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Title: LAFD: TA-55 General Facility Familiarization Tour, Course #55261

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Handout

Los Alamos County Fire Department

LAFD: TA-55 General Facility Familiarization Tour

Course # 55261

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TITLE PAGE

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Initial Date of Preparation	**September 1, 2011**
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Training Setting	**Facility Tour**
Target Audience	**All Los Alamos Fire Department Response Personnel**
Optimum Training Location	**Onsite**

Introduction

Los Alamos National Laboratory (LANL) will conduct familiarization tours for personnel of the Los Alamos County Fire Department (LAFD) at the TA-55 General Facility. These familiarization tours are official LANL business; the purpose of these tours is to orient LAFD firefighters to the facility so that they can respond efficiently and quickly to a variety of emergency situations. This orientation includes, among other topics, ingress and egress of the area and buildings, layout and organization of the facility, evacuation procedures and assembly points, and areas of concern within the various buildings at the facility. LAFD firefighters have the skills and abilities to perform firefighting operations and other emergency response tasks that cannot be provided by LANL personnel who have the required clearance level.

This handout provides details of the information, along with maps and diagrams, to be presented during the familiarization tours. The handout will be distributed to the trainees at the time of the tour. A corresponding checklist will also be used as guidance during the familiarization tours to ensure that all required information is presented to LAFD personnel.

LAFD Familiarization Escorts and Training Coordinators

The escorts and training coordinators (trainers) for the LAFD familiarization tours of the TA-55 General Facility may include subject matter experts from Operations, Safety & Health, or Emergency Preparedness (SEO-EP). The contact information for trainers of course #55261 is

- Andrea Romero, 500-2360, adromero@lanl.gov.

Elements of the Familiarization Tour

Introduction in PF-370, TA-55 Access Control Facility

1a. Fire Department personnel will meet at the TA-55 Entry Control Facility (ECF) with the trainer conducting the tour. Firefighters will be provided with a tour handout and will sign the roster before the start of the tour. Firefighters will receive a safety briefing and a radiological controls briefing. Firefighters must have a clearance and a thermoluminescent dosimeter (TLD) before the start of the tour.

1b. Prohibited articles are not permitted on Laboratory property, including parking lots, unless they are approved in advance by the Associate Directorate for Mission Assurance, Security, and Emergency Response-Security Incidents & Occurrence Investigations (ADMASER-IP). If a prohibited article is found, LANL may treat it as a reportable incident.

Prohibited Articles:
Prohibited articles are as follows:

- Dangerous weapons, explosives, or other dangerous instruments or material likely to cause substantial injury or damage to persons or property
- Alcoholic beverages, including unopened bottles or cans
- Controlled substances (e.g., illegal drugs and associated paraphernalia, but not prescription medicine)
- Other items prohibited by law

Devices that are allowed in the parking area, but not behind the fence:

Portable Electronic Devices

Portable electronic devices (PEDs) can potentially transmit or transport sensitive unclassified and classified information. The Department of Energy (DOE) identifies two types of PEDs: portable electronic storage devices (PESDs) and controlled articles.

Portable Electronic Storage Devices:

PESDs can store, read, or write nonvolatile information and be plugged into a computer. PESDs, unlike controlled articles, are not standalone devices. PESDs include

- CD/DVD write drives;
- external hard drives;
- flash memory (i.e., PC cards and SD memory cards); and
- USB memory devices (i.e., thumb drives, memory sticks, and jump drives).

Controlled Articles:

Controlled articles are standalone devices that can record and/or transmit data. Some examples of controlled articles are

- court-ordered devices (e.g., ankle-monitoring device);
- cameras (e.g., cell phones or other multifunction devices, such as a Blackberry, with photographic capability);
- cell phones and personal digital assistants;
- multifunction devices, such as a Blackberry;
- copiers or scanners with hard drives;
- digital audio players (e.g., iPod);
- laptop or palm-top computers;
- some medical devices (e.g., heart monitor); and
- two-way pagers and radios

1c. Escorts will be provided for all personnel taking the facility tour, in accordance with the following criteria:

- The escort must have the appropriate level of security clearance, be aware of facility-specific escort procedures, and be trained in Laboratory escort procedures.
- There shall be no more than five escorted individuals per qualified escort at any given time.
- The escort must maintain control of the escorted individuals at all times.
- Escorted individuals must be logged in as visitors to TA-55, using the visitor log-in sheet.
- Escorted individuals will log out at the completion of the tour.

