



**US Army Corps
of Engineers**

HUNTSVILLE ENGINEERING
AND SUPPORT CENTER

FORMERLY USED DEFENSE SITE (FUDS)

**ARCHIVES SEARCH REPORT
SUPPLEMENT
(ASR SUPPLEMENT)**

2004

PINECASTLE JEEP RANGE

ORLANDO, FLORIDA

PROJECT No. I04FL040501

PREPARED BY
**U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT**

ASR SUPPLEMENT

INSTALLATION NAME: PINECASTLE JEEP RNG

INSTALLATION AKA: ORLANDO RANGE, DEMONSTRATION RANGE

FFID: FL9799F7224

FUDS PROPERTY NUMBER: I04FL0405

TOTAL PROPERTY ACREAGE: 12483

MSC: South Atlantic Division - 41506
PINECASTLE, FL 32829

POC for this data:

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DOES THE INSTALLATION HAVE ANY A/I RANGES? NO

DOES THE INSTALLATION HAVE ANY CTT RANGES? YES

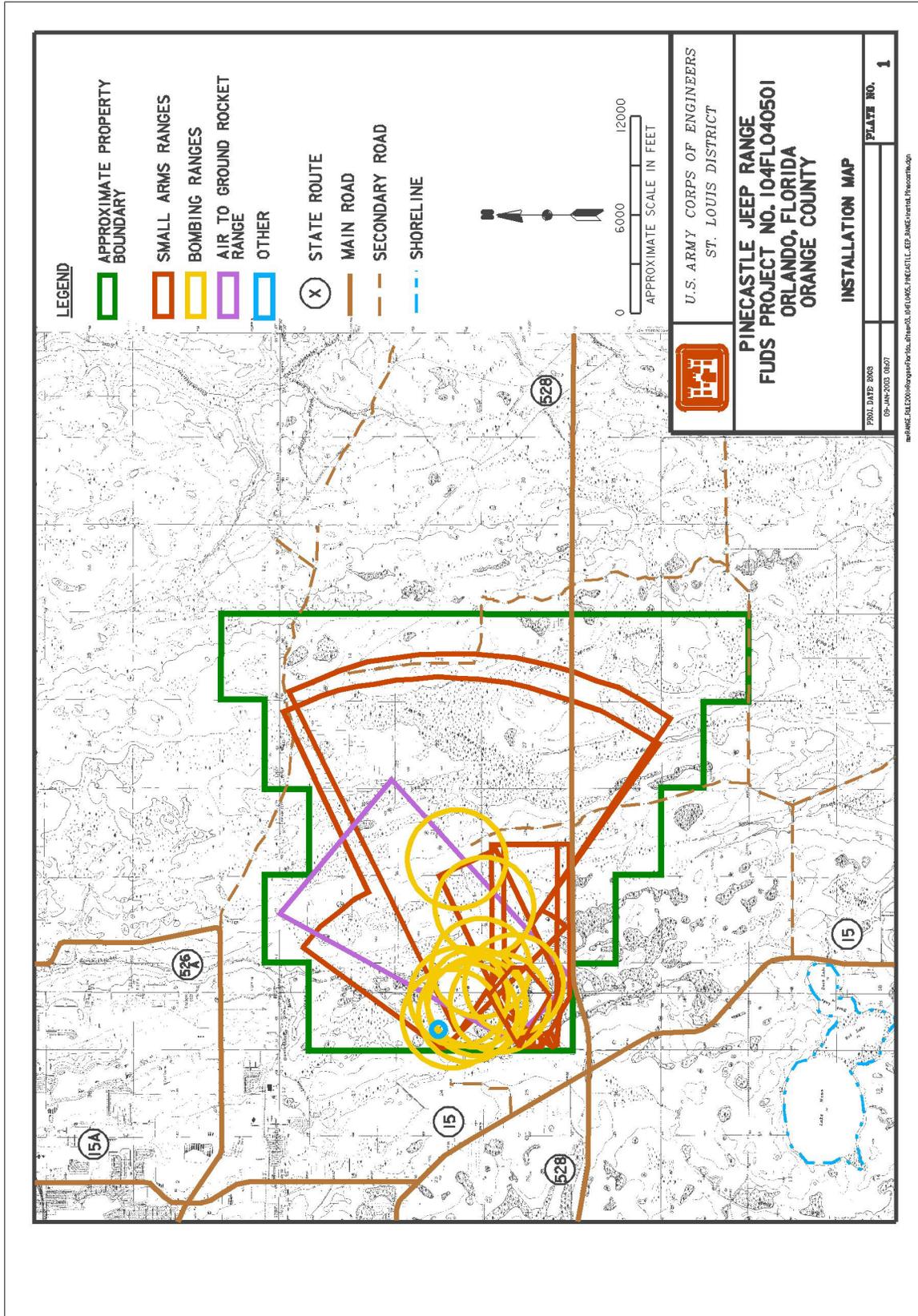
TYPES OF MUNITIONS USED ON THIS INSTALLATION: Conventional, Chemical

INFORMATION IN THIS SUPPLEMENT WAS GATHERED FROM THE: ASR

MMR AREA SUMMARY						
PROJECT No.	PLATE No.	RANGE NAME	SUB-RANGE NAME	ACREAGE	AARS AOC	RMIS RANGE ID
01	M01	Chemical Demonstration Range		5		I04FL040501M01
01	R01	Air-to-Ground Rocket Range		1419		I04FL040501R01
01	R02	Range Complex No. 1		5194		I04FL040501R02
01	R02-SR01		Turret Gunnery Range	4209		I04FL040501R02-SR01
01	R02-SR02		CQ-3 Range	4498		I04FL040501R02-SR02

