RECYCLE

Passenger Drop-off

Ticketing

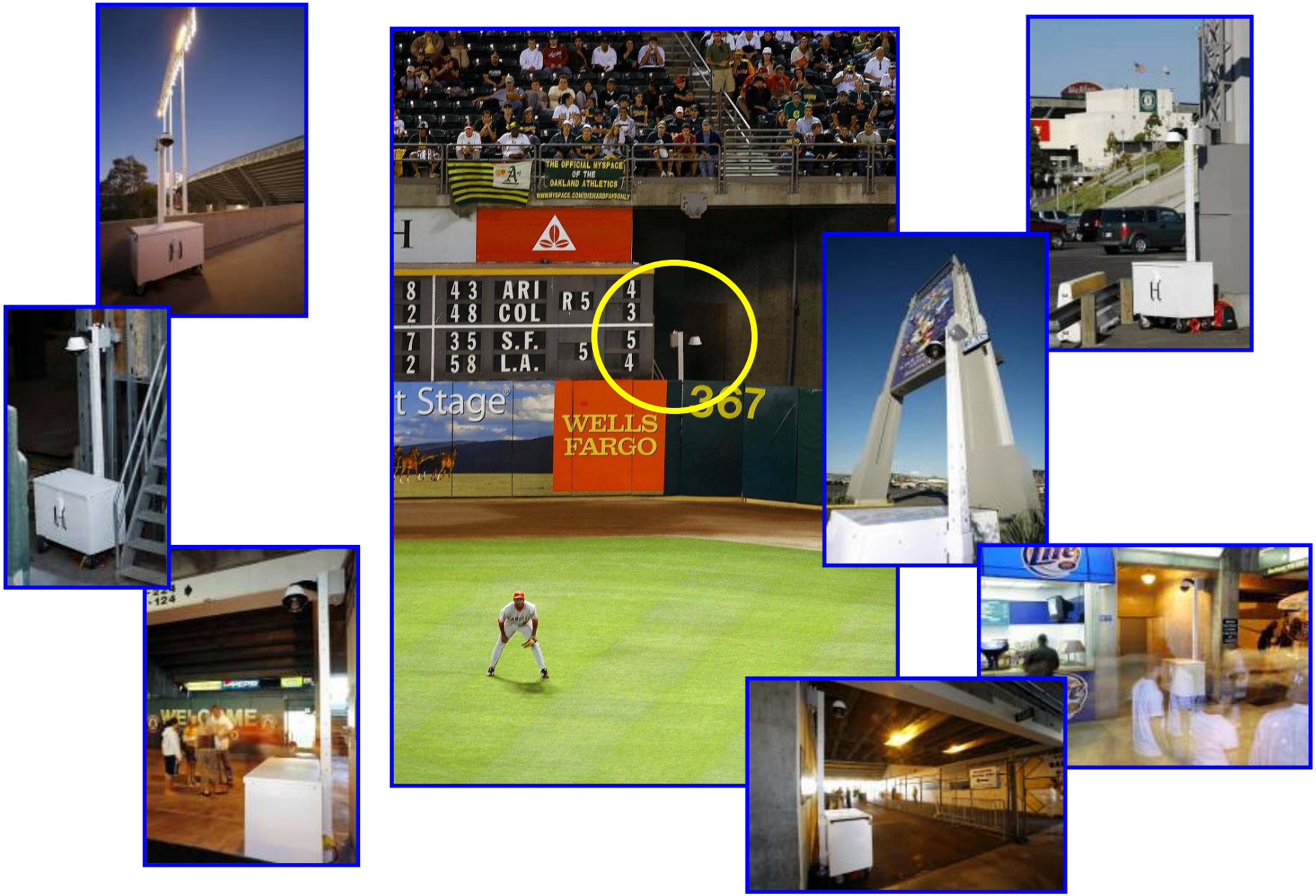
McAfee Coliseum Deployment



Goals

- Address and resolve operational issues
- Determine effect of interferents associated with venue-class

No system false alarms, many nuisance detections



Indianapolis 500 deployment

Goals

- Demonstrate RDD protection for the Indianapolis Motor Speedway
- Develop architecture that is adaptable to other typed of venues including closed stadiums and open venues

Indy 500 - largest single day sporting event
~ 400,000 on race day

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Venue Analysis and Protection capabilities range from recommendations to deployments

- A system solution
  - Awareness, training, education and response plans are as important as detection technologies for venue protection.

- Phased approach to protection
  - Threat characterization
  - Venue/Facility vulnerability analysis
  - Protective measures
  - Defensive architectures, training and effective response plans
  - Resource allocation
  - Detection technologies and responses
  - Restoration resources

What can Sandia offer for the Beijing Olympics?