Safe Approach Route, Standoff Points, and Assembly Areas

1d. When LAFD personnel approach TA-55 to respond to a fire, they should always approach the location from the upwind side if possible because the possibility exists that the smoke plume could contain radioactive or hazardous material. Facility representatives will provide LAFD personnel with a status report at the Facility Command (FC) before any attempt is made at fighting a facility fire. An access road around the facility will allow the LAFD to stage their equipment in an appropriate area to effectively fight a fire. TA-55 has two assembly areas: the assembly area for personnel not wearing anti-contamination (ANTI-C) clothing is located on the south side of the facility between PF-1 and PF-2; the assembly area for personnel wearing ANTI-C clothing is located between PF-1 and PF-39.

Facility Mission and Scope of Operation

1e. The Plutonium Science and Manufacturing Directorate, which includes the TA-55 General Facility, provides world-class, safe, secure, and reliable special nuclear material research; process development; technology demonstration; and manufacturing capabilities that support the nation's defense, energy, and environmental needs.

General Facility Layout

1f. TA-55 is bounded by Pecos Drive on the east and Pajarito Road on the south. The Entry Control Facility, PF-370, is located on the east side of the facility between the facility and Pecos Drive. Normal vehicle access will be from the west via Gamma Ray Drive through the vehicle access portal. TA-55 is a secured area; access is controlled by security personnel for normal access.

1g. Emergency vehicle access to TA-55 will be provided from Pecos Drive just east of PF-370. The Serving Our Country (SOC) protection force will assist the LAFD in expediting vehicle access in case of an emergency. In the event of an emergency when there is a power outage, the onsite SOC personnel have a current procedure, TA55-AERI-001, in place to manually open the access gates.

TA-55-400-2100 Facility Command (FC)

2a. Located in 55-400, Room 2100 is the FC. The facility is manned in an emergency and provides real-time data from a variety of sources that would be pertinent to emergency response personnel during the event.

Located throughout TA-55 are emergency response team (ERT) emergency medical cabinets and an automated external defibrillator (AED), which is stored in a separate cabinet. TA-55 has an ERT composed of facility volunteers who are trained to the first-responder level. In case of an emergency, the ERT will respond and take the steps necessary until other emergency responders arrive on scene.

Note: Depending on the time it takes for the LAFD to respond to TA-55, the ERT may have injured personnel at an appropriate location ready for transport to the appropriate medical facility when the LAFD arrives on scene. PF-39 contains offices and security personnel.

PF-114 Office Space

3a. PF-114 is a two-story office building, with an occupancy of approximately 150 people.

PF-28 Media Center

4a. PF-28 is the facility Media Center (document management).

4b. A beryllium storage vault is located in the basement of the Media Center.

TA-55 Outside

5a. The fire water supply for TA-55 consists of two pump house and fire water tank installations that are located at opposite ends of the area. Pump house PF-10 and fire water storage tank PF-12 are located on the east side of TA-55. Pump house PF-11 and fire water storage tank PF-14 are located on the west side of TA-55.

Both pump houses discharge into the fire loop, which has two check valves that in normal water supply configuration allow water to flow from east to west, from the TA-55-10 pump house, and prevent water from flowing east past PF-4 from the TA-55-11 pump house.

The sprinkler risers for TA-55-4 and TA-55-8/-18 are supplied from the fire loop west of the check valves. The sprinkler risers for TA-55-1, -2, -3, -5, 6, -28, -39, -114, -42 and -114 are supplied from the fire loop east of the check valves. The intent of this configuration is to isolate TA-55-4 from the balance of the buildings on the fire loop should there be a failure of the water supply or structures to the east of TA-55-4 (e.g., resulting from a severe seismic event).

The TA-55 fire loop has (normally closed) bypass valves around the two check valves, which allows the TA-55-11 fire pump house to supply the east portion of the fire loop if the TA-55-10 fire pump house is impaired. In this configuration, the vulnerability exists that a seismic event could compromise the water supply to TA-55-4 due to a failed structure and damaged fire lines. In this situation, it may be necessary for TA-55 operations and/or emergency responders to close post-indicator valves (PIVs) to sprinkler systems within damaged buildings to preserve the fire protection water supply for TA-55-4. **Following a severe seismic event, the LAFD may be instructed, as part of the incident command structure, to close PIVs to (damaged) sprinkler systems protecting non-TA-55-4 structures to preserve the available firefighting water for TA-55-4.**

Note: Each system has the same specifications; therefore, only one system will be described.

The pump house has an automatic sprinkler system and contains a diesel-driven fire pump and an electric-driven fire pump. Each pump is rated at 1000 gpm at 110 psig. A 25-gallon day tank located in the pump house supplies the fuel for the diesel-driven pump. A 560-gallon diesel fuel tank located in an aboveground tank adjacent to the pump house supplies the day tank. The fire water storage tank has a capacity of 150,000 gallons.

