Springfield Processing Plant (SPP)

Facility Information

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1 Republic of Isotopia

The Republic of Isotopia (Figure 1) is the smallest of the regional republics, yet it possesses large fossil fuel reserves and plentiful supplies of other minerals and metals. It also has a large agricultural sector featuring livestock and grain. Isotopia's industrial sector rests on the extraction and processing of these natural resources and also on a growing machine-building sector that specializes in construction equipment, tractors, agricultural machinery, and some defense items. The country's solid 3.5% economic growth is largely due to its booming energy sector, but also to economic reform, good harvests, and foreign investment. In order to prevent overdependence on the oil sector, the country has embarked on an industrial policy designed to diversify the economy by developing light industry and a nuclear energy infrastructure.

Figure 1. Geographical Layout – Republic of Isotopia

The Springfield Processing Plant is a ***hypothetical*** facility. It has been constructed for use in training workshops.

Current issues include expanding the development of the country's emerging nuclear energy resources, achieving an export capacity of electrical and nuclear energy to border countries, and strengthening relations with neighboring states and other foreign powers.

2 The City of Springfield

The capital of Isotopia, Springfield, is an ancient city that arose from the crossroads of early trading lanes. Today, the city is a modern metropolis of two million inhabitants. Springfield contains a major roadway, a rail system, a private airport, and a military airport.

3 Physical and Environmental Conditions near the SPP

Topography, vegetation, wildlife, background noise, and climate/weather are described in this section.

3.1 Topography

The SPP is located in a semi-arid environment.

3.2 Vegetation

Small shrubs, cacti, hardy desert trees, and grass are the only vegetation in the area.

3.3 Wildlife

Small animals such as rabbits, squirrels, prairie dogs, and coyotes inhabit the area. Birds of all sizes are also present.

3.4 Background Noise

Regional earthquakes cause seismic disturbances occasionally. Some noise may also occur because of heavy passenger vehicle traffic on nearby roads and low-flying aircraft.

3.5 Climate/Weather

The climate is a typical high-desert environment with approximately 300 clear days of bright sunshine per year. On cloudy days, there are areas with a high light-to-dark ratio because of moving cloud shadows. Rainfall is about 15 cm (6 in.) per year, with the majority occurring during seasonal thunderstorms in the late July–August rainy season. The spring is typically very windy for two to three months, with continuous winds of 2 to 5 km/hr (1 to 3 mph) and gusts up to 50 km/hr (30 mph). Dry debris, dust, and dead vegetation are blown about during the windy season.

4 Springfield Processing Plant (SPP)

The Springfield Processing Plant (SPP) is located in the Republic of Isotopia, approximately 29 km (18 mi) east of Springfield (Figure 2). Founded in 1950, the SPP is the nation's premier facility for processing nuclear material for use in power and research reactors. The SPP receives uranium metals of varying enrichments and processes the material into a specific shape, size, and weight, and then securely ships the final product back to the customer. The facility houses various research, administrative, and support facilities with three primary areas of operation: the Interim Storage Building (ISB), the Processing Facility (PF), and a waste storage area. Figure 3 provides an overview of the locations of the material while at the SPP.

Figure 2. Geographical Layout – Springfield Processing Plant

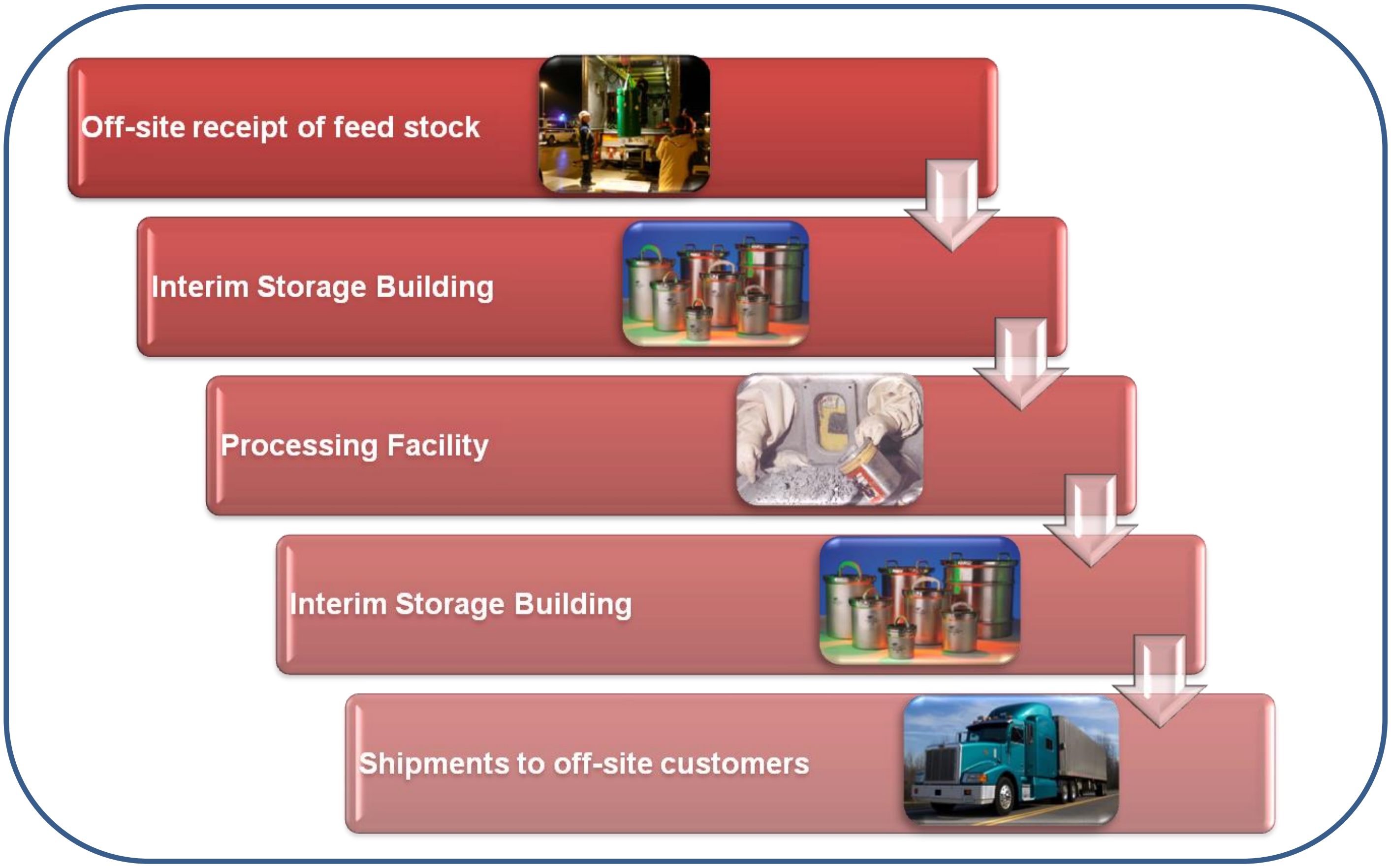

Figure 3. Process Overview at SPP

4.1 SPP Interim Storage Building (ISB)

The Interim Storage Building (ISB) is located on the west side of the SPP facility (Figure 4). The ISB is used as a temporary storage location for shipments of incoming and outgoing nuclear material as well as low-level solid waste (clothing, scrap materials, etc.). The building is constructed of 1-m (3.28-ft) reinforced concrete walls and ceiling, with doors for personnel entry/exit (normal and emergency) as well as vehicle access doors (exterior roll-up and interior double-swing vault door).

