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Title: ALDW Explosive Safety Program

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ALDW Explosive Safety Program

Triad Operations Committee

ALDW COO: Derrick Montoya

September 17th, 2019

Managed by Triad National Security, LLC for the U.S. Department of Energy's NNSA

ALDW Champions the Explosive Safety Program for LANL

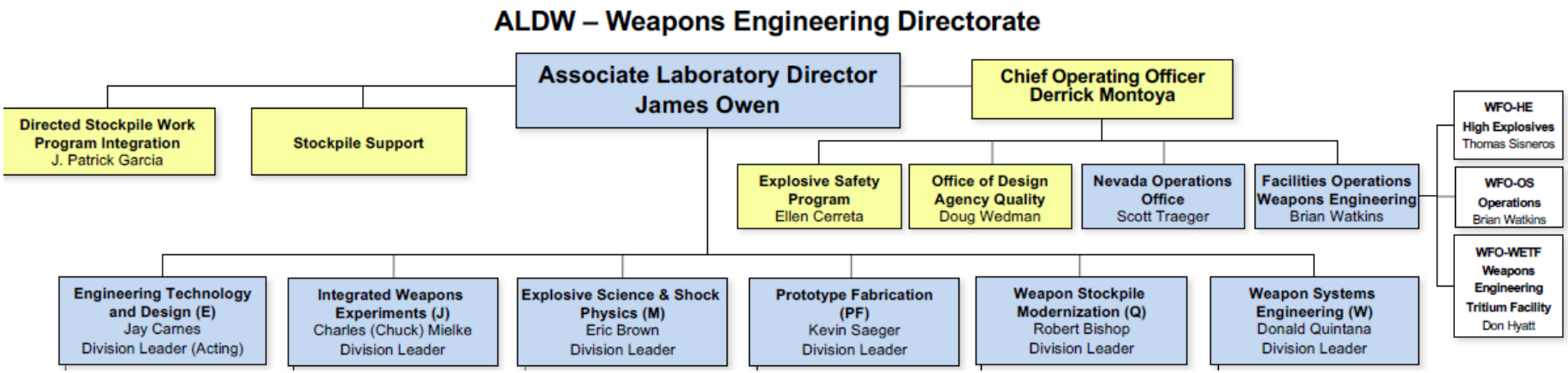
- **The LANL Explosives Safety Program provides oversight of safety standards & controls from DOE Explosives Safety Manual (1212) and LANL Explosives Safety Program Standard (P101-8).**
  - Works in partnership across line organizations performing explosives operations, WFO, and AD-ESHQSS to communicate, interpret, implement and verify compliance with these requirements.
  - The primary customer for LANL's Explosive Safety Program is ALDW

- **The Explosives Safety Program helps minimize the probability of an incident through awareness, consistency, hazard analysis, controls, training and communication**

- **ALDW GOALS**
  1. Enable staff to develop, review, document and implement compliant safety procedures
  2. Train workers in best practices for explosives work.
  3. Provide forums and resources to discuss & elevate explosive safety-related issues.

The LANL Safety Program implements DOE Standard 1212 and LANL Policy 101-8 to enable safe and compliant Design and Production Agency Mission

Explosive Safety Program is formally organized under ALDW



Explosive Safety Program is Cross organizational in implementation

Lab Director
Thom Mason

Deputy Director Weapons
Bob Webster

Weapon Engineering
James Owen

ALDW COO
Derrick Montoya

ALDW Safety Program Manager
Thomas Sisneros

Weapons Facilities Operations
Brian Watkins

Deputy Director Operations
Kelly Beierschmitt

Environmental Health and Safety
Mike Hazen

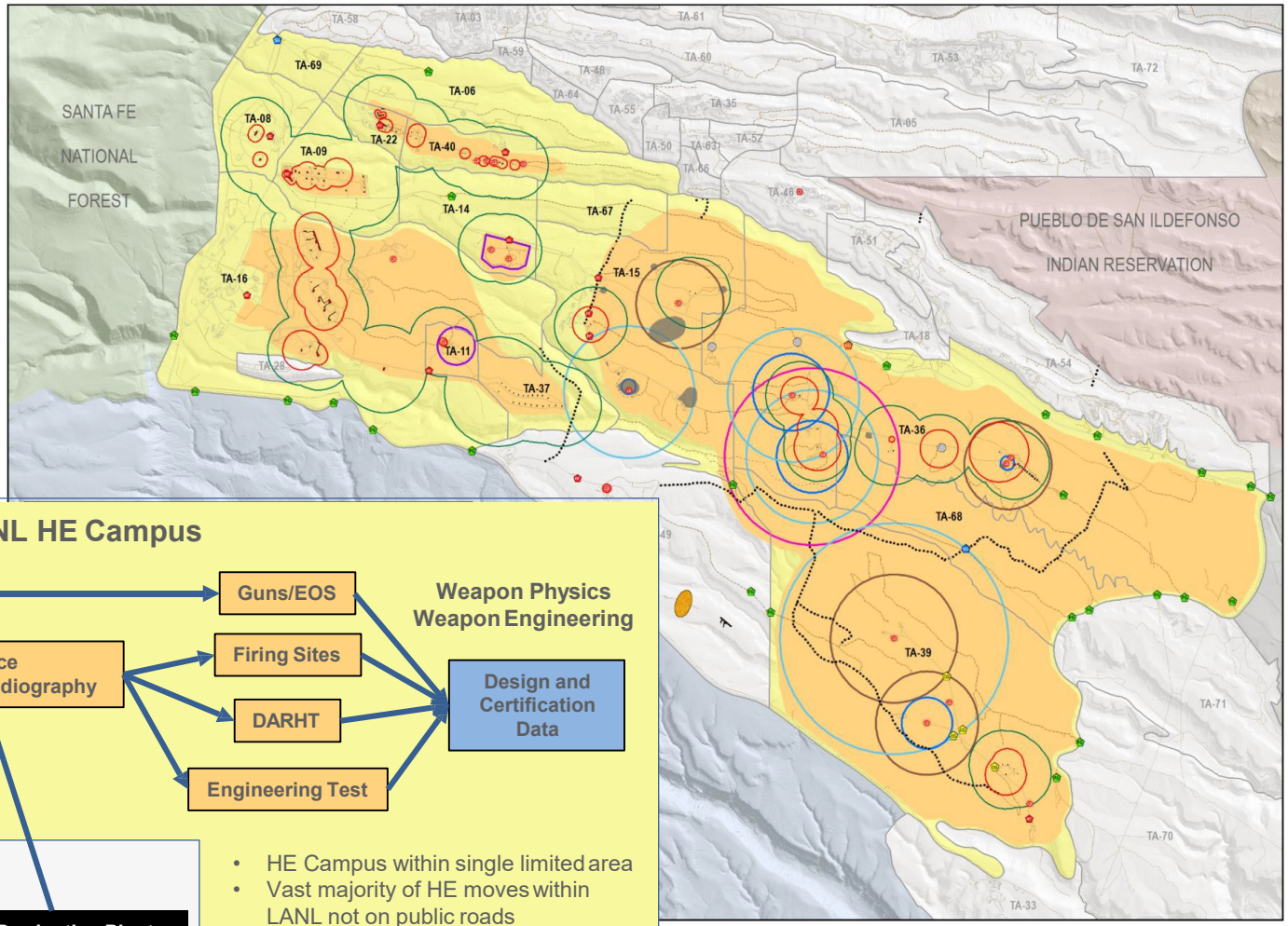
OSH-DO
Jim Coy

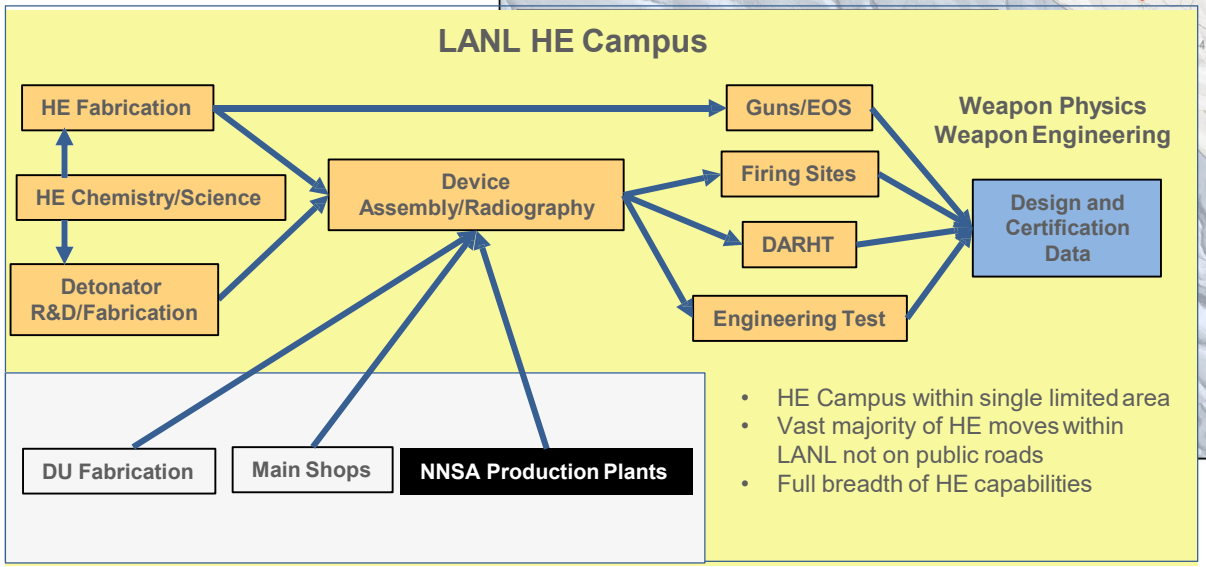
HE Authority Having Jurisdiction
Joe Lloyd