Fire department connections at the pump house provide an alternate feed to the fire water loop.

This system supplies water to a fire water main that forms a loop around TA-55, within the perimeter fence.

5b. While conducting the tour of TA-55, use the attached area fire protection maps to locate firefighting equipment, including fire hydrants, PIVs, and Fire Department connections to the buildings.

Note: Fire hydrants are located close to the fence, which has motion sensors; if firefighters are not careful, they can set off motion sensors while testing fire hydrants.

5c. PF-5 is the power source assembly facility.

5d. Located to the north of PF-5 is a 90-day satellite hazardous waste storage building, PF-190.

5e. Located at various sites around the facility are yellow boxes that contain operations center intercom devices for communications.

5f. Also located on the north side of PF-3 is a hidden office area, B01. The only entrance/egress from the area is from the door on the north side.

5g. PF-6 is north of PF-3 and houses a gymnasium, an equipment room, and chillers. A roof access ladder is on the north side of PF-6.

5h. PF-8 is a mechanical equipment building which houses compressors and an uninterruptible power supply (UPS).

5i. PF-391, the UPS building, is protected by an Ordinary Hazard, Group II dry pipe sprinkler system from the riser in PF-8. The fire department connection for this system is located on the south wall of PF-8. The UPS system, which is installed in the north room and has a disconnect switch there, is also protected by two clean agent systems.

5j. On the north side of PF-4 at the basement level is a loading dock. Pressurized gas cylinders are located on the dock area.

5k Many pressurized gas tube trailers are located around the facility, such as the one on the east side of PF-42.

5l. Located to the north and west of PF-391 is an emergency diesel generator, PF-364.

5m. PF-42, located on the north side of the facility, is the work controls area. The building contains shops and areas occupied by crafts people.

5n. The facility's UPS is located in PF-47. This system ensures that there is a continuous electrical power supply to TA-55, whether from the normal supply or a backup supply.

5o. TA-55-314 is a warehouse/storage facility containing rack and solid pile storage of consumables and combustible material. The facility is sprinkler-protected, with the fire alarm control panel located in the TA-55-11 pump house.

5p. On the west side of TA-55 are several cryogenic liquid Dewars, which contain a variety of cryogenic liquids.

5q. On the west side of PF-4 are two emergency egress points, one to the north and one to the south. Impact barriers are located at these two egresses from PF-4.

5r. On the west side of PF-4 is a hazardous waste storage area.

5s. PF-11 and PF-14 are also located on the west side. These buildings are identical to the fire water pump house and the west-side fire water storage tank that were described in step 5a.

5t. Located on the west side of the facility is the normal vehicle access to TA-55. All routine vehicle traffic will pass through this access point, which is controlled by the security force.

5u. The central alarm station (CAS) and the secondary alarm station (SAS) are located in PF-142 on the west side of TA-55.

5v. West of the CAS and SAS is a canopy (TA-55-355) covering a high-energy neutron counter (HENC) facility (TA-55-407) used for characterizing containerized solid waste. Adjacent to the HENC facility, mobile loading of waste containers into Tru-Pact shipping casks for shipment to the Waste Isolation Pilot Plant (WIPP) intermittently occurs. A crane may be positioned in this location.

5w. PF-185, located on the west side of the facility, is a Resource Conservation and Recovery Act (RCRA)-permitted storage area.

5x. Located on the south side of TA-55 are more compressed gas tube trailers that supply various gases to the facility.

5y. A 6000-gallon nitric acid tank is located in an enclosure on the south side of TA-55. Nitric acid is extremely hazardous; caution must be exercised near this tank. The area where this tank is stored is a permitted confined space.

5z. South of PF-4 is a loading dock. The dock area is a chemical storage area with compressed gas cylinders on the dock. Chlorine gas is stored on the dock. Chlorine gas is extremely hazardous; caution must be used if there is an emergency response to this area. A primary access point to PF-4 from this dock is for emergency responders.

5a1. The non-ANTI-C assembly area is located between PF-2 and PF-1 on the south side of TA-55.

5b1. The transportainer that is located on the south side of PF-1 contains spill equipment and ERT equipment.

5c1. Located on the east side of TA-55 between PF-1 and PF-39 is the ANTI-C assembly area.

PF-1

6a. PF-1 is the main office space for TA-55, which includes a cafeteria and an auditorium.

PF-20

7a. The Health Physics Operations office is located in PF-20.

7b. The Criticality Safety office is located in PF-20.

PF-3

8a. PF-3 is primarily used for laboratory and office space.

8b. Post 116, which is the main entrance to PF-4, is accessed from PF-3.