01	R02-SR03		Rifle Range No. 1	48		I04FL040501R02-SR03
01	R02-SR04		Rifle Range No. 2	463		I04FL040501R02-SR04
01	R02-SR05		Small Arms Range	287		I04FL040501R02-SR05
01	R02-SR06		Pistol Range	3		I04FL040501R02-SR06
01	R03	Range Complex No.2		2452		I04FL040501R03
01	R03-SR01		Ship Target	649		I04FL040501R03-SR01
01	R03-SR02		Convoy Target	649		I04FL040501R03-SR02
01	R03-SR03		Tanks (new)	649		I04FL040501R03-SR03
01	R03-SR04		Tanks (old)	649		I04FL040501R03-SR04
01	R03-SR05		Circular Target	649		I04FL040501R03-SR05
01	R03-SR06		Target No.1	649		I04FL040501R03-SR06
01	R03-SR07		Target No.2	649		I04FL040501R03-SR07
01	R03-SR08		Target No.3	649		I04FL040501R03-SR08
01	R03-SR09		Target No.4	649		I04FL040501R03-SR09
01	R03-SR10		Warehouse Target	649		I04FL040501R03-SR10
01	R03-SR11		Simulated Enemy Airstrip	649		I04FL040501R03-SR11

Installation Map: FL9799F7224_INSTAL_MAP_00_20030110.JPG



INSTALLATION NAME

PINECASTLE JEEP RNG
PINECASTLE, FL

FUDS PROJECT

I04FL040501 - RAC 1 ASR COMPL

PROJECT COMMENTS: During 1943, the U.S. Government leased 12,483 acres of land in Orange County, Florida, for use as the Pinecastle Jeep Range. The range was located in Township 23 South, Range 31 East, Sections 8, 10, 11, and 14 through 34 and in Township 24 South, Range 31 East, Sections 2 and 3. The site was also known as the Tactical Demonstration Range, the Orlando Range, Pinecastle Range, Pinecastle Bombing Range and the Pinecastle Chemical Demonstration Range. The range was an off-post site of Pinecastle Army Air Field (AAF). Pinecastle AAF used the range as a gunnery and demonstration range. The Army Air Forces Tactical Center at Orlando Army Air Base (AAB), used the site for testing and troop instruction in methods of tactical bombing and strafing.

The Army Air Forces reported the Pinecastle Jeep Range surplus to its needs on 2 December 1946 and by 5 December 1947, the War Department terminated the lease on the 12,483 acre range (U.S. Army Corps of Engineers 1994). Currently, local government agencies and private individuals own the former site and use it for various purposes.

The Orlando AAB Demonstration Section conducted chemical and ordnance demonstrations at the former Pinecastle Jeep Range for students stationed at Orlando AAB. The Demonstrations encompassed all phases of chemical attack and defense as well as usage of ordnance related equipment. The demonstrations provided the visual illustration of equipment and tactics taught in the classroom. The students observed the demonstrations from a protected ground shelter at the Pinecastle Range

MMR AREA NAME: Chemical Demonstration Range

RMIS Range ID: I04FL040501M01

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
OTHER	1946	1947	Area designated as Chemical Demonstration area. No information available to determine materials use

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	5
Tidal Water:	0
Inland Water:	0
Total:	5
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	5
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	I
Hazard Probability:	A
RAC Score:	1

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional, Chemical

DESCRIPTION: An area approximately 400 feet east of the jeep range was selected as the center of the range. An arbitrary boundary was developed consisting of 5 acres and represented as a circle with a radius of 264 feet.

COMMENTS: A January 1946 document refers to the relocation of a set of bleachers. The significance of these bleachers is, they were to be placed at the chemical demonstration area. Their position would be on a 90° bearing, 410 feet from the north end of the jeep track range and placed so the occupants face to the south. In addition, a switch control house would be moved to the Orlando demonstration range and placed at a point 20 feet west of the of the bleachers. All wires for static detonations or demolitions were to be brought into this building. Chemical warfare offensive demonstration equipment, including targets, loud speakers and switch boxes, was to be moved to the area directly east of the north end of the jeep track. All control wires to be terminated in the building.

No information is available to determine the training activity that took place on the range. An area just south of the bleachers was selected as the center of the range. An arbitrary boundary was developed consisting of 5 acres and represented as a circle with a radius of 264 feet. Aerial photography, dated May 1948, shows there had been activity in this area. However, the type is unidentifiable.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
BLASTING CAPS(CTT39)	BLASTING CAPS		
GAS ID SETS(CTT48)	Chemical ID Set, Detonation, M1		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