Explosive operational activities across multiple organizations and sites

National Energetic and Engineering Weapon Campus (NEEWC)

Weapons Facilities Operations (WFO)
~24 square miles



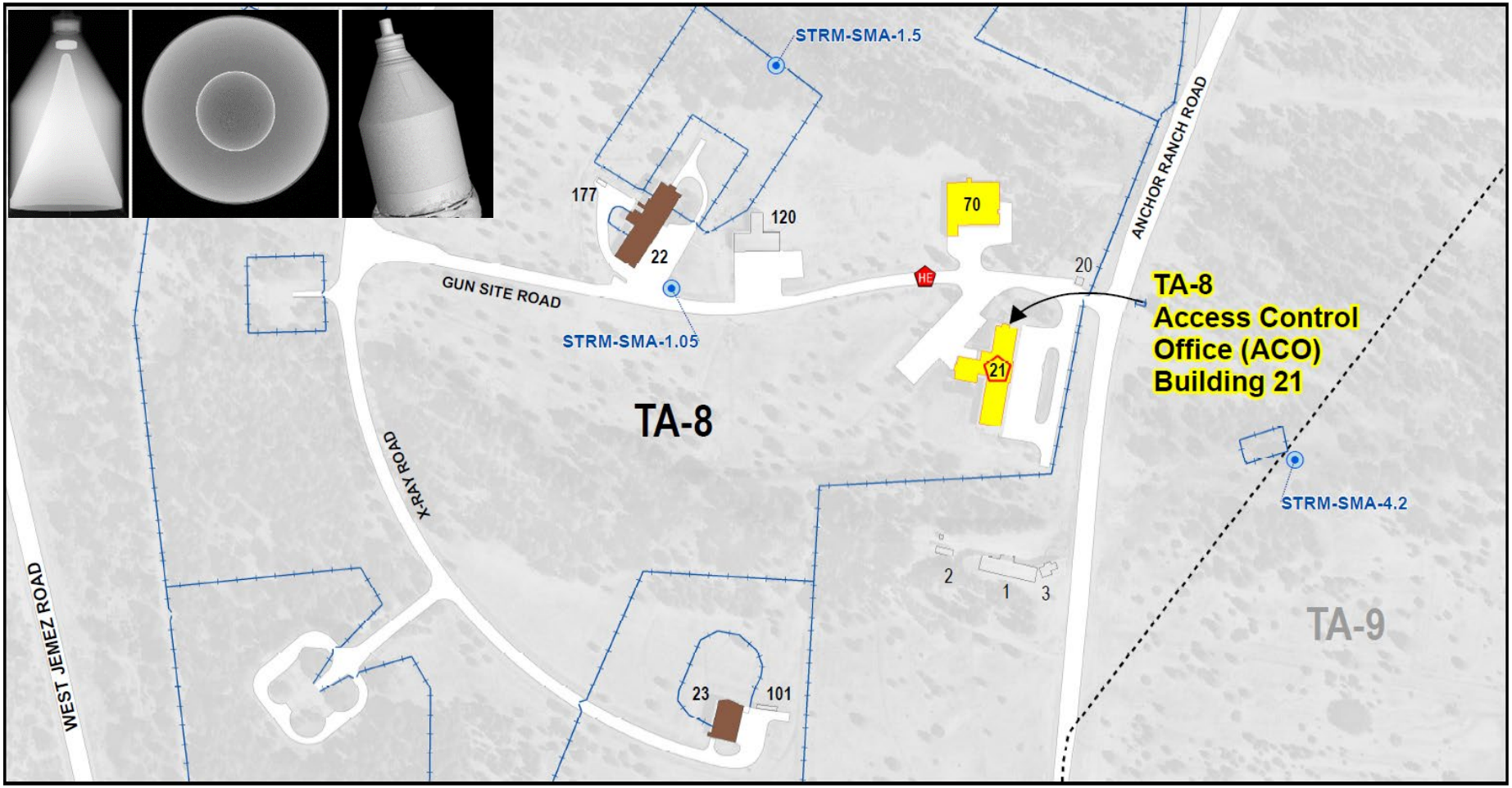


- HE Campus within single limited area
- Vast majority of HE moves within LANL not on public roads
- Full breadth of HE capabilities

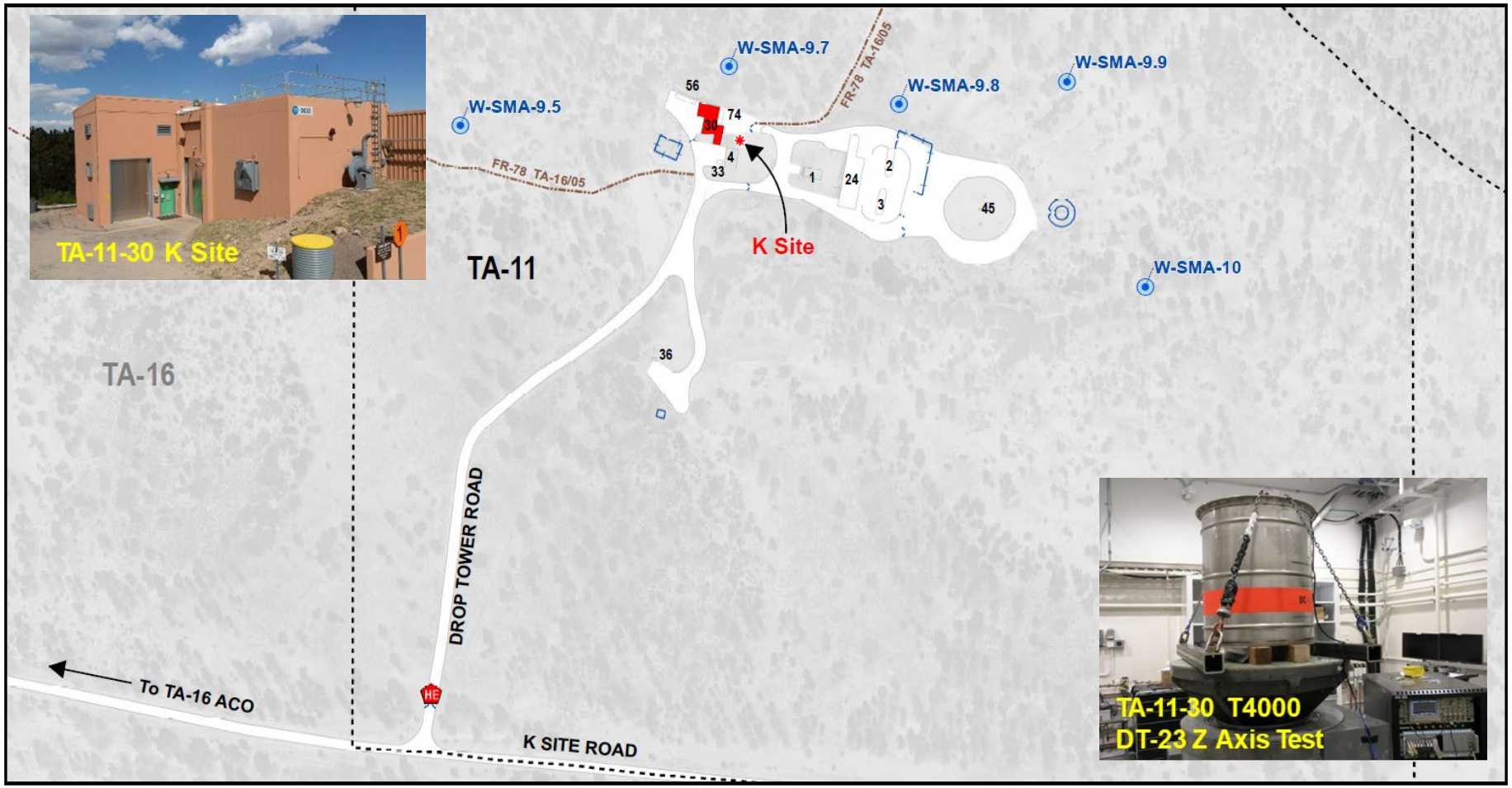
Explosive Safety Site Plans (context)