8c. PF-3, Room 119 contains potassium hydroxide, sodium hydroxide, sodium hydride, and aluminum nitrate (150 gallons of each). Sodium hydride is water reactive; water should not be used to fight a fire in this area.

8d. Post 118, which is the backup entrance to PF-4, is accessed from PF-3.

8e. Located in the northwest corner of PF-3 is the main fire panel (DACS 3225) for TA-55.

8f. The operations center for PF-4 is considered to be part of PF-4; however, it is accessed from PF-3. The operations center has its own standalone ventilation system in case of a release or a fire in PF-4 so that the operations center can remain in operation. The operations center provides real-time information regarding the system status in PF-4 that will be extremely useful to emergency responders.

8g. Located in the north side of PF-3 is the Waste Management office.

PF-2

9a. PF-2, which is a three-story structure, is predominantly used as an office space.

9b. PF-2 houses the Health Physics Analysis Laboratory (HPAL).

PF-5

10a. Located in PF-5 is the TA-55 warehouse. The power source facility, which contains two glovebox lines, used for making power sources, is located in the lower level on the north east side.

Relative Risks

Chemical Hazards: The primary chemical hazards at TA-55 are acids, caustics, and other volatile chemicals used in various processes conducted at TA-55.

Pressurized Gas Cylinders: Pressurized gas cylinders used at the facility represent a hazard due to the possible release of gas that is potentially hazardous and from possible improper storage that might result in damage to a cylinder, which could present a missile hazard because of the pressure in the cylinder.

Radiological Hazards: The radiological hazards at TA-55 are primarily due to plutonium, which emits alpha radiation, and some gamma radiation. The hazard is predominantly due to contamination. Plutonium is a fissile isotope, and therefore there is a remote possibility for a nuclear criticality, which produces large amounts of neutron and gamma radiation.

Beryllium Hazards: Beryllium is contained in a beryllium store vault in the Media Center.

Facility Alarms

The facility is equipped with the following alarms:

- Fire
- Ventilation
- Continuous air monitor (CAM)
- General evacuation

Controls

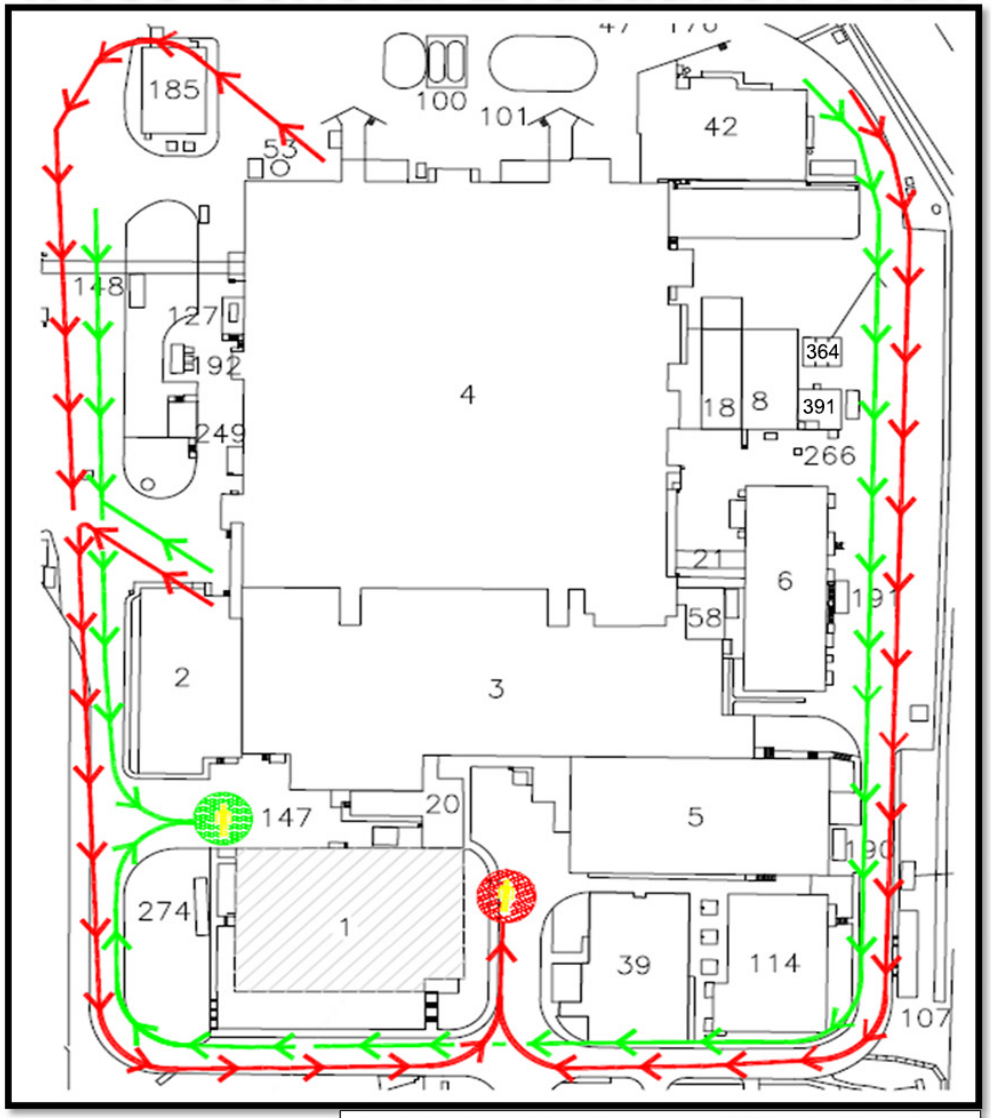
The following controls are in place to reduce the risk of accidents that would cause personnel or responders to be exposed to facility hazards. In addition, numerous engineered and administrative controls in the processing systems prevent accidents or limit the consequences should an accident occur:

- *Combustible Loading:* The facility operates with levels of combustible materials that make the risk of an interior catastrophic fire very low.
- *Facility Structure–Firewalls:* The facility structure's outer walls are of substantial construction and are firewalls that prevent the spread of the fire within the facility.
- *Pressure Safety Program:* This program mitigates specific hazards that pressure presents (e.g., explosions, release of contents, and mechanical injury).
- *Radioactive Inventory Control Program:* The radioactive inventory control program limits the amount of radioactive material in the facility.
- *Quality Management Program–Training and Qualification Program:* Workers are trained and qualified on security, safety, containment, and sample transfer requirements for working with radiological, chemical, and biological material.
- *Fire Suppression System:* Minimizes the spread of fires and lowers temperatures.
- *Gas Cylinder Safety Program:* The gas cylinder safety program includes procedures for handling cylinders and the requirement to restrain gas cylinders used in the facility.
- *Postings:* Postings are as usual for LANL operating areas.
- *PPE:* Personal protective equipment (PPE) is required as the last line of defense to further protect workers from hazards. In the spirit of the Occupational Safety and Health

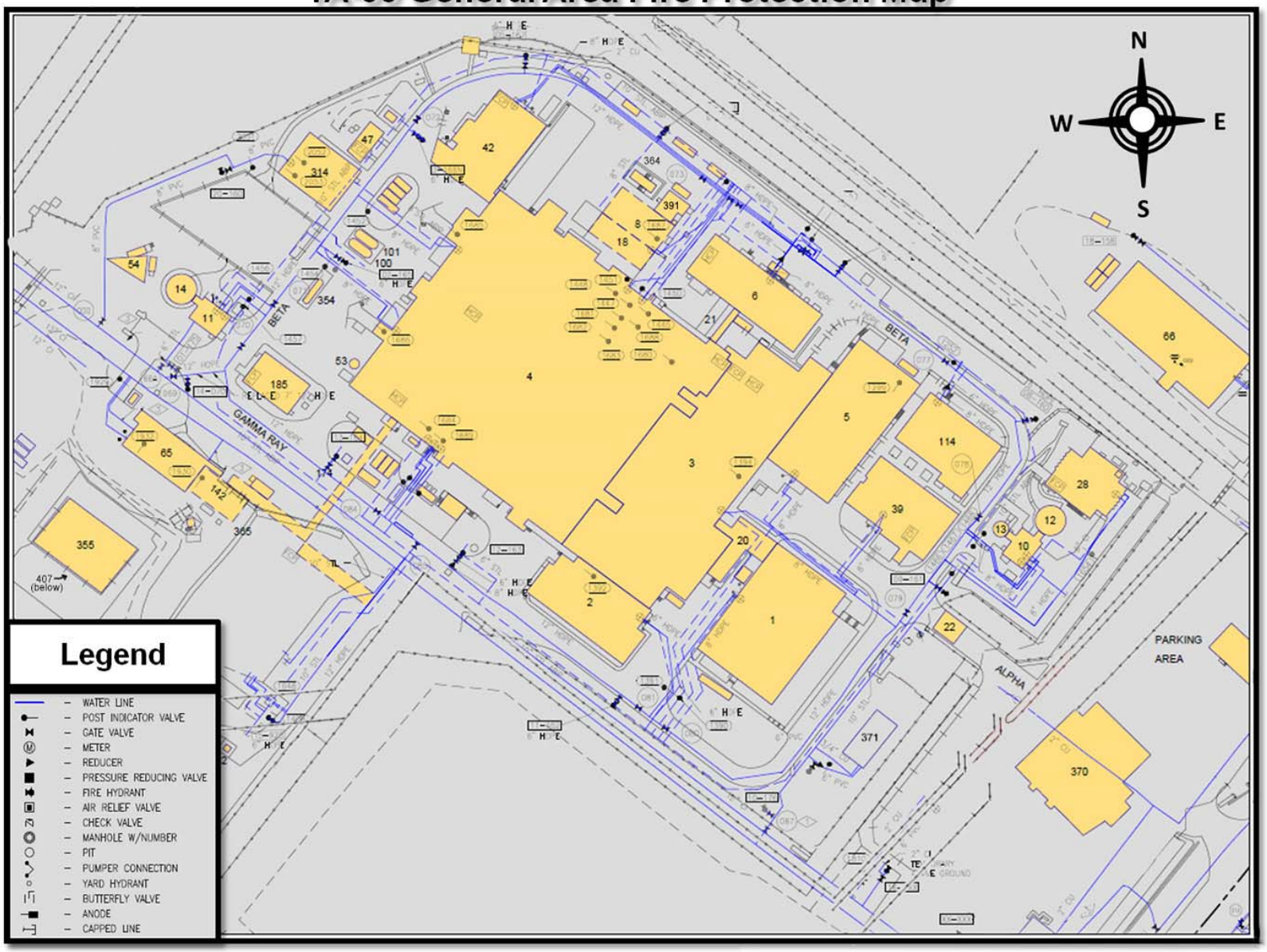
Administration (OSHA) Regulation 1910.132, *General Requirements for PPE,* guidelines for PPE will be determined during the integrated work management (IWM) process.