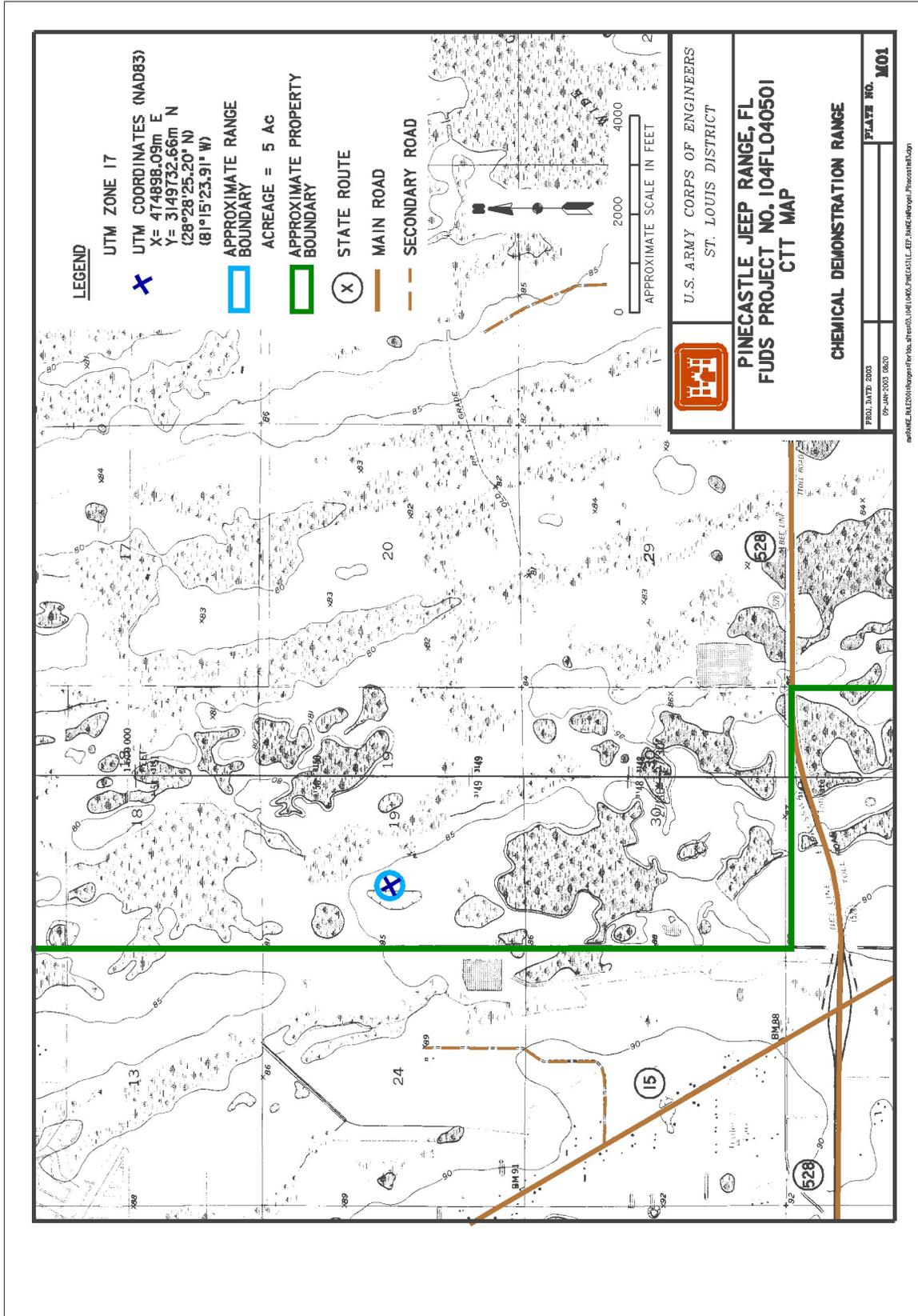
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	474898.09
UTM Y: (meters)	3149732.66
UTM ZONE:	17
Latitude:	28° 28' 26" Not Defined
Longitude:	81° 15' 23" Not Defined

RANGE MAP: FL9799F7224_CTT_MAP_04_20030110.JPG



MMR AREA NAME: Air-to-Ground Rocket Range

RMIS Range ID: I04FL040501R01

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A
BOMBING	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	1419
Tidal Water:	0
Inland Water:	0
Total:	1419
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	1419
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	B
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: The designated target is described as a simulated enemy airstrip, which has been identified as a strip of ground running approximately 2,000 feet on a bearing of 43°

COMMENTS: The range is characterized as an Air-to-Ground Rocket Range based on information described in historical documents. The designated target is described as a simulated enemy airstrip, which has been identified as a strip of ground running approximately 2,000 feet on a bearing of 43°. A site near the northern portion of the strip has also been designated as a bombing target and listed with the Demonstration Range Complex. Acreage and munitions included in that bombing complex is excluded from the total acreage of this so as not to duplicate the acreage.

As described in historical documents the site was used as a strafing target with small arms and aircraft rockets. Documented demonstrations included the use of small arms ammunition and aircraft rockets to include 5-inch High Velocity Aircraft Rockets (HVAR). Reports describe demonstrations using 5-inch HVAR and also 5-inch HVAR with Inert Heads. It is not known if High Explosive filled Rockets were used, but assumptions is that they were, based on a document dated 8 July 1944. The document discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

The exact location of all targets is unknown. It is suspected that additional targets were fired upon with small arms and aircraft rockets. The range cell was developed to ensure adequate coverage of the suspected targets. It includes a safety fan 5000 feet wide at the base, extending 16,000 feet downrange where it widens to two miles.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
SMALL ARMS(CTT01)	50 Cal. Machine Gun		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M41, Frag Bomb, 20 lbs		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs		
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48		

BOMBS, PRACTICE(CTT10) M38A2, Practice Bomb,
100 lbs
AERIAL ROCKETS (LIVE)(CTT26) 5-inch, Rocket, HVAR