The material balance area (MBA-1) for the ISB is geographically defined as the same boundaries as the MAA boundaries. The amount of nuclear material present makes the MBA a Category I facility.

Material is moved into the ISB by truck via a roll-up door. Once the door is closed, SPP facility personnel perform Material Control and Accounting (MC&A) activities in the Material Measurement Area (MMA) prior to moving the material into the Interim Storage Vault (Figure 5). The material located in this area is of concern to the safety and health physics personnel.

The material is received in material containers ("paint cans") that can hold up to eight kilograms (kg) (17.6 pounds [lbs]) ranging in enrichment from natural up to 80% enriched solid uranium metal. The metal (feedstock) within the material containers is of various shapes, ranging in net weight from a few grams to several kilograms.

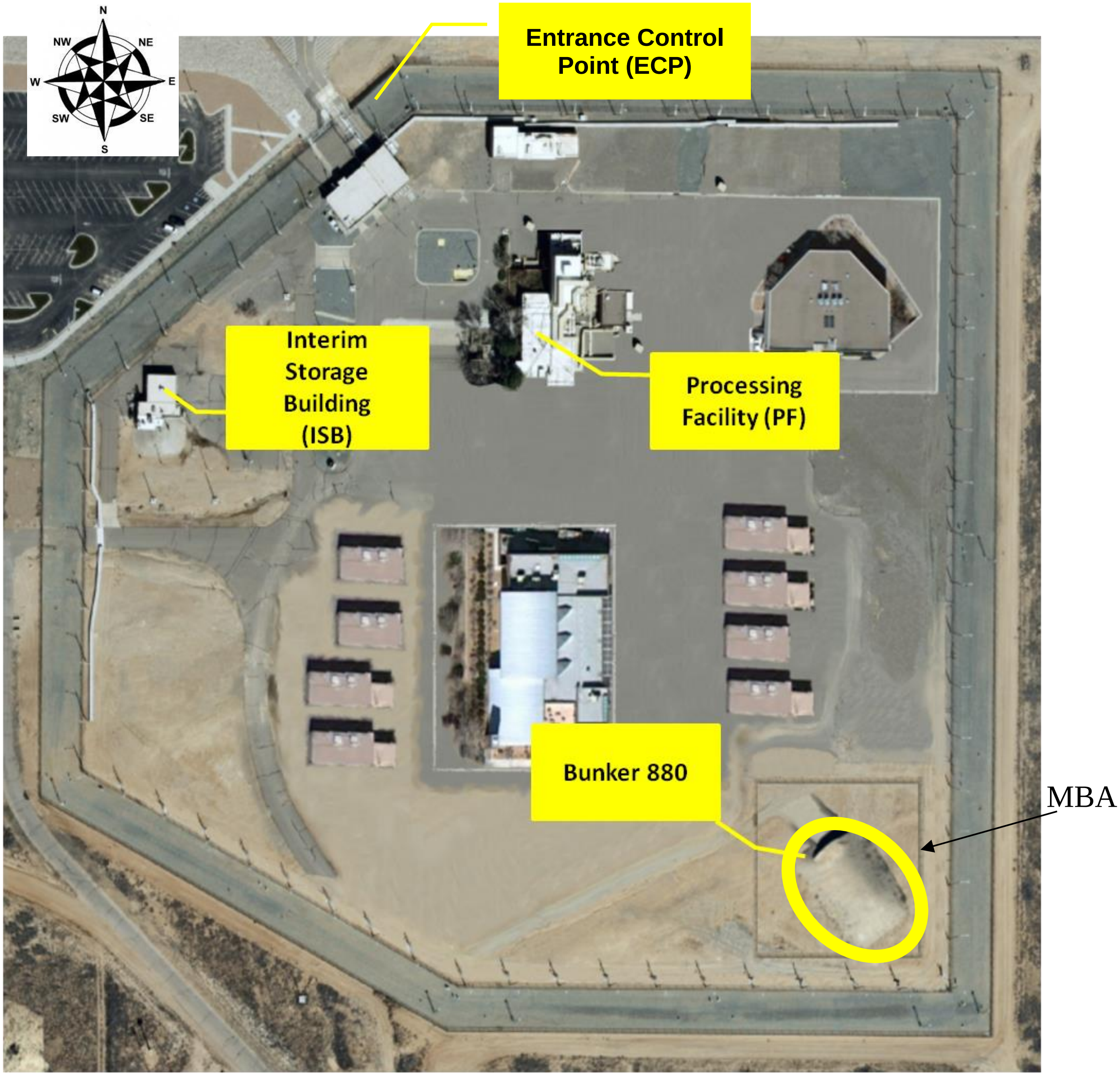

Figure 4. Springfield Processing Plant (SPP) Layout

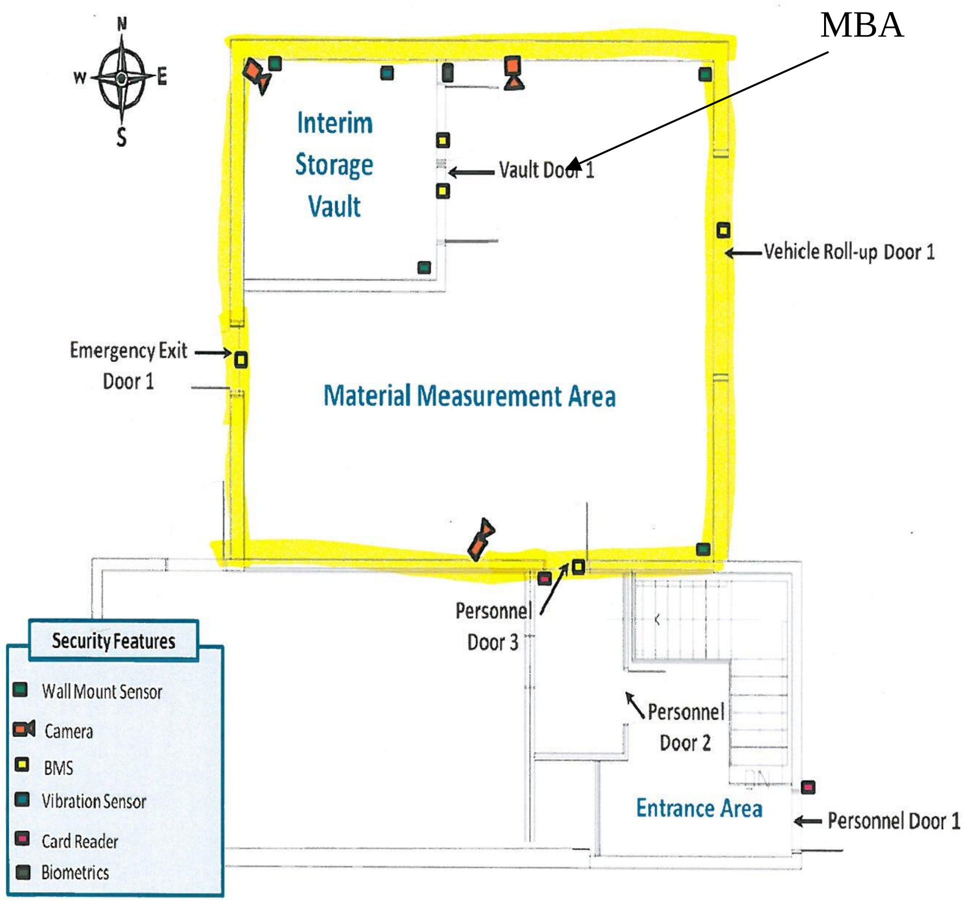

Figure 5. Interim Storage Building Floor Plan

Material containers are received with Tamper Indicating Devices (TIDs) and passport data, which reflects gross weight, net weight, uranium weight, and total U^{235} weight. (The individual weights of items within the container are not tracked in the database, but are provided in a supplemental worksheet for each container.)

Once the material is received, personnel inspect the containers for obvious signs of damage or tampering, check TIDs for integrity and number consistency with passport data, and measure the container's gross weight and gross gamma measurement to ensure the enrichment is as declared. Although the initial checks of the container and TID are conducted immediately, confirmation measurements may take up to seven days to complete. After checking the containers, personnel place the containers in racks in the Interim Storage Vault (Figure 6). When not occupied, the vault is locked and alarmed via the interior intrusion detection system.

Figure 6. Material Containers in Interim Storage Vault Racks