- **Existing Explosives Safety Site Plans (ESSPs)**
  - 138 locations with active ESSPs
    - 49 Operating Locations (laboratory operations, machining, assembly, etc.)
    - 67 Active Storage Locations (Above Ground Magazines)
    - 14 Disposal Ranges (Firing Sites, Gun Operations)
    - 4 Waste Disposal Facilities (Burn Pad, Burn Tray, and Filter Beds)

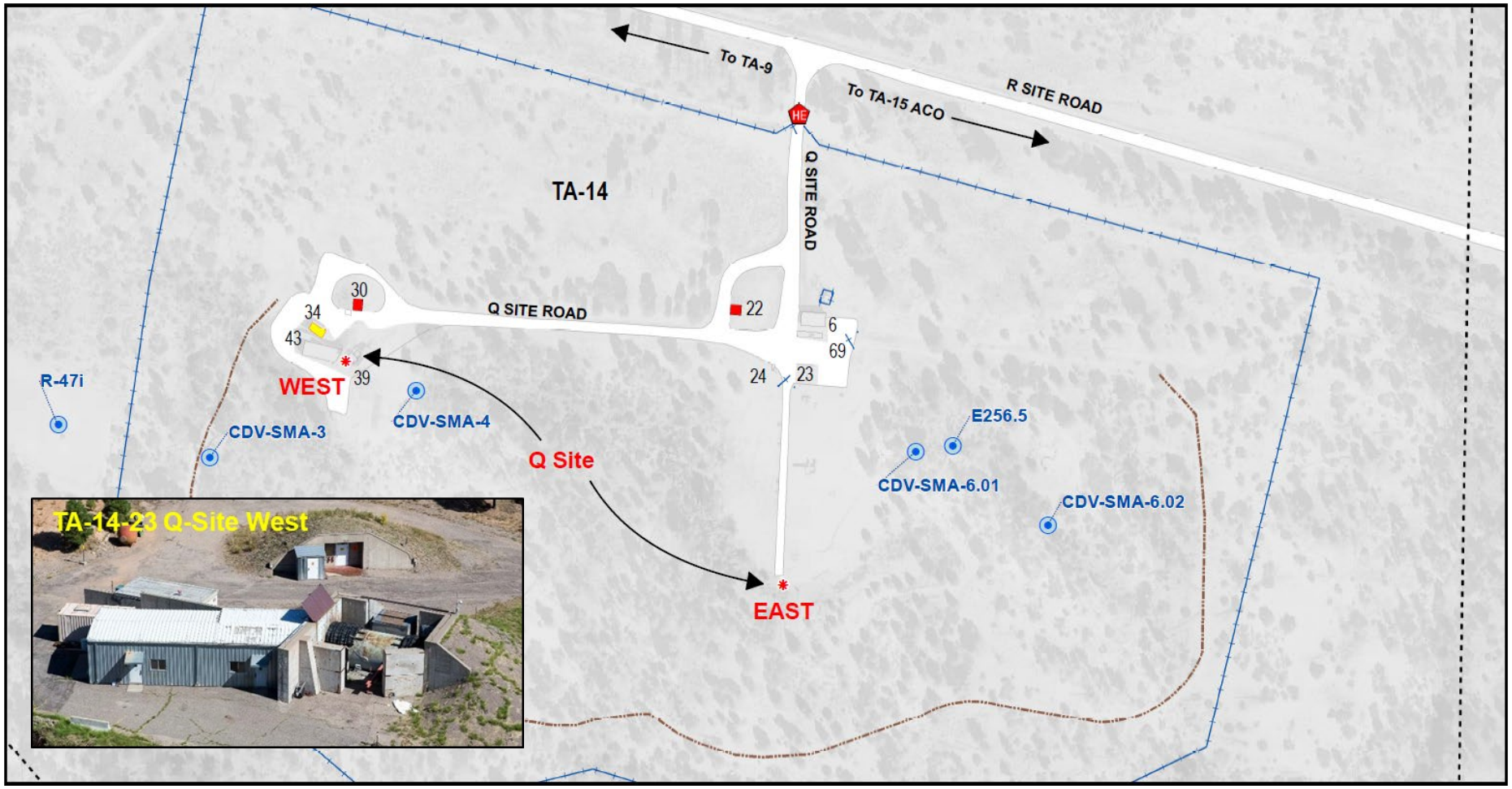
TA-08 Anchor West Side, Radiography and Application & Special Projects