- *Integrated Work Management:* An integrated work document (IWD) is required for all moderate- or high-hazard work.

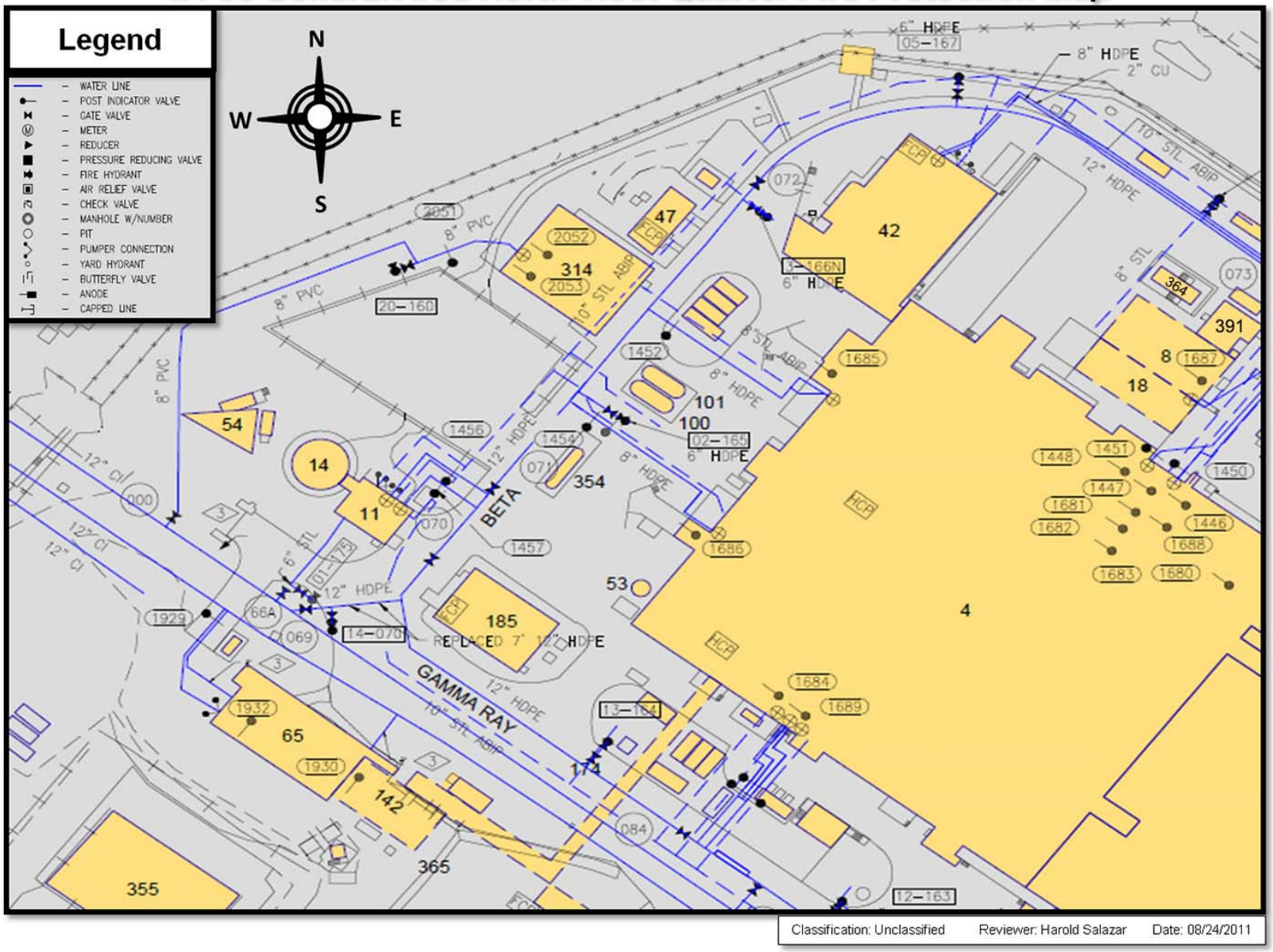
TA-55 General Evacuation Plan