When requested by operations, containers are transferred to the Processing Facility. Transfer checks include a verification of TID integrity and number against the accountability records. No measurements are made at the time of transfer. Transfers are completed via site vehicles driven by site personnel.

For off-site shipments, container and TIDs are checked against accounting records and loaded into 0.2-m^3 (55 gallon) drums. A gross weight check is performed prior to loading into the 0.2-m^3 (55 gallon) drums. The drums have TIDs applied after loading; however, drums may be stored in a vault for several weeks before shipment. Gross weights for the drums are taken for shipping purposes. Drum numbers and TIDs are checked prior to loading on to the truck. Gross gamma measurements are not taken during loading or shipment.

Inventory is conducted monthly and consists of a wall-to-wall inventory of each container and TID verification for each item. Confirmation measurements are performed on a statistical basis, that is, 3% of containers are selected at random. The containers are measured and compared with the gross weight and gamma measurements obtained when the container was received.

4.2 SPP Processing Facility (PF)

The Processing Facility is located about 100 m (328 ft) southeast of the SPP entrance (see Figure 4). The Processing Facility contains equipment to mold the feedstock into a particular shape; typically, the shape is in the form of pellets. Personnel assigned to the Processing Facility use glove boxes to handle the solid feedstock and process the material into its final form.

The Processing Facility is constructed of 1.5-m (5-ft) reinforced concrete walls, floors, and ceiling. There are pedestrian entrance doorways as well as vehicle entry points. The building lacks windows; heating and ventilation occurs via the heating, ventilation, and air conditioning (HVAC) system, which provides airflow via ductwork utilizing nested pipe delay barriers that preclude personnel entry. The floor plan is provided in Figure 7.

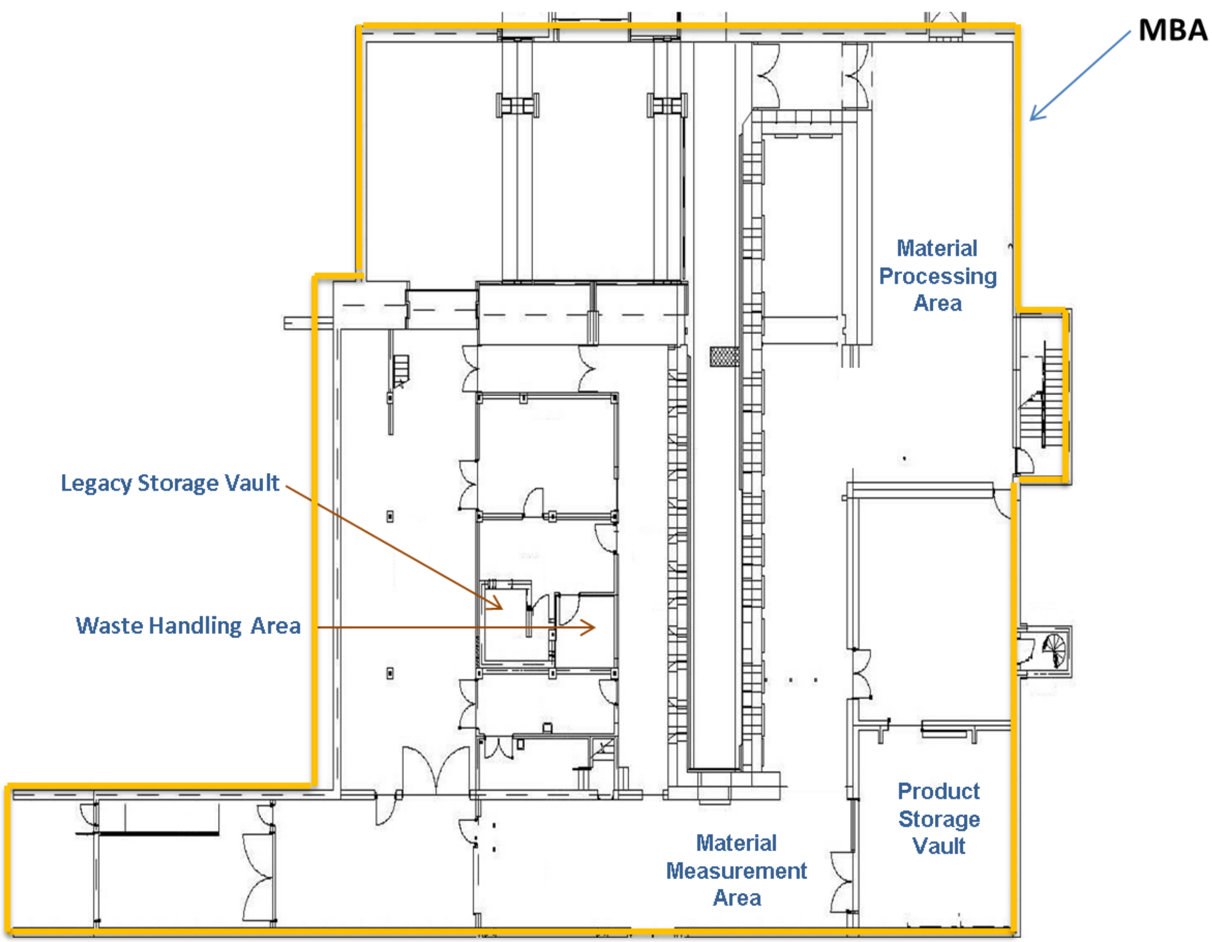

Figure 7. Processing Facility Floor Plan

The PF is a Category I-B facility. Like the ISB, the material balance area for the PF (MBA-2) shares the same boundaries as that for the MAA.