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

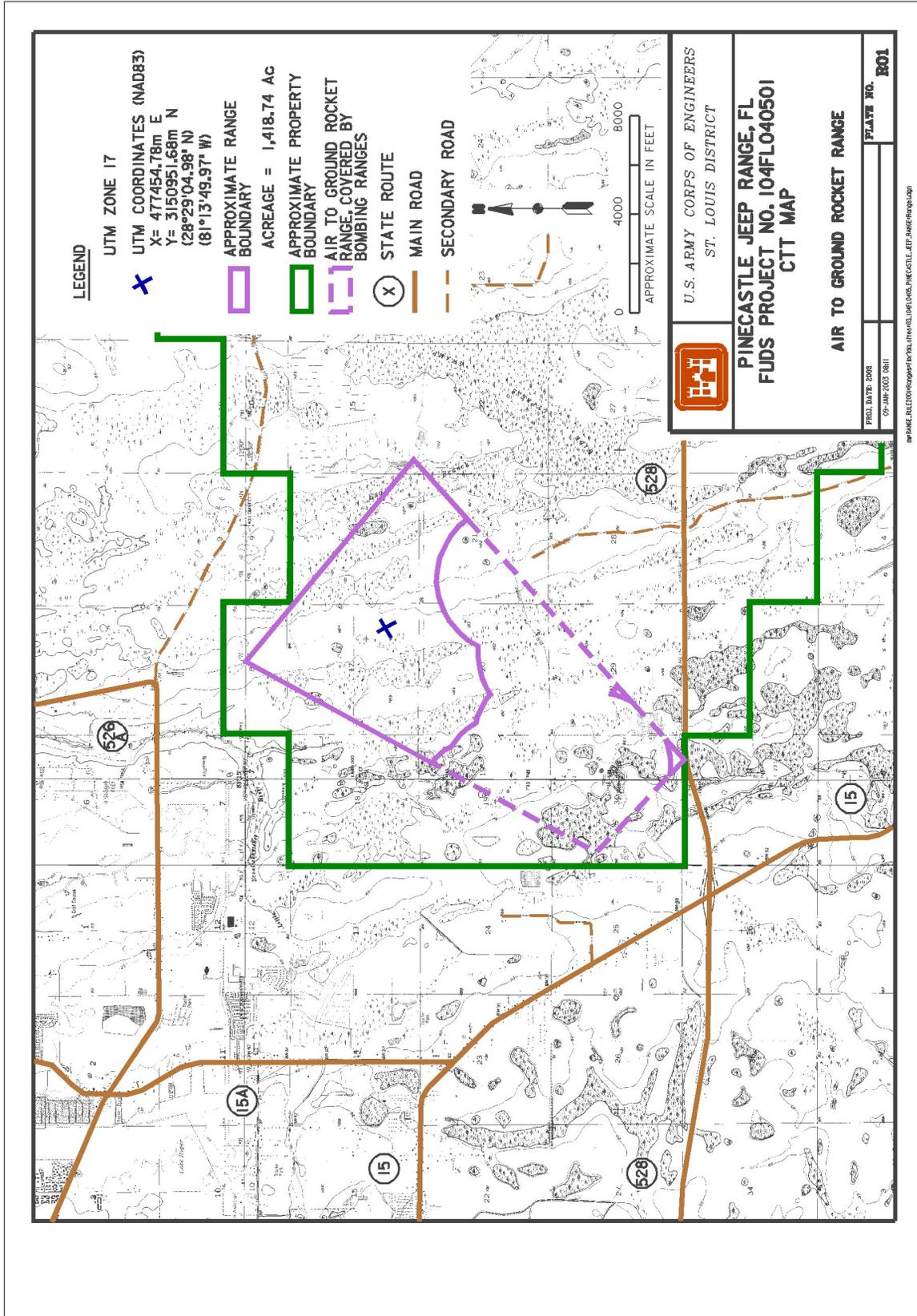
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM: NAD83
UTM X: (meters) 477454.78
UTM Y: (meters) 3150951.68
UTM ZONE: 17
Latitude: 28° 29' 5" Not Defined
Longitude: 81° 13' 49" Not Defined

RANGE MAP: FL9799F7224_CTT_MAP_01_20030110.JPG



MMR AREA NAME: Range Complex No. 1

RMIS Range ID: I04FL040501R02

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Residential - Single Family	1999	Since the ASR, a portion has been developed, residential homes. Actual date unknown.
Undeveloped	1947	N/A

ACREAGE:

Land:	5194
Tidal Water:	0
Inland Water:	0
Total:	5194
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	5194
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	A
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: The Small Arms Complex consists of four small arms ranges located in the southwest corner of the former Pinecastle range, Section 30, T23S, R31E.