Venue Assessment, recommendations, and event support

1. Vulnerability assessment through discussions, modeling and past experience
2. Protection prioritization recommendations
3. Resource optimization recommendations
4. Commercial detector recommendations
5. Detector deployment strategy consultation
6. Response planning and event protection logistics recommendations
7. Training and exercise support
8. On scene support during the Olympics

A few venue considerations

- Indoor venues: HVAC systems are a vulnerability, protect them
  - Use physical barriers when possible
  - Don’t allow parking near the intake
  - Avoid horizontal surfaces for intakes
  - Use video surveillance
  - Consider incorporating an HVAC shut-off switch

- All venues: For most chemical attacks people in distress will be the first sign of attack
  - Develop a response plan for choking crowd scenarios

END

Systematic approach for Rad/Nuc venue assessment and protection

Each venue/special event analysis has five key elements

1. Geo-spatial analysis

   Natural/man made barriers, choke points, transportation modes, weather and climate, high value targets, other considerations
2. Adversary capability analysis

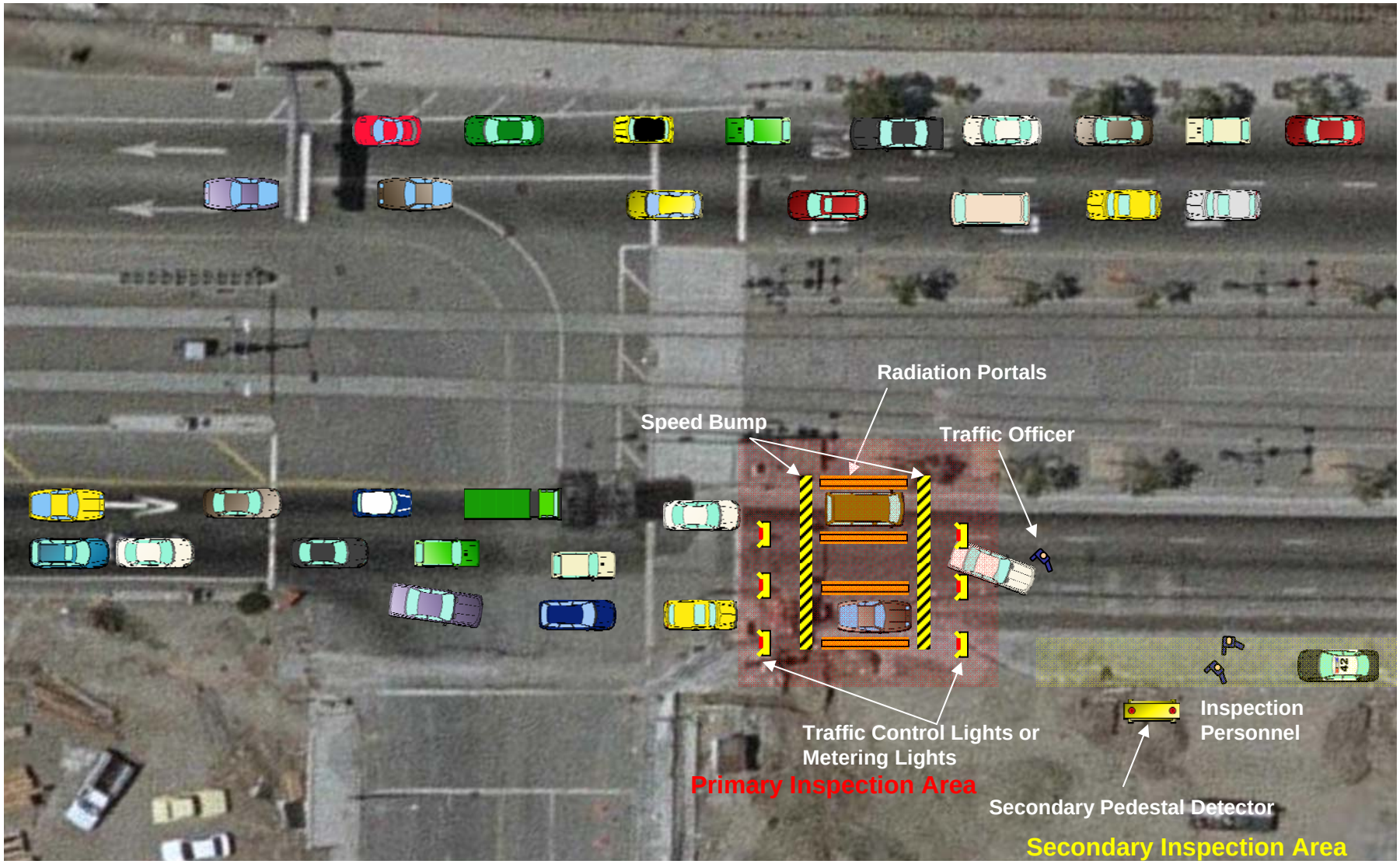
   Evaluate the threat devices and adversary tactics
3. CONOPS

   Type perimeter, resource/asset availability, numer and type of checkpoints (vehicle, pedestrian, train, etc.), perimeter sweeps
4. Detector performance

   Understanding detector performance (strengths and weaknesses against defined threat space), probabilities of detection calculations, nuisance alarm load potential
5. Security training

   General radiation training, physical threat descriptions, detector usage and capability, practical exercises

Vehicle checkpoint CONOPS



Sandia's experience includes evaluation of detector technologies

- Chemical Warfare Agent surrogates
- Toxic Industrial Chemicals
- Source term time of flight evaluation
- Air dispersion modeling validation