Once material containers are received from the ISB, personnel verify the number of the feedstock containers (paint cans), inspect the TID, and compare gross weight against the transfer documentation. Personnel then move the containers into the Product Storage Vault until needed for processing.

4.2.1 Glove Boxes

Four glove boxes are located in the material processing area (Figure 8), each designated for a separate task, as described here.

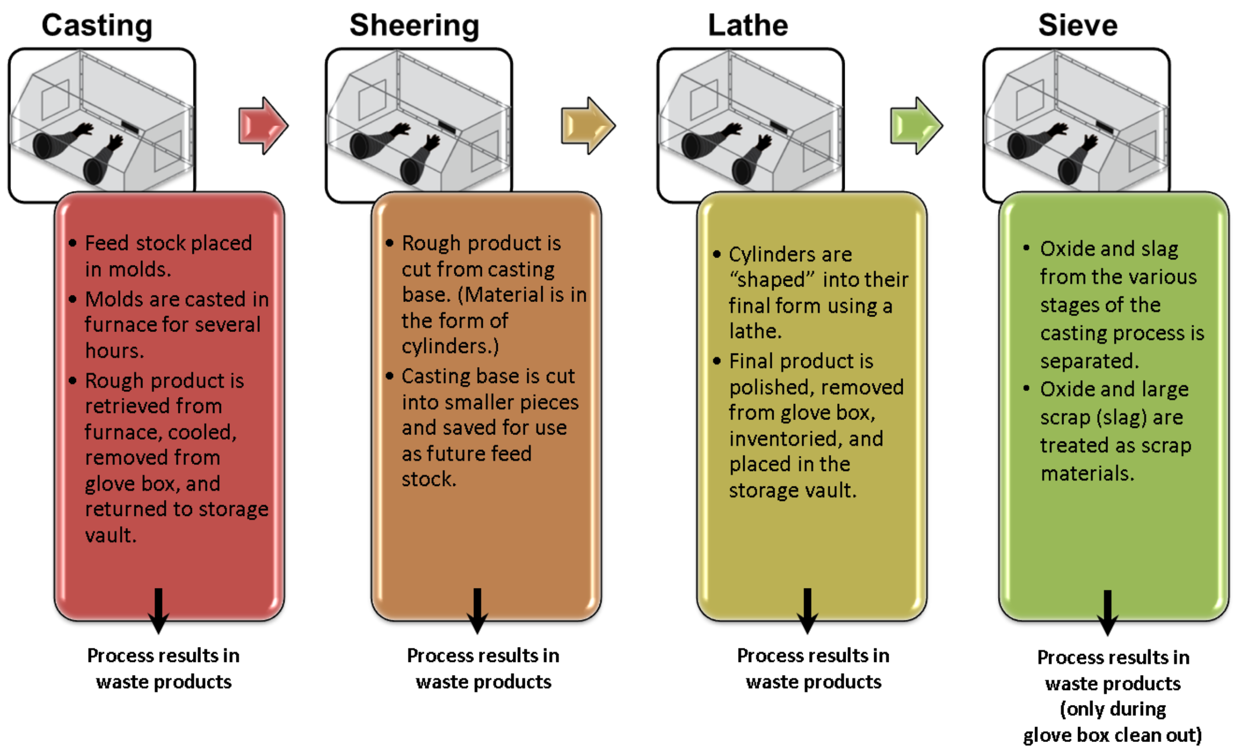

Figure 8. PF Operations

1. **Casting Glove Box**

Designated feedstock containers are moved from the Product Storage Vault to the processing weigh station. Operators remove the required pieces from the container, verify the weight of each piece and place all pieces on a tray with ~7 kg (15.4 lbs.) of metal pieces per batch. The tray is then moved to the Casting Glove Box and the container (if not empty) is resealed, weighed, and returned to the Product Storage Vault. In the glove box, the mold is loaded and placed in the furnace (0.2-m^3/55-gallon drum).

Once the material has been cast, it is removed from the furnace and cooled in the glove box. This process can take several hours to complete, and in some instances, materials may be left in the glove box overnight. The cooled rough product is wiped down with a cloth in the glove box, removed, weighed, and then either:

a. Placed in a box with a TID applied and then stored in the vault, or,
b. Transferred directly to the Sheering Glove Box.

The rough product from this operation is like a LEGO™ block, (i.e., it has a cylinder on top of a rectangular slab).

The scrap material that comes out of the casting consists of oxide (powder) and various small pieces of metal. This material collects in the heating unit as well as spills out into the glove box during removal of the casted part. Thus, the Casting Glove Box has very small particles of metal and oxides inside the box and in the drum (casting furnace). The material in the glove box is collected with a whisk broom and dust pan, and emptied into a small container kept in the glove box until full. At that time, the container is either moved directly to the Sieve Glove Box, or it is weighed, has a TID applied, and then is placed in the vault. The amount of material that may be in the containers ranges up to ~5 kg (11 lbs).

The cloths used to wipe down the casting are collected after each batch and thrown away in a 0.2-m^3 (55-gallon) waste drum in the General Operations Area.

2. **Sheering Glove Box**

This glove box contains a saw, which is used to separate the metal cylinder from the rectangular base. Once cut off, the cylinder is wiped down with a cloth in the glove box, removed, and weighed. The cylinder is then either placed in a box with a TID applied and stored in the vault; or moved directly to the Lathe Glove Box. These cylinders should weigh about 4.8 to 5.2 kg (10.6 to 11.5 lbs).

The rectangular base, which was removed, is cut into smaller pieces such that they can be placed in a container located in the glove box. The pieces are wiped down before being placed in the container, which is not removed until full; at that time, it is moved to the weighing station where the pieces are removed and weighed, and then either placed in the same container or into another container with a TID applied. After the gross weight of the container is measured, it is moved to the Product Storage Vault.

During the cutting operation, very fine particles of metal are produced. These collect on both an oil absorbent pad and the cloths used to wipe down the cylinder and pieces. The used pads and cloth are collected after each batch and deposited in a waste drum.

3. **Lathe Glove Box**

This glove box has a lathe used to shape the cylinder created in the Sheering Glove Box. The lathe produces the final shaped item as well as shavings and oxide. The shavings and oxide are collected in a container in the glove box, which is removed when full and temporarily stored in the Product Storage Vault.