COMMENTS: The Small Arms Complex consists of six small arms ranges located along the western boundary of the Pinecastle range. Ranges include a Turret Gunnery Range, a CQ Range, two rifle ranges, a pistol range, and what appears to be a multi purpose small arms range. Each range includes an administrative area, ammunition issue point, ready lines, firing lines, target area, target butts, and a danger/safety fan. All but the safety fan was based on historical maps and aerial photos. The safety fans were constructed using the requirements found in historical range and safety regulations.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	50 Cal. Machine Gun		
SMALL ARMS(CTT01)	Small Arms, General		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
L	Several local government agencies.			NO
O	Multiple private owners			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

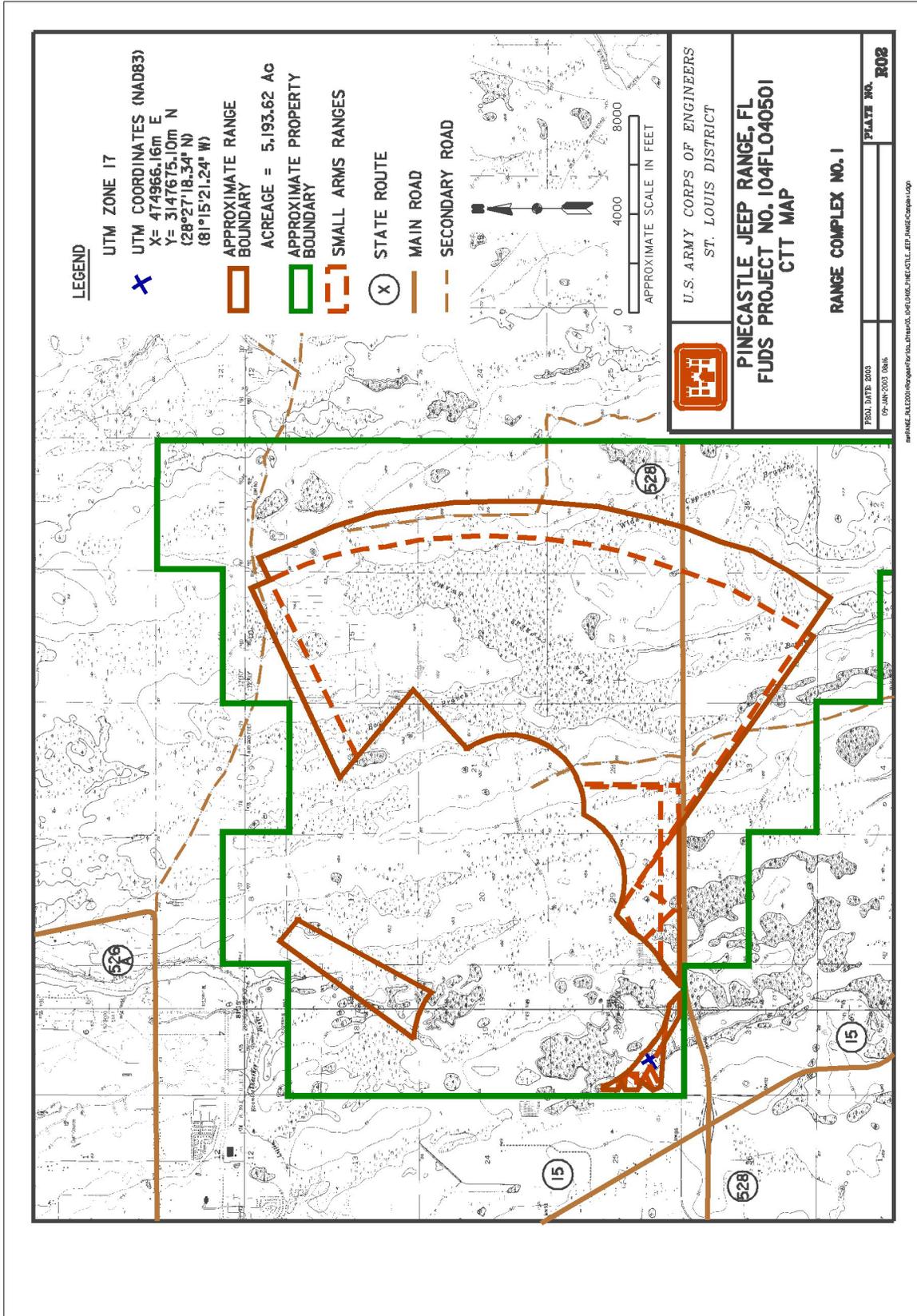
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	474966.16
UTM Y: (meters)	3147675.10
UTM ZONE:	17
Latitude:	28° 27' 19" Not Defined
Longitude:	81° 15' 20" Not Defined

RANGE MAP: FL9799F7224_CTT_MAP_02_20030110.JPG



SUB-RANGE NAME: Turret Gunnery Range
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR01

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Residential - Single Family	1999	Since the ASR, a portion has been developed, residential homes. Actual date unknown.
Undeveloped	1947	N/A

ACREAGE:

Land:	4209
Tidal Water:	0
Inland Water:	0
Total:	4209
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	4209
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	A
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Range consisted of a firing line approximately 100 yards to the front of a moving target mounted atop a jeep, traversing a narrow gage track laid out in a triangular pattern. Located in the SW¼ of NW¼ of Section 19, T23S, R31E.

COMMENTS: Negotiations for construction of the Ground to Ground Moving Target Jeep Range occurred in May 1943. The site, a standard jeep range was constructed sometime shortly thereafter. The range consisted of a firing line approximately 100 yards to the front of a moving target. The target was mounted atop a jeep, which traversed a narrow gage track laid out in a triangular pattern. The track and jeep were completed shielded from fire by a berm, which completely encompassed the track. Machine guns, both .30 caliber and .50 caliber were used on this range. Maps displaying the layout of this range identify danger/safety fans based on ammunitions. As noted on the map, the guns, both .30 and .50 caliber had traverse restrictions established to so as to not allow the weapons to exceed right and left limits. Limits differ for both weapons, which is represented in the range cell as it is displayed.