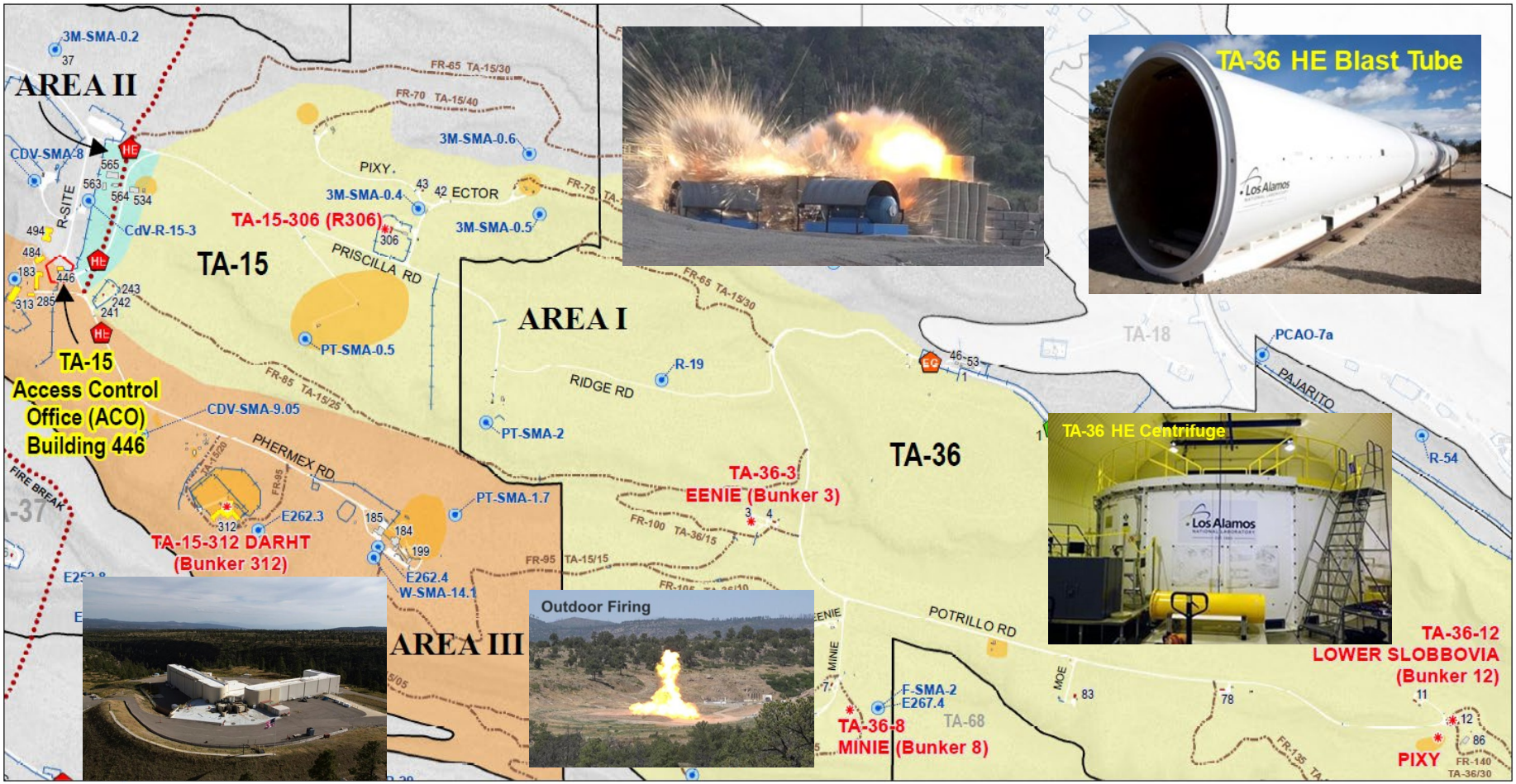
TA-11 K Site, Weapons Test Engineering



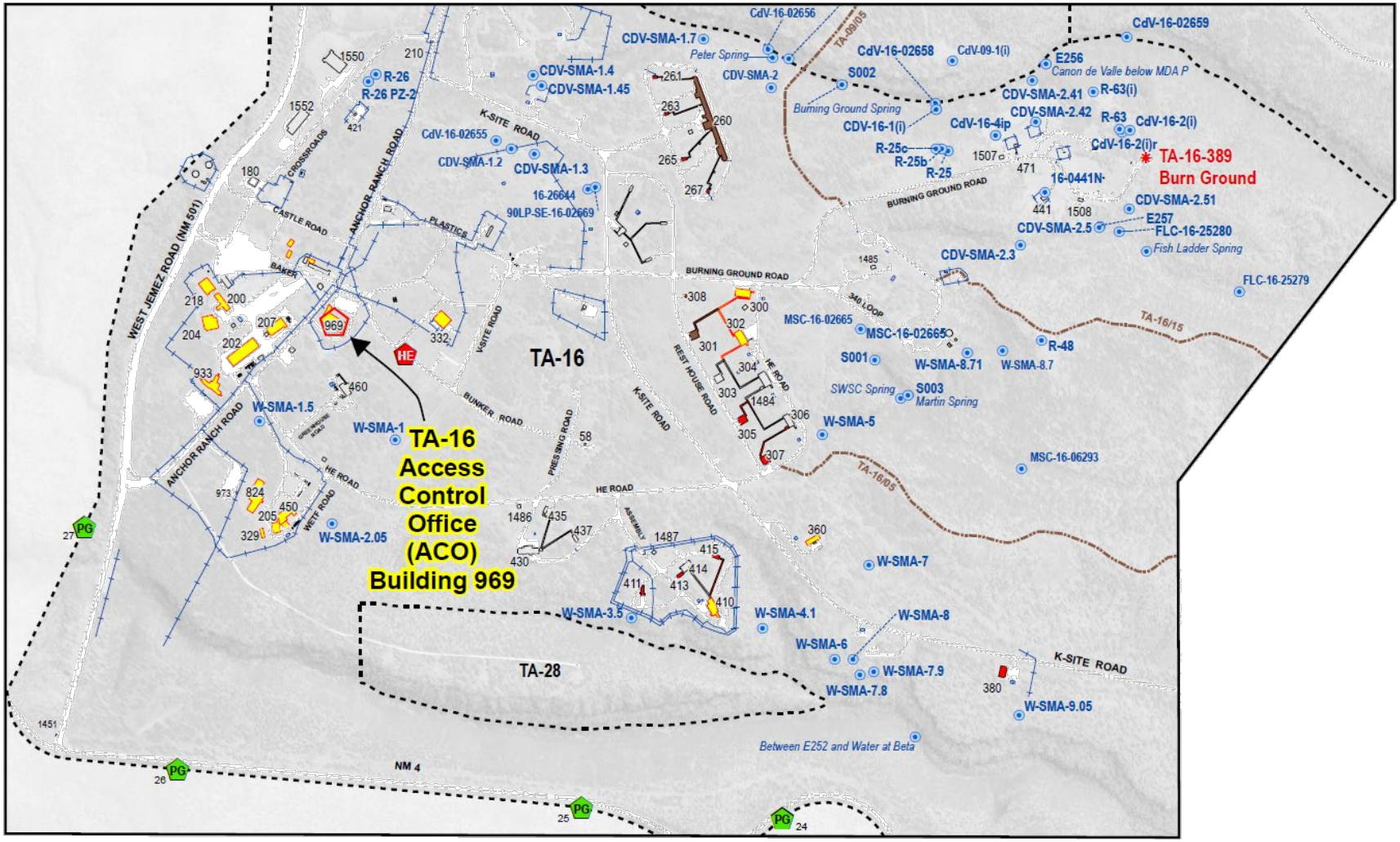
TA-14 Q Site, Outdoor Testing



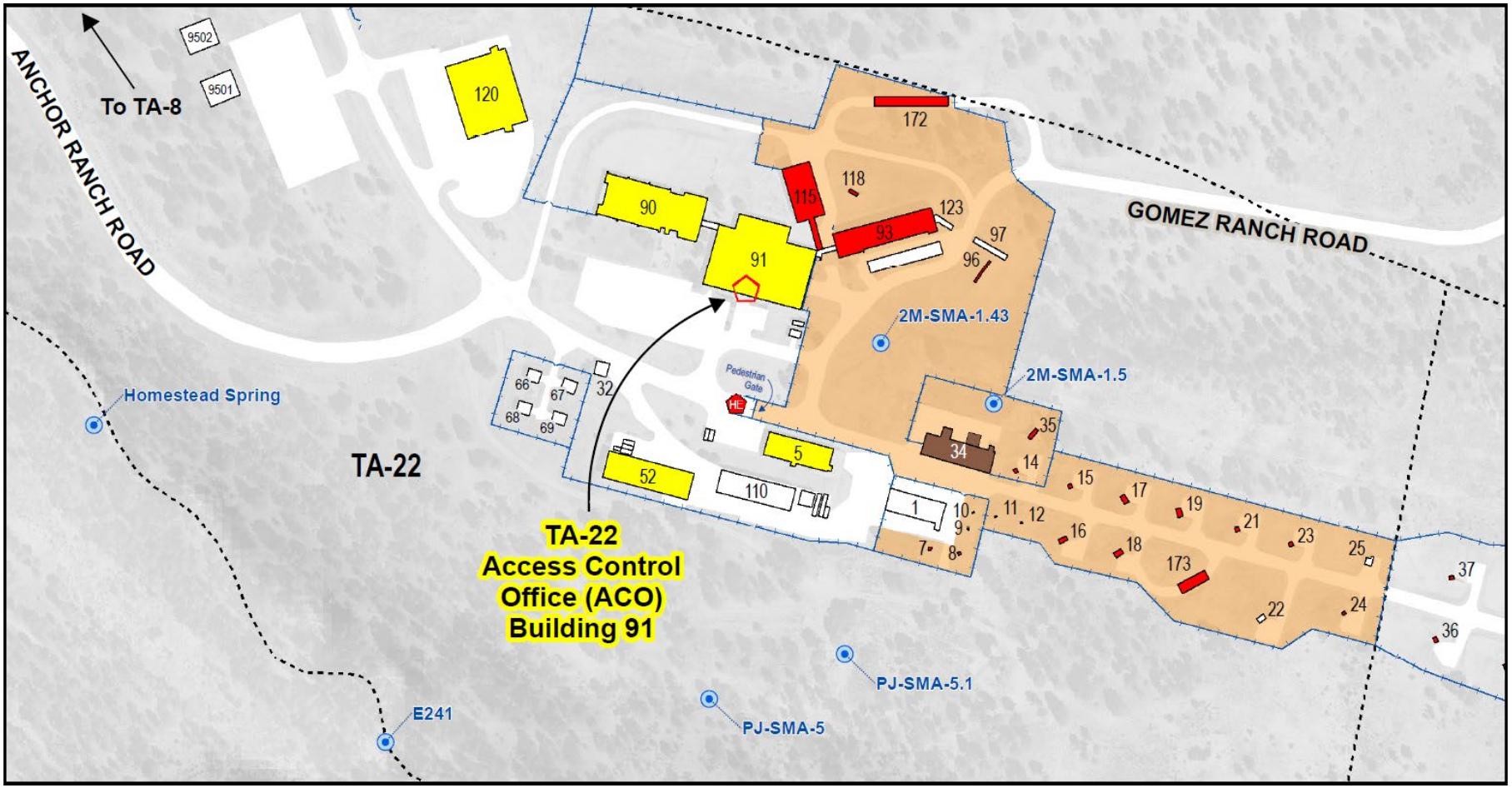
TA-15 R Site and TA-36 Kappa Site, DARHT and Outdoor Testing