The final, shaped product is wiped with a cloth, taken to the weigh stations, weighed, and placed in a box with a TID applied. The box is weighed and then transferred to the ISB Product Storage Vault.

4. **Sieve Glove Box**

The Sieve Glove Box is used to separate the oxide/slag collected during the casting operation. The oxide that falls through the sieve is collected in one container, and the small metal pieces are collected in another. Both containers are kept in the glove box until full. Residual oxide and small pieces of metal are scattered in the Sieve Glove Box; the residual oxide/metal pieces are cleaned out prior to inventory.

Once full, the containers of metal pieces are weighed and the net weigh calculated (gross weight minus tare). The material is given a 100% purity value and the enrichment is estimated based on casting enrichment data. When a can of oxide has been filled, a 25 gram sample is removed and sent to the analytical laboratory for analysis. The container is weighed and the net weight calculated (gross minus tare), The cans then have a TID applied and are sent to the feed storage until shipped to the ISB.   Once the analytical values are complete, the accounting records are updated to reflect the true uranium concentration and enrichment.

Samples – Samples may be taken of the nuclear material are taken in the Processing Facility within each glove box and sent to the Analytical Laboratory for analysis. These samples are placed in small glass vials that contain ~~25 grams net weight. The samples are placed under TID and then in a larger shipping container. A transfer document is completed and the samples are walked from the PF to the analytical laboratory through the personnel portals for both the MAA and the PA. The unused portion of the sample is returned to the PF using the same procedure.

4.2.2 PF Waste Handling Area

Low level waste is generated in the form of contaminated personal protective equipment, rags, etc. The material is placed in drums, scanned by NDA, a TID applied and then transferred to the Waste Storage Area outside the PA (General Operations Area), measured by NDA for accountability and the resulting quantity credited back to the shipping MBA.

Once the waste drums are filled, they are removed from the General Operations Area and moved into the PF Waste Handling Area, which is located within the Processing Facility (Figure 7). The PF Waste Handling Area does not have applied access controls.   Each drum stored in the PF Waste Handling Area has a unique TID; also, a gross gamma scan is performed before the drum is moved into the area. Drums are eventually removed from the PF and sent to the Waste Storage Area for measurement and transfer to the Waste Management Organization.

4.2.3 Feed Storage Vault

All material being received into the PF, unless moved directly to a glove box is stored in the Feed Storage Vault. Also, re-usable materials (metal pieces, oxides and interim product parts, are also stored in the Feed Storage Vault when not in use. Since this Vault is part of the MBA, transfer documents are not used when moving the material to or from the glove boxes. However, the operations personnel are responsible for updating the location of the moved item in the accounting records.

4.2.4 Product Storage Vault

Various types of material in various forms are returned to the ISB Vault from the Product Storage Vault. For each transfer, regardless of the form, the container number and TID are checked against transfer paperwork. A gross weight check is performed and also compared to the transfer documents. Material received from the process area includes the following:

- Final shaped parts ranging from 4.8 to 5.2 kg (10.6 to 11.5 lbs) solid uranium from the lathe operations. The final parts are received in containers, which have had a TID applied at the processing area.
- Large containers of oxide/slag from the processing area (sieve operations). These containers range in weight from 6 to 9 kg (13.2 to 19.8 lbs). The oxide containers are then shipped to another facility (off-site) when requested.
- Large containers of metal shavings from the lathe operations. These containers can range in weight from 6 to 9 kg (13.2 to 19.8 lbs). The shavings are then shipped to another facility (off-site) when requested.

All finished product parts are stored in the Product Storage Vault when not in a glove box. Since this vault is part of the MBA, transfer documents are not used when moving the material to or from the glove boxes. However, the operations personnel are responsible for updating the location of the moved item in the accounting records. Product and scrap items are only stored temporarily until transferred to the ISB vault for shipment offsite.

4.3 Bunker 880

At one time, the SPP produced reactor materials for nuclear power plants. The role of the SPP has evolved from its initial mission, and as a result, the facility uses Bunker 880 (see Figure 4) to house legacy nuclear materials. Of all the operational facilities visited at the SPP, the regulatory body was most pleased with the protection level at Bunker 880, citing that there was a low risk of material theft/sabotage.

Bunker 880 is a typical storage bunker with a bermed roof and sides. The front of the bunker has a 0.75-cm (0.3 in) steel plate door with two commercial-grade keyed padlocks. There is a balanced magnetic switch (BMS) on the door, but no motion sensors inside. The fuel rods are each man portable and are positioned inside a metal matrix that provides criticality control. They are not restrained and can be readily removed by sliding them out of the matrix. The bunker is usually accessed monthly to monitor radiation levels, as well as potential contamination from the deteriorating fuel rods, and annually to perform an inventory.

One of the two Health Physics (HP) staff and the Material Custodian open the vault for the monthly monitoring. The Material Custodian gets the keys from the Operations Supervisor on a regular basis for such activities around the site. When the bunker is opened, the Material Custodian stands outside and observes the HP staff actions to minimize the Material Custodian's radiation exposure. During inventories, there are several people in the vicinity recording actions and rod information, but at least two personnel are inside the bunker when the door is open.

4.4 Analytical Laboratory

To support operations and nuclear materials accounting, a destructive analytical laboratory is located outside the protective area. This material balance area is operated by the Analytical Laboratory and houses various analytical measurement equipment for measuring the uranium in the forms generated from the Processing Facility. Small sample of ~25 grams are received, sub-sampled for analysis and the unused portion returned to the PF. Waste generated from the destructive analysis operations are characterized and shipped to the Waste Storage Area. This is a Category IV MBA.

4.5 Waste Storage Area

All low-level waste generated with the SPP are sent to the Waste Storage Area prior for eventual shipment off-site. The Waste Storage Area is located outside the protected area and is under the organizational responsibility of the Waste Management Department. Material received is measured by non-destructive analysis and any accountable quantities of nuclear materials credited back to the shipping MBA. It may be several weeks or months before the received waste is characterized and the accounting records updated. This is a Category IV facility.

5 Target Identification

At any given time, nuclear material is present in either the ISB or the Processing Facility. The material can be in various configurations (disk, pellet, powder, or waste) throughout either of the facilities. The site considers both the ISB as well as the Processing Facility to be high-priority target locations, and the materials located in these locations to be susceptible to theft or sabotage (Table 1).