The safety fan originates at the ends of the firing line and extends down range to a maximum distance of 3,450 yards for .30 caliber weapons and 7,500 yards for .50 caliber.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
SMALL ARMS(CTT01)	50 Cal. Machine Gun		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

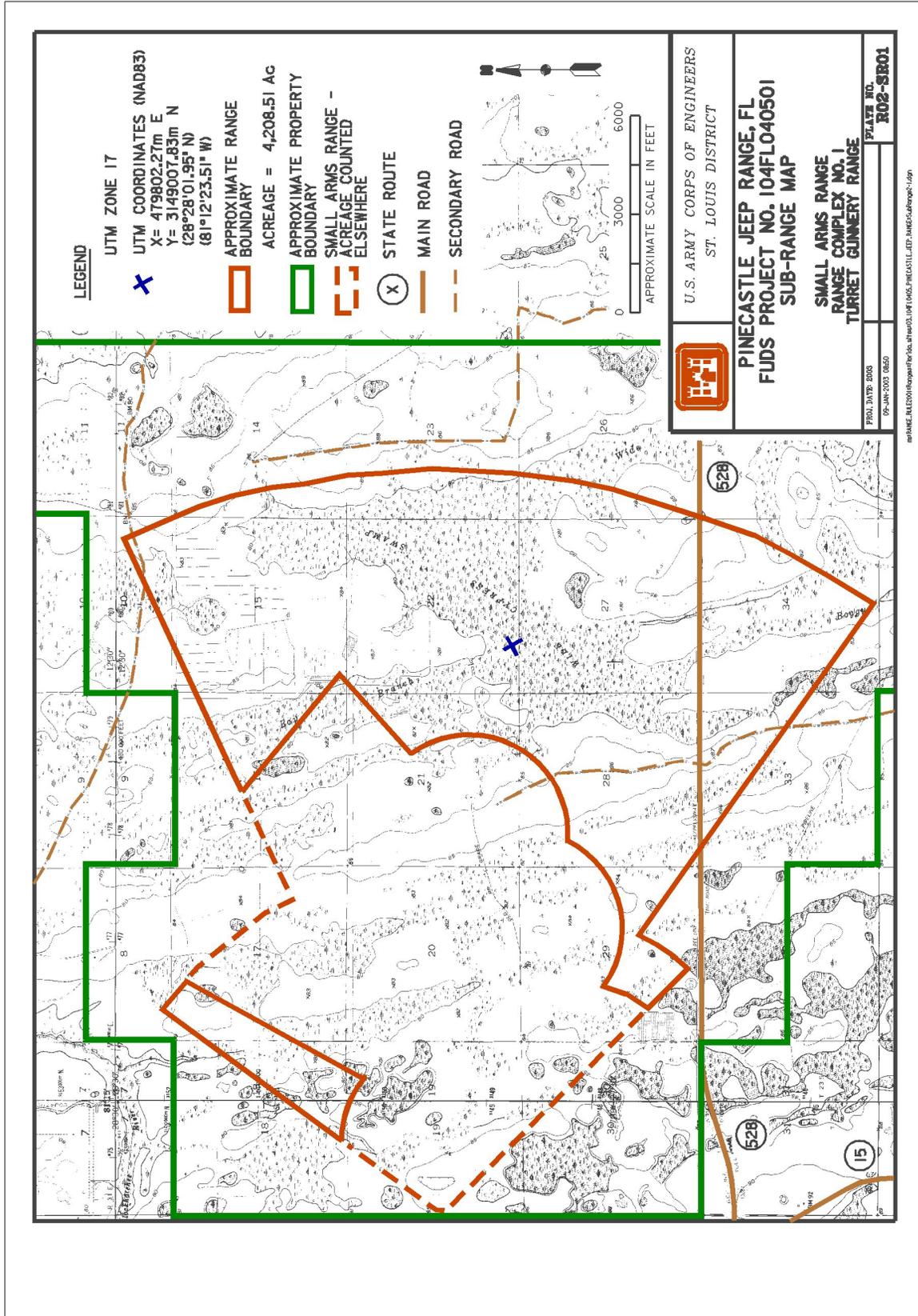
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	479802.27
UTM Y: (meters)	3149007.83
UTM ZONE:	17
Latitude:	28° 28' 2" Not Defined
Longitude:	81° 12' 22" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0201_20030110.JPG



SUB-RANGE NAME: CQ-3 Range
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR02

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	4498
Tidal Water:	0
Inland Water:	0
Total:	4498
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	4498
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	A
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Used for small arms (.30 & .50 caliber machine guns) firing at either towed or radio controlled airplane targets. Located in the NE $\frac{1}{4}$ of SW $\frac{1}{4}$ of Section 19, T23S, R31E.

COMMENTS: A January 1946 document refers to, clearance to fly the CQ-3 Radio Control Target for tracking missions in the vicinity of the Chemical Warfare Demonstration area. Clearance also approved to fire .50 EX-caliber machine gun.

Details of these ranges were established locally. Construction would have consisted only of the necessary clearing to provide a firing point and the required visibility within the limits of fire and adjacent danger area. A CQ range was used for firing at either towed or radio controlled airplane targets. The designation "OQ" refers to the type of target used on the range. The "O" means pilot less and the "Q" stands for radio-controlled.