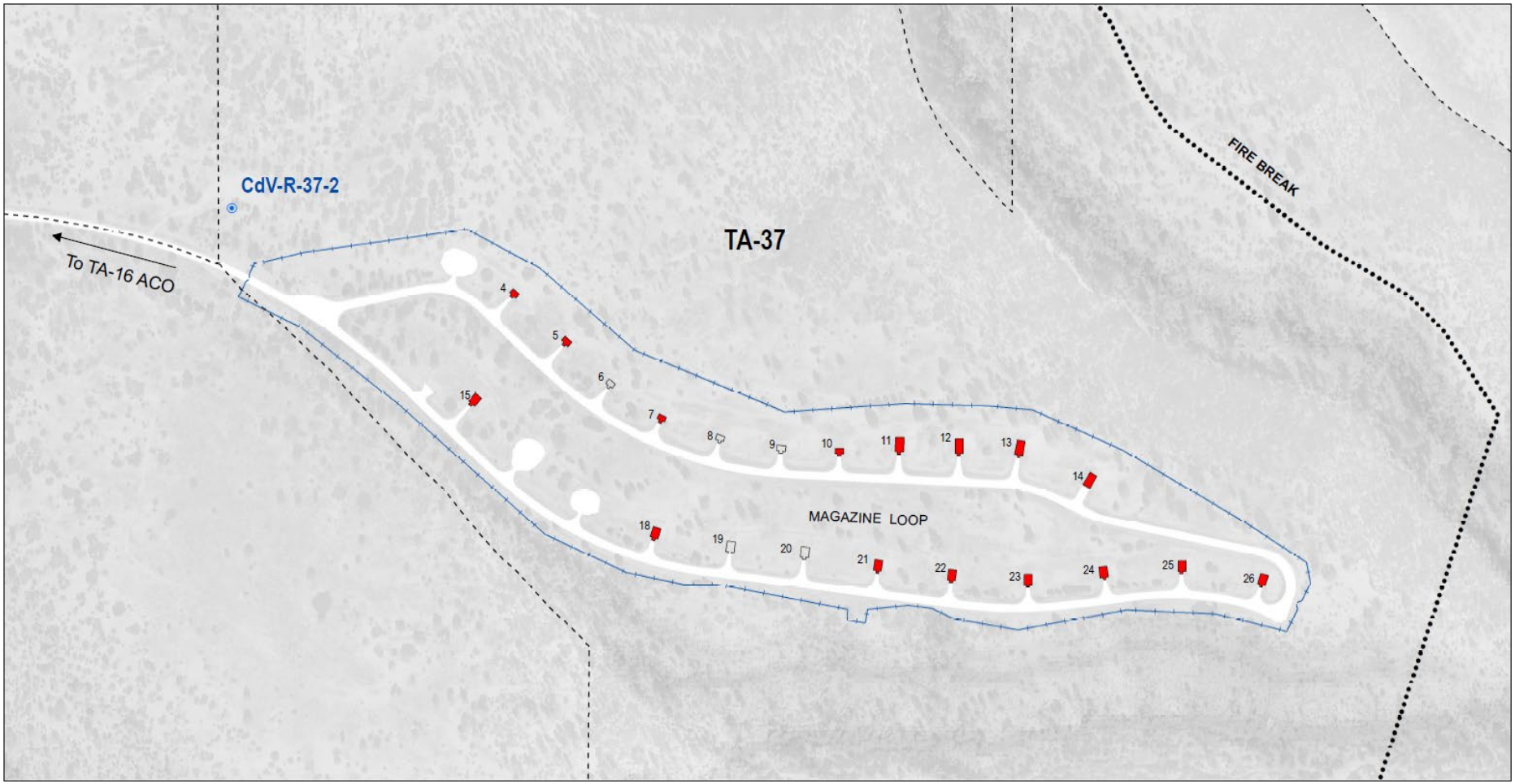
TA-16 S Site, Fabrication, Burn Grounds, Assembly, and Environmental Testing



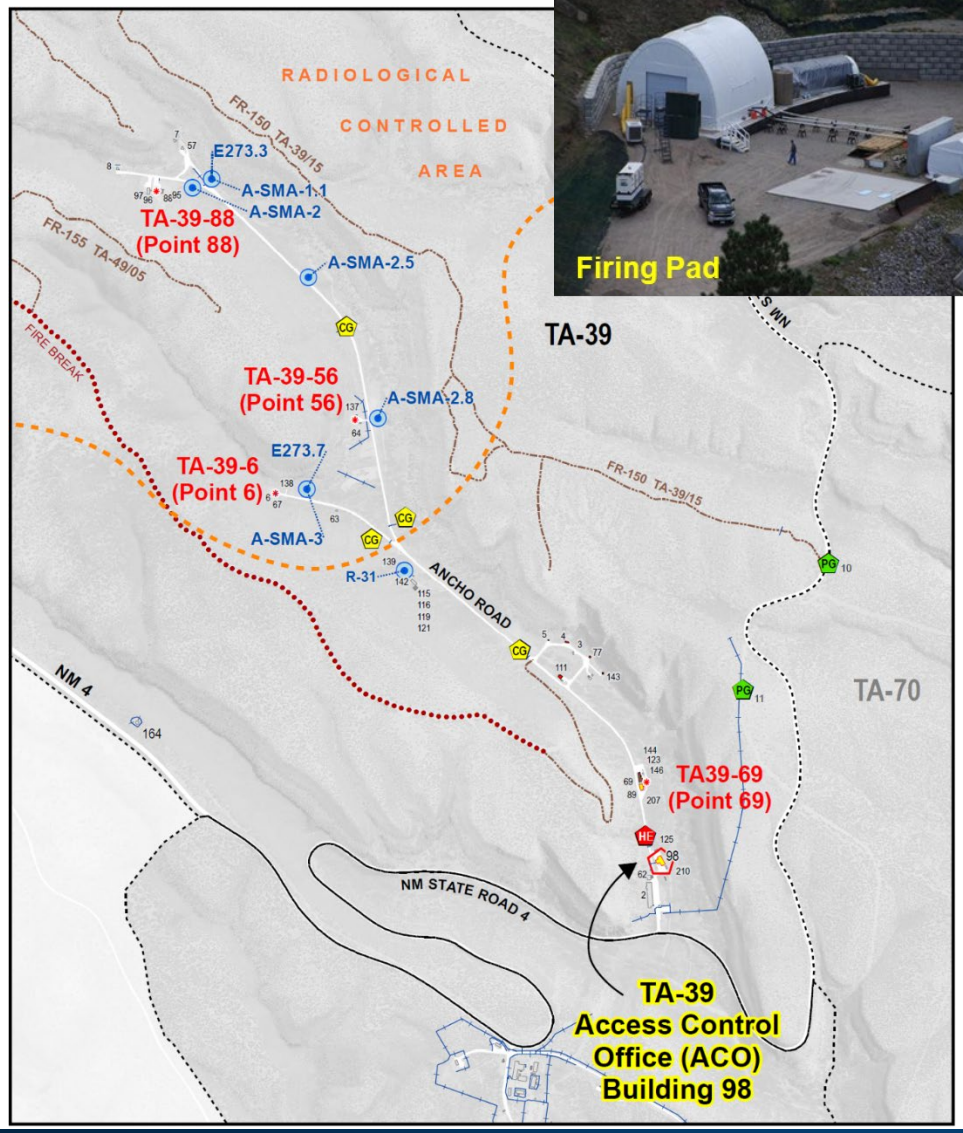
TA-22 TD Site, Detonator Fabrication and R&D