Table 1. Form, Category, and Priority of Nuclear Material at the Springfield Processing Plant (SPP)

Facility	Form of Material	Category	Priority (H, M, or L)
Interim Storage Building (ISB)	HEU Metal Parts	I	H
	HEU Metal Pieces	I	H
	HEU U_3O_8 Powder	I	H
	HEU Scrap (Unusable)	II	H
Processing Facility	HEU Metal Parts	I	H
	HEU Metal Pieces	I	H
	HEU U_3O_8 Powder	I	H
	HEU Scrap (Unusable)	II	H
	Low level Waste (solid)	IV	L

6 SPP Personnel and Organization

Approximately 200 employees and contractors are employed at the SPP. In addition, on average, 75 visitors are granted site access per normal work day. The SPP is operational on weekdays with core business hours of 7 am to 5:30 pm. During the weekend and holidays, the facility is closed to visitors and deliveries. Employees may access the site during non-operational hours; however, they must first obtain written approval from the Site Operations Manager and must register with a member of the Guard Force stationed at the facility's Entry Control Point (ECP).

All employees undergo a vigorous background investigation prior to being hired. To date, there have been no disputes over labor issues and no attempts to breach facility security.

The SPP employees are grouped into twelve labor categories. Each category has specific roles and responsibilities as well as various access and authorization levels. An overview of these categories is provided below.

1. Operations Manager. The Operations Manager has access to all areas. The Operations Manager has supervisory authority, and initiates transfer documents authorizing movement of material from the various site buildings.
2. Central Alarm Station (CAS) Operator. Located within the basement of the ISB, operators at the CAS are responsible for monitoring cameras and assessing alarms of all facilities housing target material.
3. Guard Force Supervisor. The Guard Force Supervisor and subordinates escort target material during intra-site transport. Neither the Guard Force Supervisor nor his deputies are allowed access inside areas in which target material is in use or stored. They have key access to gates and access control rooms, but not to material storage locations.
4. Guard Force. The guards are responsible for patrolling and protecting the facility. The guards will perform cursory security inspections of site personnel and other security-related tasks, as assigned by the Guard Force Supervisor.
5. Operations Supervisor. The Operations Supervisor is responsible for the daily operations of the buildings that house target material. The Operations Supervisor has keys to the vault areas and the authority to order entry area alarms to be placed in access mode.
6. Material Custodian. The Material Custodian maintains and validates measurement- and inventory-related activities as well as the records of all target material within the site. The Material Custodian controls keys to the target material storage areas, but does not have the authority to independently access the storage areas. The Material Custodian is authorized to be part of the two-person rule for the storage and process areas and may also be part of the two-person rule for accessing alarms.
7. Process Technician. The Process Technician is responsible for material handling. The Process Technician is allowed access into the material storage areas as part of a two-person rule, but does not have key access.
8. Health Physicist. The Health Physicist is charged with ensuring criticality safety while materials are being handled or transferred. The Health Physicist may assist in the handling of material and the preparation of material transfers. He/she does not have access to keys and can access material storage areas only as part of a two-person rule.

9. Physical Protection System (PPS) Technician. The PPS Technician is responsible for servicing and maintaining the alarm systems. The PPS Technician has no routine key access or authority to handle nuclear material. The PPS Technician is escorted at all times by a process technician when he/she is performing responsibilities within a material storage location.
10. General Maintenance. General Maintenance personnel perform routine cleaning and minor maintenance. This person does not have key access, nor is he/she authorized to access locations that house material.
11. Transportation Personnel. The Transportation Personnel are responsible for intra-site movement of target material. Transportation personnel are escorted at all times and are not allowed unescorted access into material storage areas.
12. Outside Agent. Other agents are any personnel who are allowed access to material locations, but do not have key access. This category includes inspectors and other external representatives. The Outside Agent is escorted at all times and is not allowed unescorted access into material storage areas.

Table 2 lists the access and authority for each personnel group.

Table 2. Personnel Access and Authority

	Ops Manager	CAS Oper.	Guard Super.	Guards	Ops Super	Material Custod.	Process Tech	Health Phsyicist	PPS Tech	General Maint.	Transp Pers.	Outside Agent
Access to alarms at CAS		X	X	X					X			
Staffs security post			X	X								
Assesses SNM alarms		X	X	X								
Assesses security alarms		X	X	X								
Maintains security alarms									X			
Maintains SNM monitors									X			
Tests security alarms			X	X					X			
Tests SNM monitors									X			
Calibrates metal detectors									X	X		
Supervisory auth over guards			X									
Monitors proc cntrl alarms		X					X					
Assesses proc cntrl alarms		X					X					
Assesses health phs alarms		X						X				
Performs searches			X	X								
Exempt from item searches	O	O	O	O	O							O
Exempt from pers searches	O	O	O	O	O							O
Access to badges	O		X	X								
Access to site vehicles	X		X	X		O	O		X	X		
Exempt from metal detector	X		X	X	O							
Works on locks									X	O		
Supervisory authority	X		X		X	O						
Authorizes SNM transfers	X					O						
Prepares SNM transfers	X					O						
Access to SNM transfer form	X					O						
Verifies SNM transfers	X					X						
Transfers SNM											X	
Removes matl from targ loc											X	
Performs inventories						X						
Access to spec rem equip	X					X						
Has key to tie downs	O					X						
Access to container TIDs	O					X						
Access to MC&A records	O				O	X						X

Access or Authority	X
Probable access or authority	O

7 Threat Data

7.1 Intelligence Sources from the National Government

Management at the SPP have elected to evaluate the effectiveness of their physical protection system using a high-level outsider threat. It assumed that the threat is motivated by ideological causes, and desires to cause public terror (regionally and internally). The goal of the high-level threat is to obtain nuclear material via theft and/or sabotage. Table 3 provides specific information on the high-level threat.

Table 3. High-Level Design Basis Threat

Capabilities and Attributes	Numbers	5 (may divide into two teams)
	Weapons	AK-47 (machine guns), RPG (rocket propelled grenades), sniper rifles, handguns, hand grenades, knives
	Explosives	Improvised explosive device (IED), shape charges, vehicle bomb, suicide vest/backpack, commercial and military explosives (assume adversary carries sufficient amounts to complete objective)
	Tools	Hand tools, power tools, bridging/breaching equipment, chains, ladders, ropes, cutting torches, radios, flashlights, fake/stolen identification, stolen/purchased uniforms and insignia, night vision devices, on-site tools explosives, for breaching (assume adversary carries sufficient amounts to complete breaching attacks)
	Transportation	Bicycle, motorcycle, automobile (truck, car, off-road), all – terrain vehicles, utility/commercial trucks, on-site vehicles (trucks, forklifts). No aircrafts, no maritime vehicles
	Knowledge • Facility • Security System • Operations	Assume full knowledge of facility layout and target locations, security system (people, equipment/technology, and procedures), and facility operations, function, and processes. Surveillance conducted over many months.
	Technical Skills	Military training, demolition, information technology, general and site-specific engineering
	Funding	High – regional and international funding support
	Insider Collusion	Yes – passive insider (provides site/facility information only)
	Support Structure	Planning, local cell structure, safe-havens, sympathetic population, logistics, money

Assumption: Each person is limited to carrying a total weight of 45 lbs.