The safety/danger area would include an angle of fire including a 5° angle added to the left limit, and a 10° angle to the right. Without specific information as to the location of the left and right limits of fire, a 30° safety fan is assumed (but could be as much as 40°) to extend down-range a distance of 7,500 yards.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
SMALL ARMS(CTT01)	50 Cal. Machine Gun		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

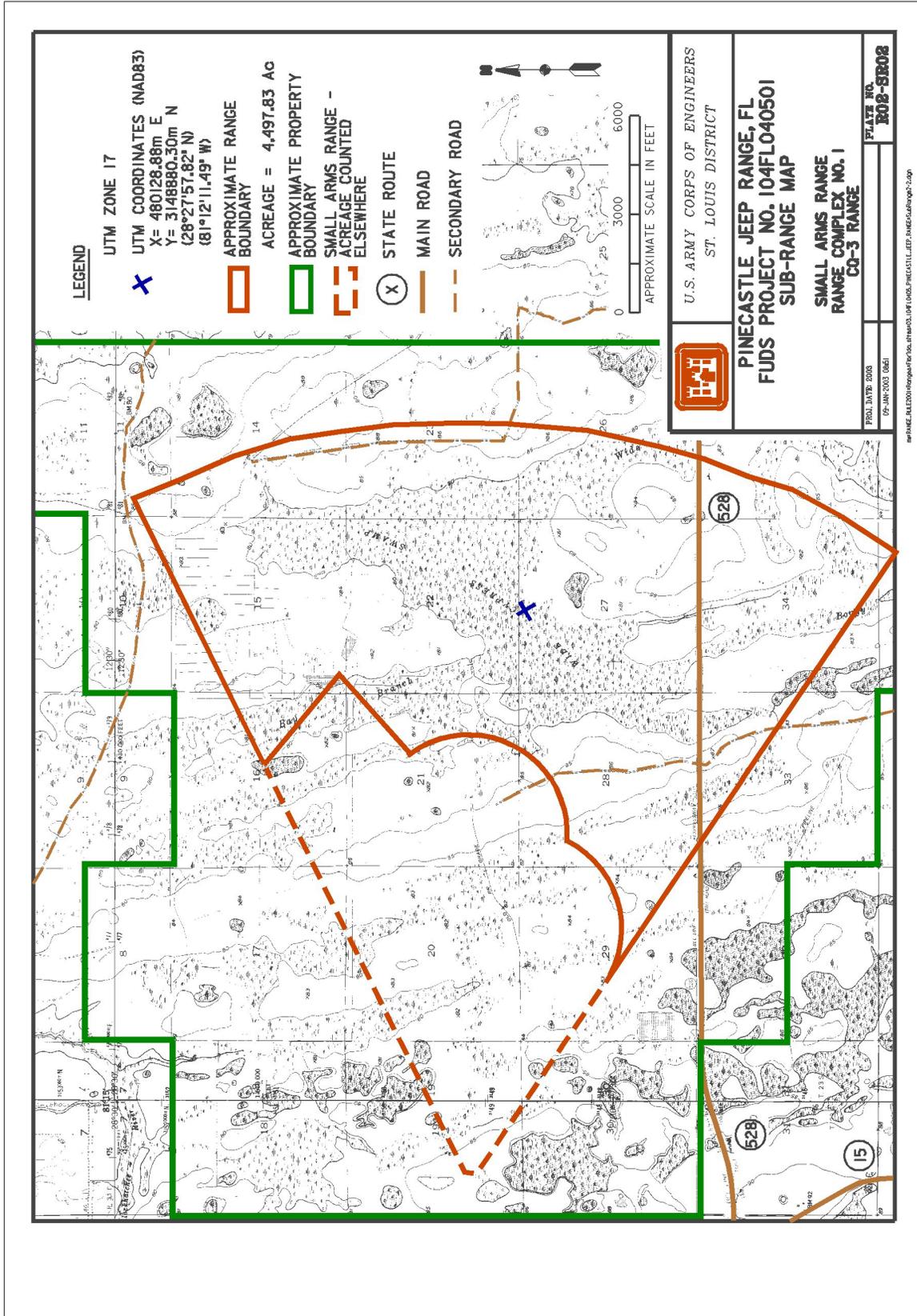
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	480128.88
UTM Y: (meters)	3148880.30
UTM ZONE:	17
Latitude:	28° 27' 58" Not Defined
Longitude:	81° 12' 10" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0202_20030110.JPG



SUB-RANGE NAME: Rifle Range No. 1
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR03

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	48
Tidal Water:	0
Inland Water:	0
Total:	48
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	48
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	B
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: The range is identified as a 300 yard known distance (KD) rifle range. Located in the southwest corner of the former Pinecastle range, SW¼ of SW¼ of Section 30, T23S, R31E. .

COMMENTS: The range is identified as a 300 yard known distance (KD) rifle range. No historical maps were found during research showing this range. All dimensions were based on historical aerial photography. The range consists of a target area and three firing lines. The firing lines are spaced approximately 100 yards apart. Width of the range is approximately 100 yards. The range remains visible (barely) on recent (1999) aerial photography.

A known distance rifle range was utilized for weapons familiarization and qualifications. KD ranges may be designated 200-yard, 300-yard, or 500-yard. Based on the designation, firing lines were positioned at 100 yd and 200 yd, 100 yd, 200 yd, and 300 yd, and 100 yd, 200 yd, 300 yd, and 500 yd, respectively.