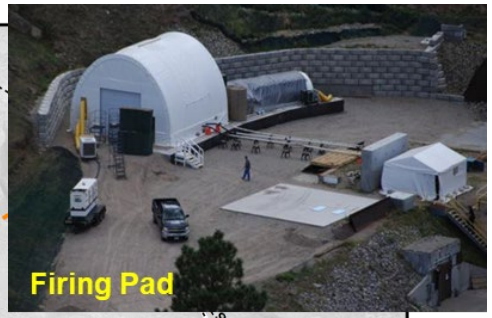


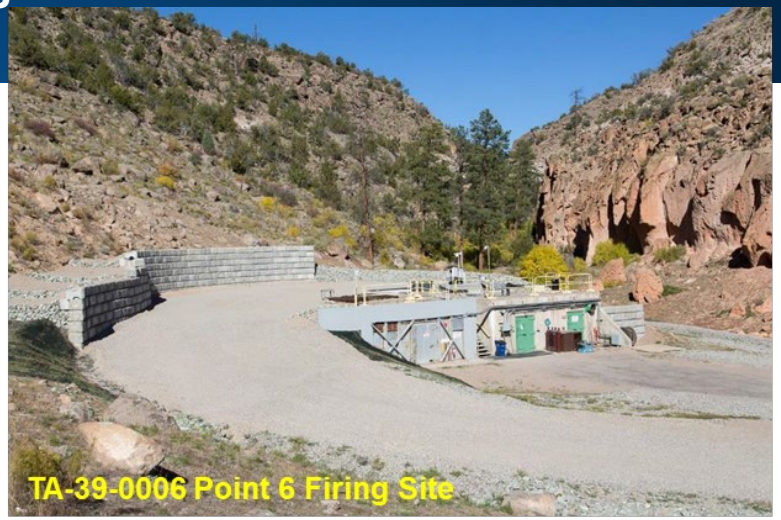
TA-37 Magazine Farm

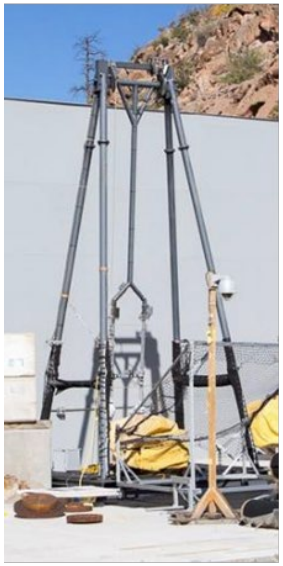


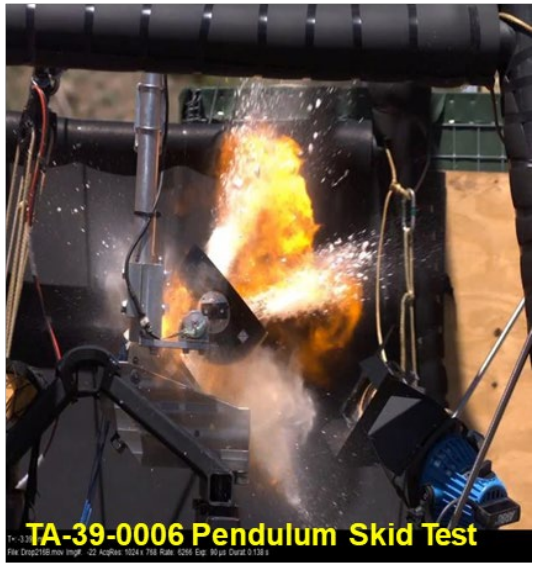
TA-39 Ancho Canyon Site, Outdoor Testing