The adversary threat is considered to have full knowledge of the facility including knowledge of response procedures. Knowledge of the facility is assumed to have been passed to the adversary by an insider who may participate in an active role (disabling alarms, open doors, steal keys, etc.). Further, it is assumed that the outside threat has the ability to operate in task teams of two or more. These task teams are composed of dedicated and well-trained individuals having in-depth experience with military tactics and skills and are willing to die and/or to kill to be successful. The adversary force would consider attacking during normal working hours to take advantage of removed delay elements (such as doors left open or tie-downs removed) and intrusion detection sensors being in the “access” mode (turned off).

8 Entry Control Operations at SPP Gates and Portals

8.1 SPP Vehicle Gate

During normal working hours, site vehicles (designated by special markings on vehicle) and delivery vehicles are allowed through the SPP Vehicle Gate (Figure 9), which is mechanically operated. The gate is configured as two gates. The outer gate is opened electronically by the use of a site badge and personal identification number (PIN). The second gate is supervised and operated by a single unarmed guard.

Once the outer gate is open, a vehicle proceeds to a specific point where it is stopped by the guard. The outer gate closes, and the vehicle is trapped between the two gates. The guard inspects the driver’s badge and performs a visual check of the vehicle. Once the vehicle has passed the inspection, the guard manually opens the second gate and the vehicle proceeds onto SPP grounds.

During night hours and off-hours (i.e., when the plant is not operational), the Vehicle Gate is locked.

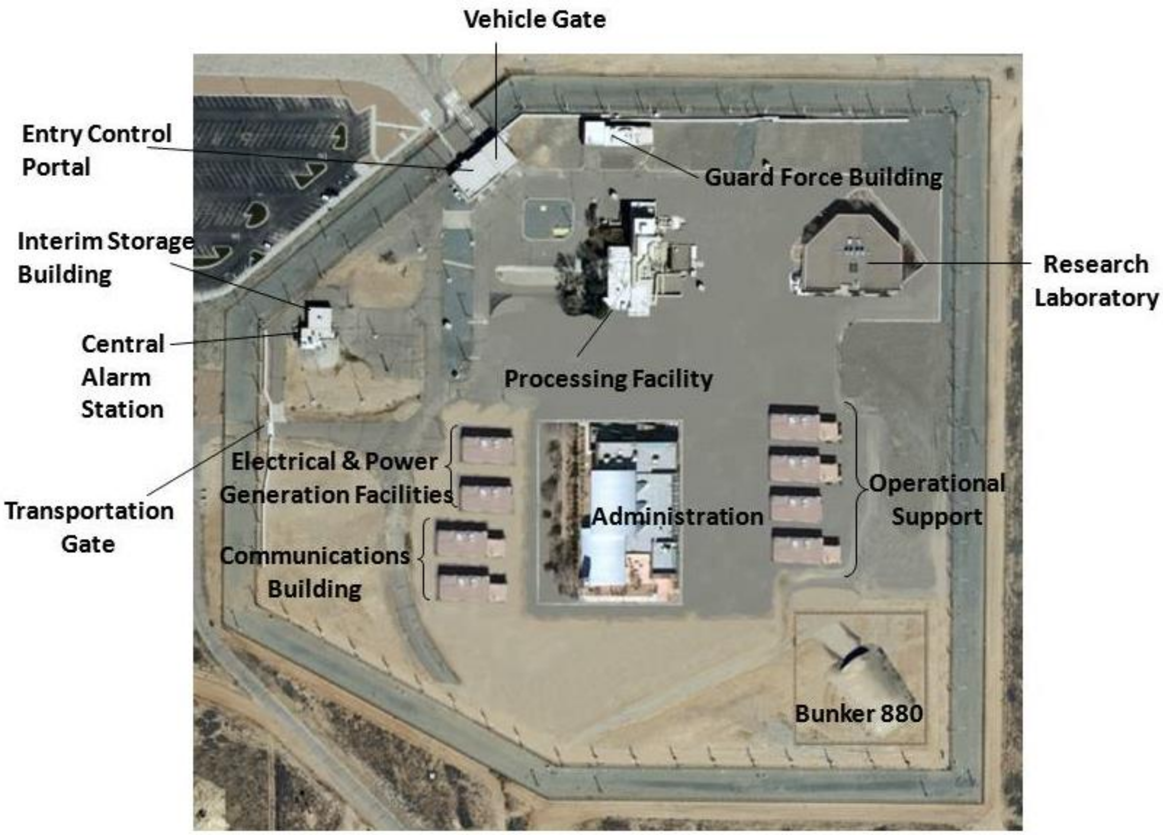

Figure 9. Entry and Gate Locations

8.2 SPP Personnel Entrance

All personnel entering the SPP compound on foot must do so through the main Entry Control Point (ECP). Three guards staff the ECP during daytime hours: one guard is responsible for performing package searches; the second guard checks badges and performs metal detection activities; and the third guard mans the post at the Vehicle Gate. Guards manning the ECP are unarmed. During off-hours or holidays, the ECP is staffed by one guard.

8.2.1 Entry Procedures

- Personnel enter through the front door of the ECP, show their badge to the guard, and continue to the pedestrian portal.
    - Visitors must check in with a guard at the ECP to obtain a visitor's badge. Once a visitor is badged, each visitor must be escorted into the facility by a member of the SPP staff.
- Personnel enter the portal one at a time, swipes his or her badge, and enter a unique PIN. If the badge/PIN is accepted, the rear personnel door unlocks.
- A guard observes personnel for unusual behavior.

8.2.2 Exit Procedures

- Personnel enter the portal one at a time and swipes his or her badge. The badge deactivates the magnetic lock on the portal door, allowing the individual to exit.
- The guard observes personnel for unusual behavior.

8.3 SPP Transportation Gate

The Transportation Gate is normally closed and locked with a high security padlock. A guard is not on post to observe the Transportation Gate. The Transportation Gate is used only for the deliveries of nuclear materials. When material is being received at the site, a member of the site's Response Force (RF) team is responsible for manning the post at the Transportation Gate. Vehicles and paperwork are inspected by the RF guard before entrance into the facility is permitted.

9 Response Force Data

9.1 Types of Response Force Personnel

The protective force at the SPP consists of a contract-security organization charged with providing the site with 24-hour response in the form of alarm assessment, access control, and armed alarm response.

The site is responsible for providing the RF with all necessary tools, equipment, uniforms, and radios required to perform their duties. Guards on post or on patrol are unarmed and do not wear protective gear (ballistic protection, helmets, etc.).

In the event of a security incident within the facility grounds, the first response comes from an armed member of the RF. Armed RF members deploy out of the Guard Force Building. Before members of the RF can respond, they must put on their protective gear and retrieve their weapons. All weapons are locked in a vault. The key to the vault is kept by the Guard Force Supervisor. In the event of an incident requiring armed response, the Guard Force Supervisor unlocks the vault and issues the weapons to the RF. All primary responders deploy according to pre-established procedures. Due to the size of the facility, all response arrives on foot.