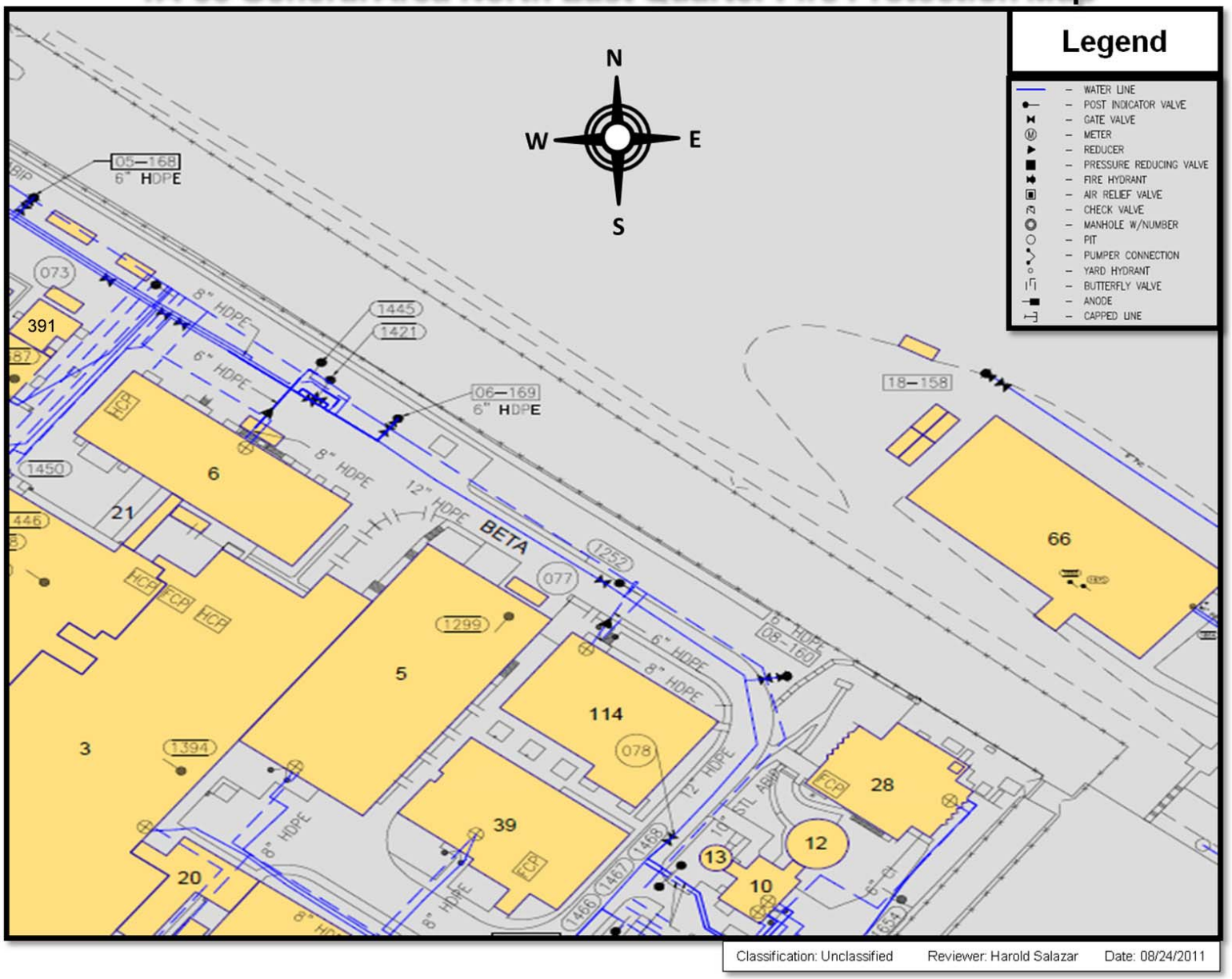
TA-55 General Area Fire Protection Map



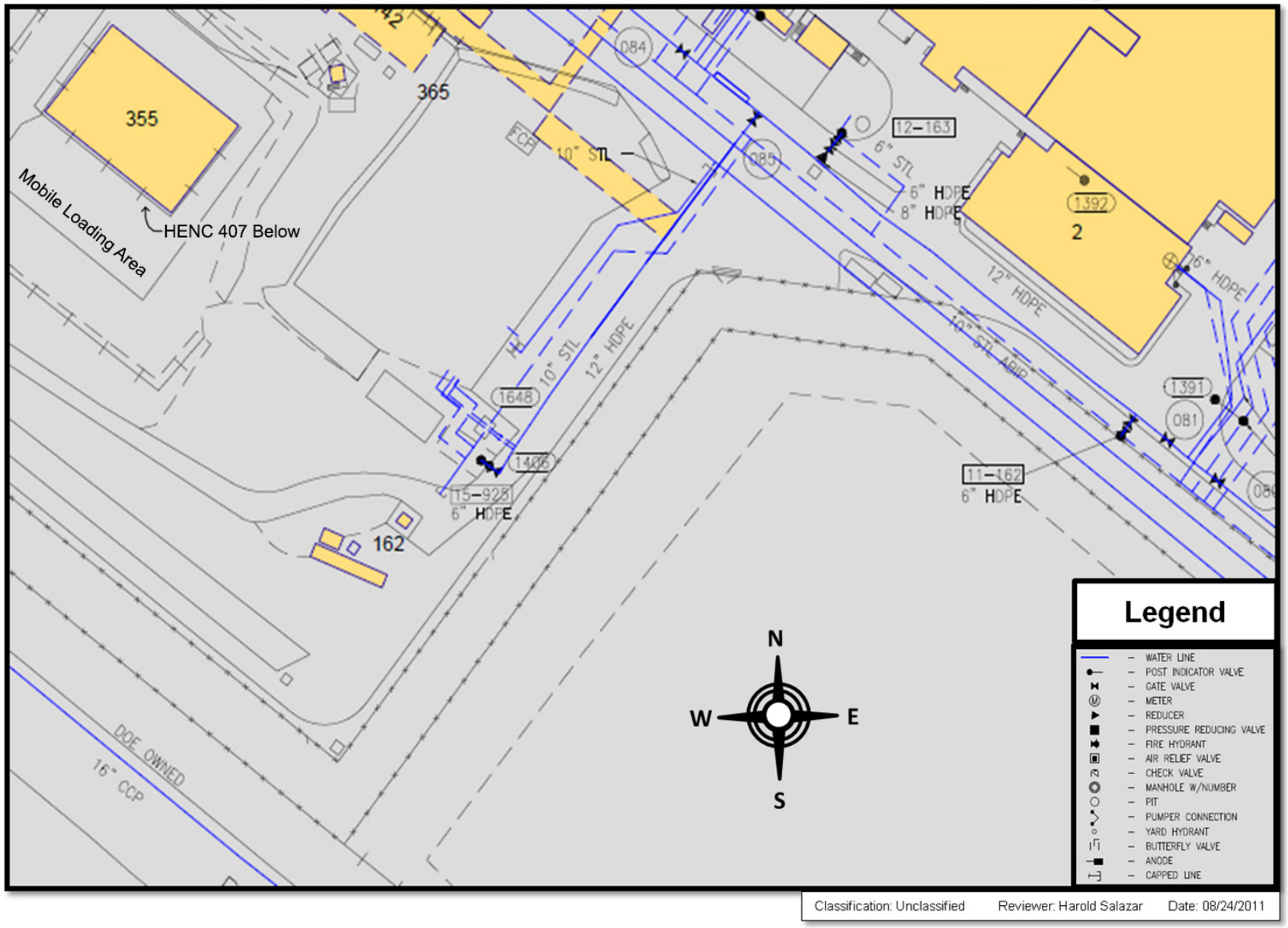
TA-55 General Area North West Quarter Fire Protection Map



TA-55 General Area North East Quarter Fire Protection Map



TA-55 General Area South West Quarter Fire Protection Map



TA-55 General Area South East Quarter Fire Protection Map