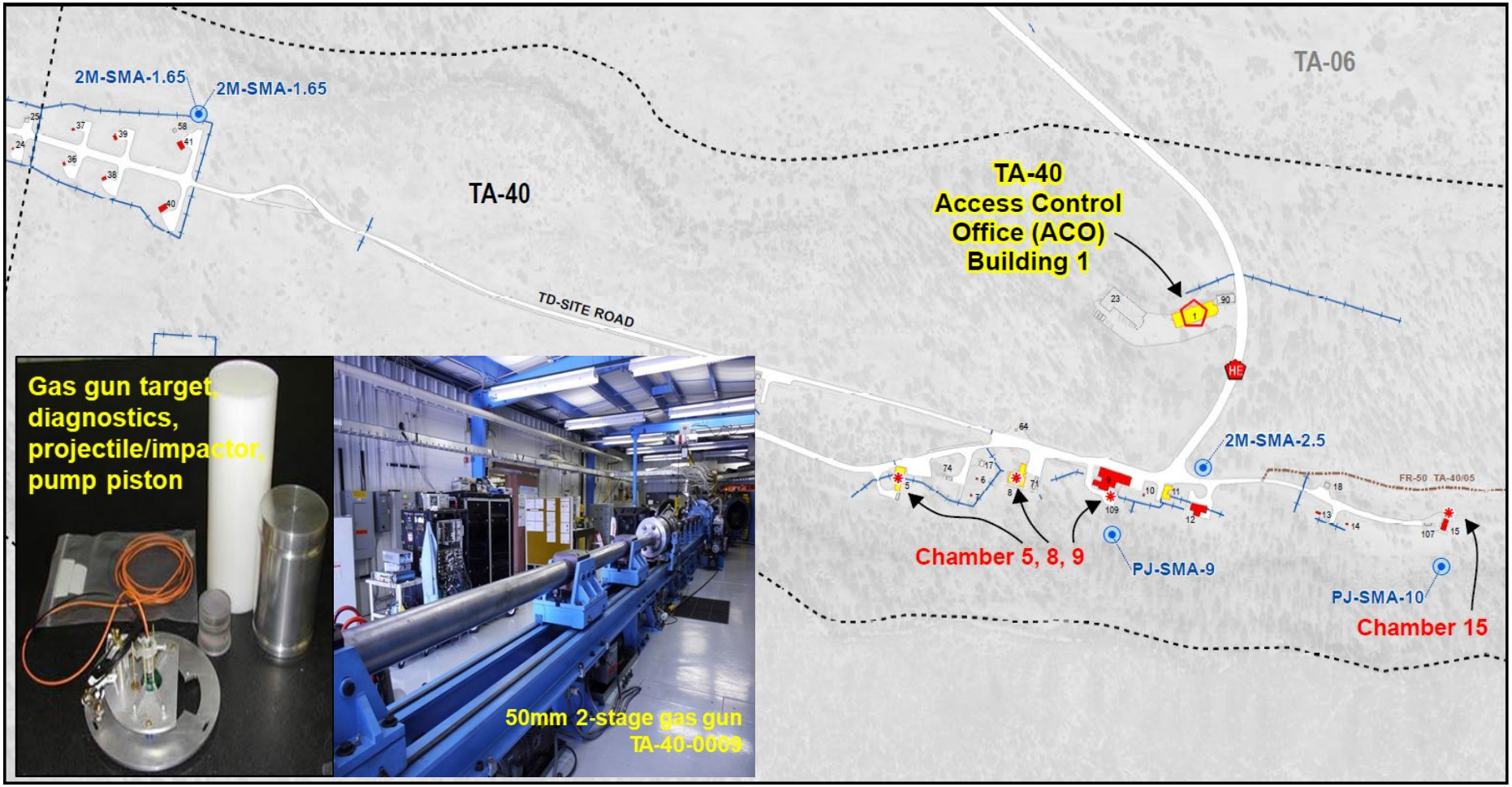




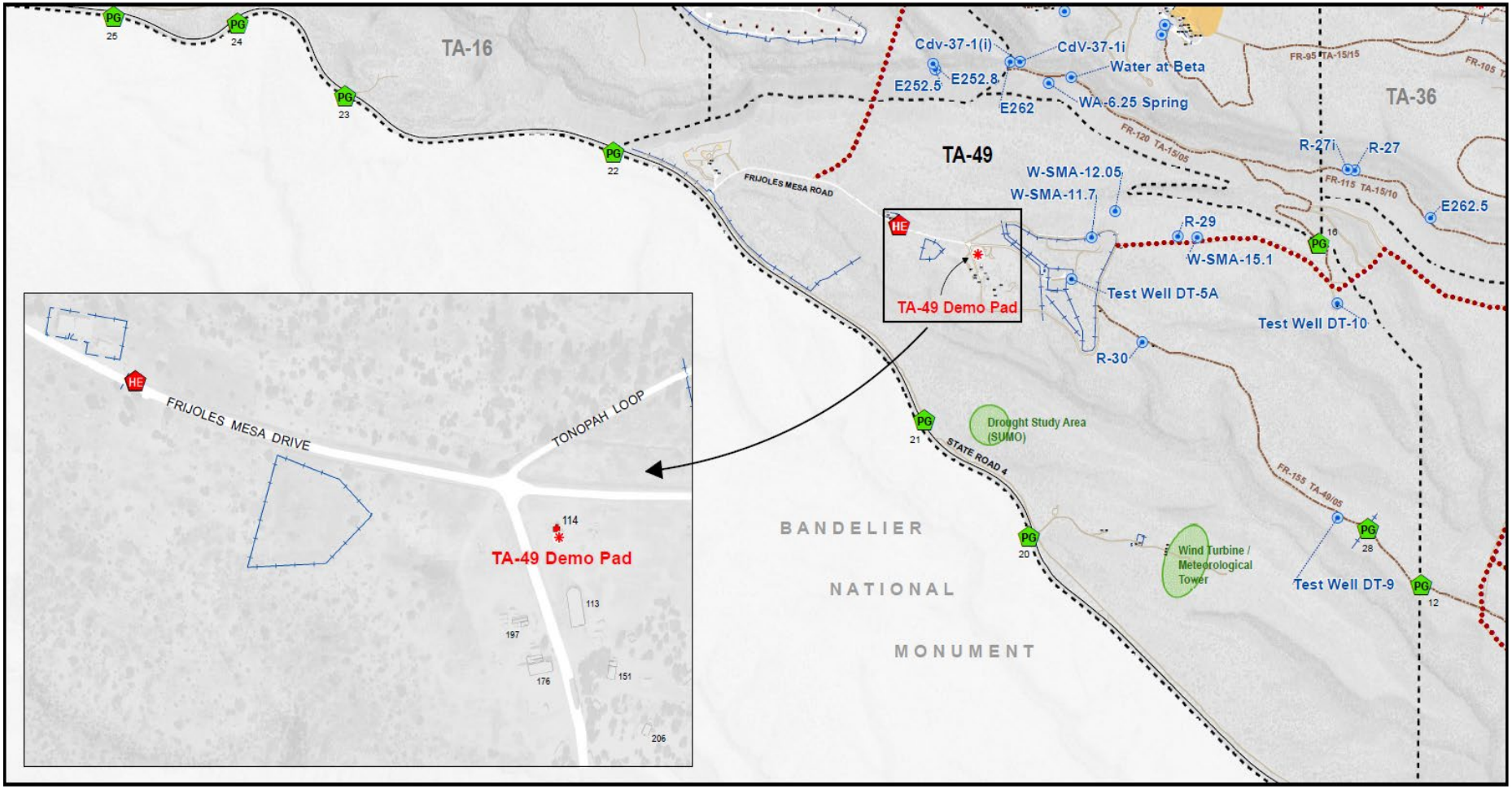




TA-40/DF Site, Shock & Detonation Physics, and Detonator Testing



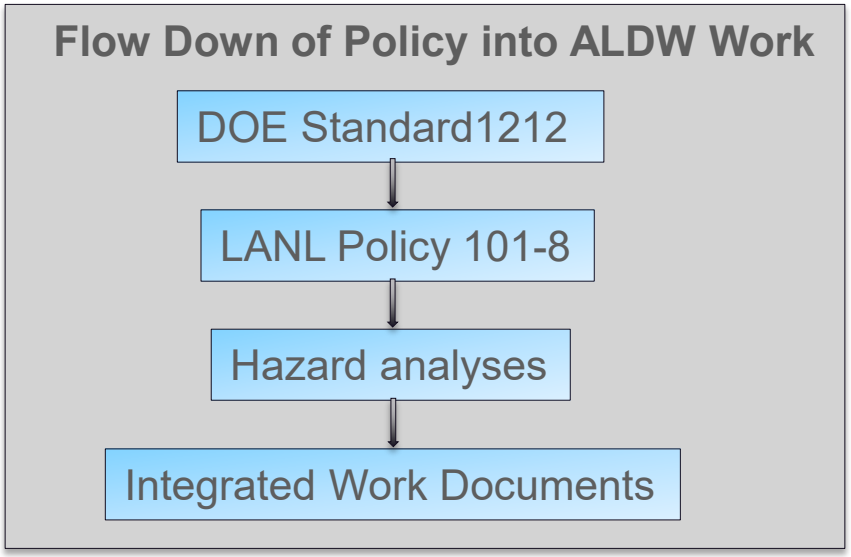
TA-49/Frijoles Mesa Site, Outdoor Testing

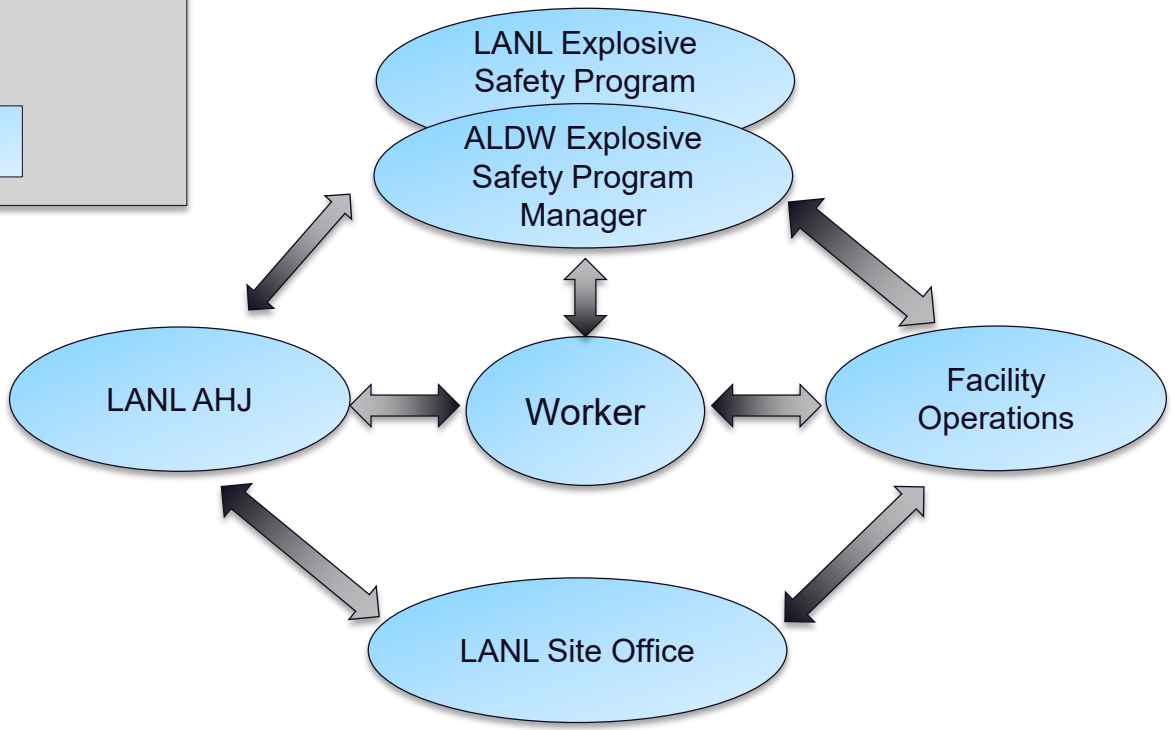


Line and Program Organizations

- Explosive Science and Shock Physics (M)
- Engineering Technology and Design (E)
- Integrated Weapons Experiments (J)
- Weapon Stockpile Modernization (Q)
- Weapon Systems Engineering (W)
- Prototype Fabrication (PF)
- Facility Operations (WFO)
- Detonator Production (DET)
- Global Security (GS)
- Emergency Response (EMD-ER)
- Nevada National Security Site (NNSS)

A Partnership between ALDW and LANL Explosive Safety Programs as well as the Site Office Ensures Communication of DOE Policy to the Worker





Multiple Programs and Groups used for Explosive Safety

- **HE Managers (currently ~50)**
  - Managers, Group Leader and above, with explosive operations within their organization
  - Includes AHJ, ES&H Explosive related deployed personnel, WFO operations, etc.
  - Bi-monthly meetings lead by Explosive Safety Program Manager
  - Venue for communication of **all things** relative to explosive operations
    - Incidents
    - Events
    - Hazards and Controls
    - Lessons learned
    - Policy/requirement changes

- **High Explosive Safety Advisory Panel: Subset of HE Mangers**
  - COO, DDLs, Explosive Safety PM, AHJ, WFO DL
  - Focus on specific broader issues (e.g. Access Control)

Committees used for Explosive Safety

- **Explosive Review Committee (ERC)**
  - Reviews and concurs on all explosive operations
  - Serves as Explosive Development Committee per DOE-STD-1212
- **Explosive Instrument Review Committee (EIRC)**
  - Reviews and analyzes electrical test instruments or test instrument systems used with explosives
- **Explosive Storage Review Committee**
  - Reviews the explosives stored at LANL to minimize the hazards associated with the storage of those materials

- **Shot Review Committee (SCR)**
  - Evaluates out-door intentional detonation experiments for fire starting potential
  - Also serves as overall peer review of experimental configuration

- **Explosive Safety Officers Committee (ExSOC)**
  - Identifies operational high explosive safety issues and to assist Explosive Safety Officers in providing consistent guidance to explosive workers and organizations
  - ExSO development
  - Chaired by HE AHJ

Programs Supporting Explosive Safety

- **Access Control Program**
- **Explosives Safety Training and Qualification Program**
- **Operations Programs:**
  - New Activity Review Process
  - FOD Acceptance Process
  - Facility Hazard Categorization Process
  - HE Maintenance Worker Qualification
  - Energetic Material Demonstration Course

Process for Managing Requirements Enables Work Control at the Activity Level

Initially, requirements are communicated to the worker through:

- **Training – tailored to worker specific needs**
- **Technical Procedures and Integrated Work Documents - built on hazards analyses that establish compliant engineered and administrative controls to mitigate hazards**

Interpretation of requirements/changes to requirements are communicated to the worker through:

- **Flow down of information provided at the HE Managers meetings**
- **Worker interaction with group level explosive safety officer**
- **Lessons learned**

Reminders for HE workers and Education for the Non-HE worker communicated through:

- **Signage and Postings**
- **Access Control Office Briefings**
- **Plan of the Week meetings**
- **Annual reviews of safety documents**
- **Assessments(internal and external)**
- **Management Observations**
- **LANL HE Safety Day**

Four Primary Elements of the ALDW Safety Program Ensures Connectivity of Policy, Interpretation, & Implementation, leading to Compliance

Training

- Development of new training and qualification standards
- Maintenance of the current training
- Responsibility for Archiving procedures
- Training Equivalency Decisions

Communication

- Organize and host the bi-monthly HE managers meeting
- Maintain the HE program website
- Hold the LANL HE Safety Day
- Lead bi-weekly meetings with training staff to set priorities
- Bi-weekly meetings with FOD & ACO

Assessment

- Lead internal assessment and surveillance teams
- Conduct Monthly HE MOV's with AHJ and Site Office
- Participate/lead in resumption activities
- Oversee response to findings from internal & external assessments