Secondary response comes from external forces (local police who patrol outside the facility). Some level of coordination between the site and the off-site police force is assumed. In the event of an emergency, the local police provide external containment by blocking site vehicle exit points.

Tertiary response arrives in the form of a nearby Military Tactical Response Team.

9.1.1 SPP Guard Responsibilities

These security personnel are responsible for the following:

- Guards
    - Assessing alarms
    - Performing administrative duties, such as access control and key service
    - Patrolling and staffing fixed posts (ECP and CAS)
    - Observing adversary actions and communicating them to the CAS
- Response Force
    - Providing armed response to security events

All posts and patrols have defined policies and procedures with which the security personnel must comply.

A Guard Force Supervisor is present on each SPP Guard shift and conducts administrative duties and access control.

9.1.2 Local Police Patrols

Each local police patrol consists of two police officers in a squad car. They are responsible for protecting the area around the SPP. Local police have the following duties:

- Respond to an assessed intrusion by preventing intruders from leaving the perimeter or by detaining intruders. The local police patrols are not allowed to enter the SPP grounds.
- Perform periodic patrols of the exterior SPP complex (three times per day)
    - Note that the local police have arrest authority

9.1.3 Military Tactical Response Team Members

Two Military Tactical Response Teams are in the city on 24-hour alert. The teams have five members each. All members are trained in hostage situations and close-quarters combat, and have the authority and training to enter target locations to ensure the safety of critical assets and target material. However, they have never entered the SPP and require authorization from the Operations Manager and Guard Force Supervisor to enter the facility.

9.2 Equipment

9.2.1 SPP Guards

All guards are equipped with:

- Straight baton
- One set of handcuffs
- Small flashlight
- Handheld radio

9.2.2 Onsite Response Force

All guards are equipped with:

- Straight baton
- One set of handcuffs
- Small flashlight
- Handheld radio
- Body armor
- Rifle

9.2.3 Local Police Patrols

The local police are equipped with:

- Standard police car
- 9mm semiautomatic handgun with a fully loaded magazine
- Spare magazine of 8 rounds of ammunition

- One 5.56mm semiautomatic rifle per squad car with 50 rounds of ammunition

9.2.4 Military Tactical Response Team

The Military Tactical Response Team members are equipped with:

- 9mm semiautomatic handgun with a fully loaded magazine
- 5.56mm assault rifle with a 25-round magazine
- Two spare magazines of ammunition for each weapon. Both weapons are carried with a fully loaded magazine but without a round in the chamber.
- Straight baton
- One set of handcuffs
- Flashlight
- Handheld radio
- Armored vehicles
- Body armor

9.3 Training

The SPP Guards and Response Force receive training in the following areas:

- Onsite safety
- Access control procedures
- Rules of engagement and proper use of force
- Local target locations
- Response procedures
- Chain of command
- Other administrative responsibilities
- RF only: Firearms qualification training (four times per year)

The members of the local police receive training in the following areas:

- Legal basis for search and seizure
- Use of force
- Local statutes and laws
- Firearms qualification training (four times per year)

The members of the Military Tactical Response Team receive training in the following areas:

- Firearms qualification training (12 times per year)
- Standard military combat training
- Close quarters combat
- Recapture and recovery of nuclear material/facilities

All personnel receive routine physical fitness training when in the training mode.

9.4 Alarm Stations and Communication

The CAS is staffed by a minimum of one SPP Guard at all times; the guard staffing the CAS is known as the CAS Operator. This guard is responsible for assessing alarms and communicating them to the RF. In the event that the RF encounters difficulty containing or neutralizing an event, the dispatcher would notify the local police as well as the Military Tactical Response Team.

The CAS is equipped with the following:

- 100-watt radios that can communicate to all posts and patrols within the boundaries of the SPP
- Telephone line that provides non-dedicated access to all guard posts, the police dispatcher, and the military tactical team dispatcher

Extensive testing of the communication system has shown that the radio communications are good throughout the facility. All hand-held radios and fixed posts are equipped with a duress switch that allows a covert signal to be sent to the CAS in case of unauthorized activity.

9.5 Deployment of Response Force

The Response Force is deployed as described in Table 4 through Table 6.

Table 4. SPP Guard Deployment Data

Post No.	Description	Security Personnel Type	No. of Personnel	
			Day Shift	Nights and Weekends
P-1	CAS (includes Supervisor)	Guard	2	2
P2 & P3	Entry Control Point	Guard	2	1
P-4	Vehicle Entrance (Main Gate)	Guard	1	0
P-5	ECP (ISB)	Guard	1	0
P-6	ECP (PF)	Guard	1	0
P7	Foot Patrol	Guard	2	2
P8	Guard Force Building	RF	5	5
		Totals	**14**	**10**

Table 5. Police Deployment Data

Post No.	Description	Security Personnel Type	No. of Personnel	
			Day Shift	Nights and Weekends
N/A	Patrols in local area (outside SPP) (two patrols with two personnel each)	Police patrol units	2 per vehicle	2 per vehicle
		Totals	**4**	**4**

Table 6. Military Tactical Response Team Deployment Data

Post No.	Description	Security Personnel Type	No. of Personnel	
			Day Shift	Nights and Weekends
N/A	Military Tactical Response Teams (two teams of five personnel each)	Tactical Teams	10	10
		Totals	**10**	**10**

9.6 Response Procedures

All alarms are received and assessed at the CAS. If an alarm is assessed as an intrusion, the CAS Operator immediately notifies the RF team to begin preparations for deployment. The CAS Operator then notifies the SPP Guards to initiate actions designed to protect employees by warning them, evacuate them when appropriate, and perform other actions that might obstruct the adversary (locking doors, disabling power, etc.).

Should backup response be required, the CAS Operator notifies the local police by phone. The Guard Force Supervisor provides the police with a quick briefing. The police deploy to *contain* the adversary.

Notification and briefing to the Military Tactical Response Team is similar to that of the local police. Upon arrival at the facility, the tactical response team coordinates with site operations to enter the incident area and ensure the protection/recovery of nuclear material and assets.

9.7 Average Response Performance Data

The SPP has conducted evaluations of the Guards, RF, police patrols, and Military Tactical Response Teams in the areas of alarm assessment, alarm communication, preparation, travel, and deployment times to alarms. The average times are listed in 7.

Table 7. Average Response Times

Description	Processing Facility (s)	Interim Storage Building (s)
Response Force (RF)		
Alarm assessment time	45	45
Alarm communication time	20	20
RF preparation time (includes weapon retrieval)	65	65
RF travel and deployment time	45	55
RF Total	175 s	185 s
Local Police		
Communication time	25	N/A
Police patrol preparation time	15	N/A
Police travel time by vehicle	150	N/A
Off-site containment deployment time (after arrival)	30	N/A
Local Police Total	220 s	N/A
Military Tactical Response		
Communication time	25	25
Military Tactical Response Team preparation time	90	90
Travel time by vehicle	500	510
Onsite deployment time (after arrival)	90	90
Military Tactical Total	705 s	715 s

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