Resources

- HE Managers
- Shot Review Committee (SRC)
- Explosive Review Committee (ERC)
- Explosive Instrument Review Committee (EIRC)
- Vessel Approving Authority (VAA) *
- HE Safety Advisory Panel
- Explosive Safety Officer Committee
- Explosive Storage Review
- ALDW & FOD Management Review Boards*

**Not exclusive to the HE safety program*

As Part of a Learning Organization, this Program is in a Continuous Improvement Cycle

FY'19 Accomplishments to Date:

1. Workshopped best practices for Hazard Analysis and now implementing findings
2. Revised Training (OJT) for Firing site leader, Explosive Safety Officer, HE Handler and Knowledgeable Person
   - Formalized the oral board procedure for FSL
   - Vessel Firing Operator in in Planning
3. Revised and Beta testing a New Form 3005 – work permitting process for facility work in an HE Facility
4. Executed on the MOV schedule with the site office
5. Have established a sustainable path for facility blast calculations
6. Partnering with Texas A&M to offer a larger suite of fundamental HE safety courses
7. Updating multiple institutional level hazard analysis

Strong Foundation with More to do: Issues to be Addressed

- **Traditional activities might be able to use a fresh look–identify a process to re-examine these hazard analyses to address scope creep and proper flow down these requirements**
  - Created a process to manage this work load
  - Will utilize the HE Safety Program Advisory Panel
- **Training program relies on qualified SMEs, who can mentor and make a judgement call – bench is thin in some areas regarding this ability**
  - What other tools can be brought into the program?
  - How do we partner with academia to ensure a pool of candidates who are closer to "born qualified" or have a jump start
- **ExSO program is relatively *"young"* and we rely on it**
  - Firm foundation and we know the gaps
  - Working with the AHJ to understand maturity timeline
- **HE inventory - Path forward**
  - Recent recent OIG audit seemed favorable, but there is always room for improvement

This construct has enabled a more compliant and knowledgeable workforce and has been embraced by other labs as well as the Test Site

Discussion

Access Control Program

- **Major Program Elements**
  - Access Control Program Description and Procedures
    - How we administer the Access Control Program
    - Consistent implementation across 13 HE areas
  - Access Control Officer Qualification Program
  - Visitor Training Program
    - Core Program
    - Site Specific Training
  - Knowledgeable Person Qualification Program
  - Barriers and Postings

WFO Access Gates
Primary entry/exit points for HE Areas

TA-16 Access Gate

WFO Hazard Gates

Control access to specific hazard areas

TA-16 101 Gate

TA-40 Chamber 5 Gate

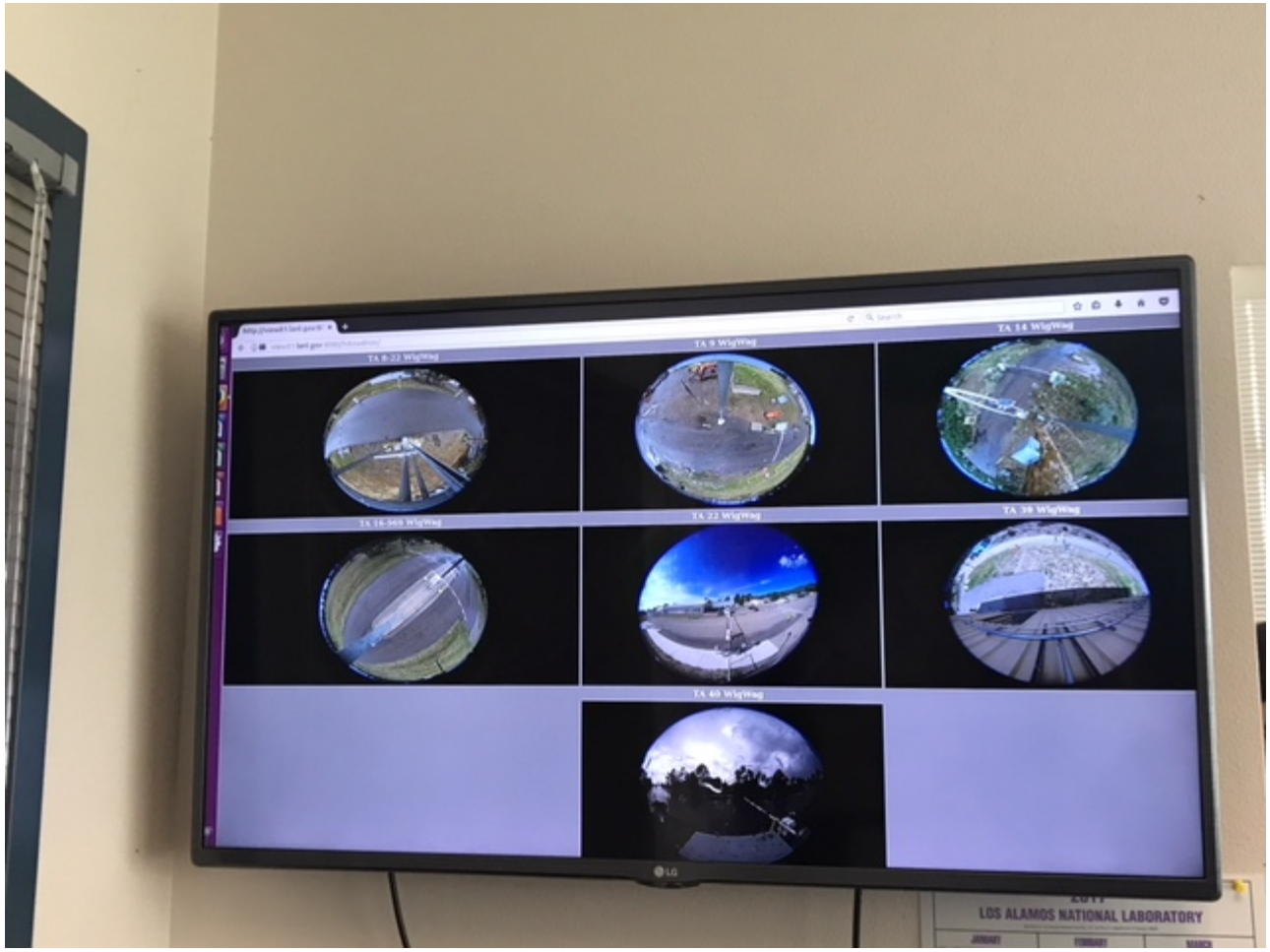
Access Control Status Boards

TA-15 HE Area Status Board

08/14/2018 - 12:06:00

Location	Facility Status	Time	Activity	HE POC/Contact	Notes/Condition	Updated
TA-14 Q Site	Open			Maria, 412-5850		08/14/2018 09:24:05
TA-15-R306	Open			Sam Vincent, 500-2843		08/13/2018 08:28:25
TA-36 (Eenie) Bunker 3	Open with Restrictions	PPE Must be worn when entering the site	Construction Site - Paving	Justin Smith, 695-8726	Justin POC for ALL OTHER ACCESS into site	07/26/2018 15:48:49
TA-36 (Minie) Bunker 8	Restricted	Plan A Clearance	10am, 10:30am	Ken Huff, 500-2562		08/14/2018 09:33:48
TA-36 (Lower Slobbovia) Bunker 12	Restricted	Plan B Clearance	1pm	Joel, 7-4798	LAFD @ 1pm	08/14/2018 07:42:59
TA-36 (Abner) Bldg. 78	Open with Restrictions	CONSTRUCTION DRIVE WITH CAUTION	BARRICADES IN PLACE			07/30/2018 16:37:25
TA-36 (Promoe, Moe, Detmoe) Bldg. 83, 10, 9	Limited					12/12/2017 14:24:40
TA-36 (IJ) Bunker 107	Limited					12/12/2017 14:23:42
TA-15-241, 242, 243	Limited					12/12/2017 14:22:38
TA-15 (Vessel Prep) Bldg. 534	Open			Brandy Royer, 412-5934		06/20/2018 12:27:14
TA-15 (X-Ray Lab) Bldg. 564	Limited			Ryan Vliestra		05/31/2018 16:37:15
TA-15 (DARHT) Bunker 312	Limited			Control Room, 7-4524		07/30/2018 16:37:02
DARHT Axis I	Limited	0952	Mode 2			08/14/2018 10:06:43
DARHT Axis II	Limited	0952	Mode 2			08/14/2018 10:07:22
TA-53 LANSCE (pRAD)	Limited			Aaron Vigil, 7-3225		08/10/2018 16:27:04

--Choose site--

Duty Officer: 664-2926 -- WFO Operations Manager: (W)665-6596 (C)500-5541 -- DARHT Operations Manager: (W)665-1330 (C)500-2742 -- TA-15 ACO: 667-6742

Access Control Cameras