The width of the range would have been determined based on terrain and installation requirements. A range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The 30° safety fan originates from the ends of each firing line and extends down range 1,000 yards, at which point it continues an additional 2,900 yards parallel to the direction of fire. The downrange distance is calculated from each firing line.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO

L Several local government agencies. NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

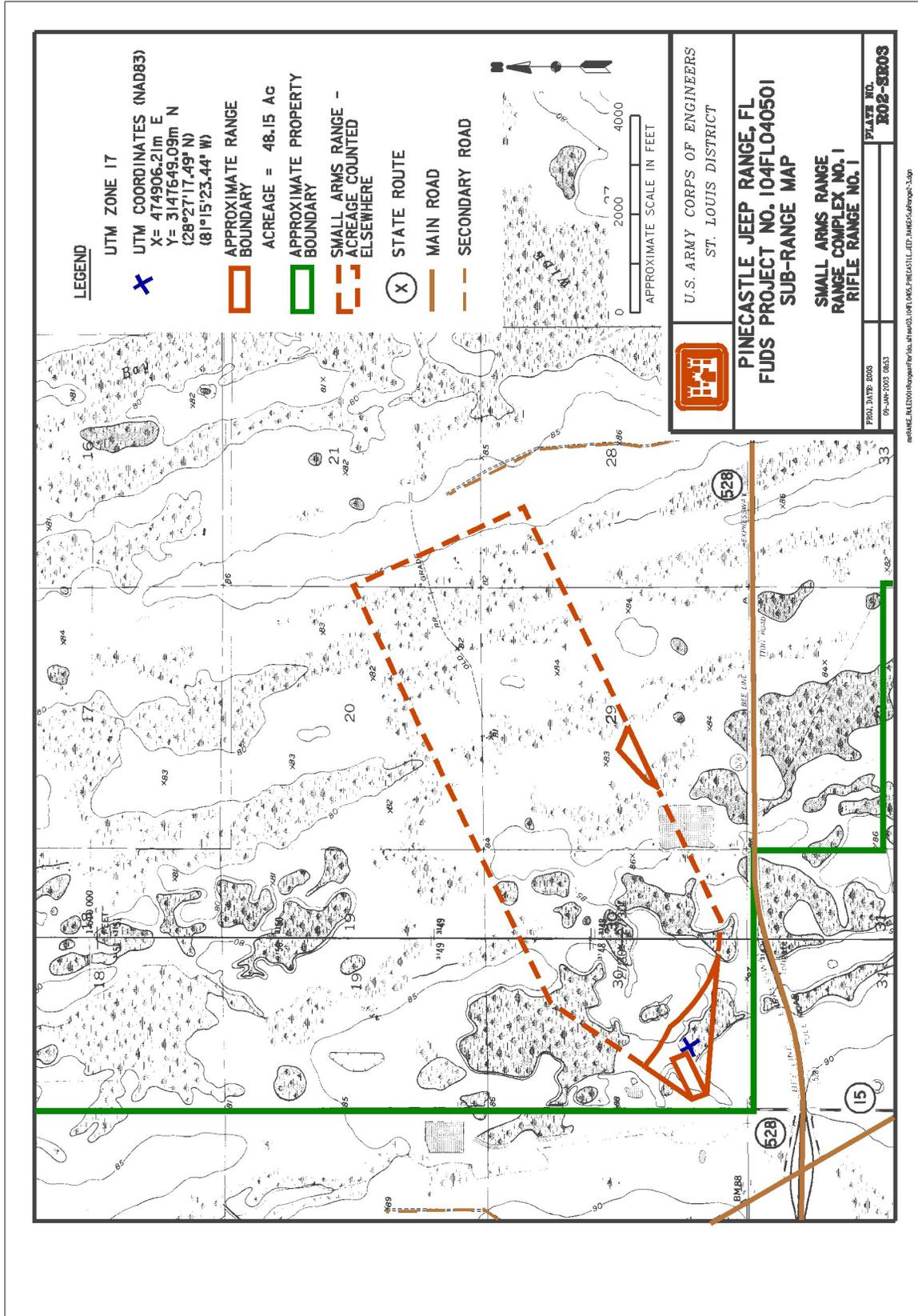
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	474906.21
UTM Y: (meters)	3147649.09
UTM ZONE:	17
Latitude:	28° 27' 18" Not Defined
Longitude:	81° 15' 22" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0203_20030110.JPG



SUB-RANGE NAME: Rifle Range No. 2
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR04

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	463
Tidal Water:	0
Inland Water:	0
Total:	463
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	463
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	B
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: The range is recognized as a non-typical 200 yard Known Distance (KD) rifle range. Located in the southwest corner of the former Pinecastle range, NW¼ of SW¼ of Section 30, T23S, R31E.

COMMENTS: The range is recognized as a 200 yard Known Distance (KD) rifle range. As described on historical diagrams, this range was non-typical. Unlike standard KD ranges, this one consists of two target areas, each with five targets. The first target area was established at 100 yards in front of the firing line. The second was positioned 200 yards from the firing line and off-set to the south of the 100-yard targets. A single firing line stretched the width of the range

Historical documents and drawings indicate four of these ranges were to be built at this location. However, only one was actually constructed. This is evident, as it is clearly visible on historical aerial photography. A No clear evidence of the range is visible on recent (1999) aerial photos.

Range dimensions were established using the historical aerial photographs. Estimates are 450 feet wide and 600 feet long.

A range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The danger/safety fans are consistent with historical range regulations The 30° safety fan originates from the ends of the firing line and extends down range 1,000 yards, at which point it continues an additional 2,900 yards parallel to the direction of fire.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
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L	Several local government agencies.	NO
O	Multiple private owners	NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

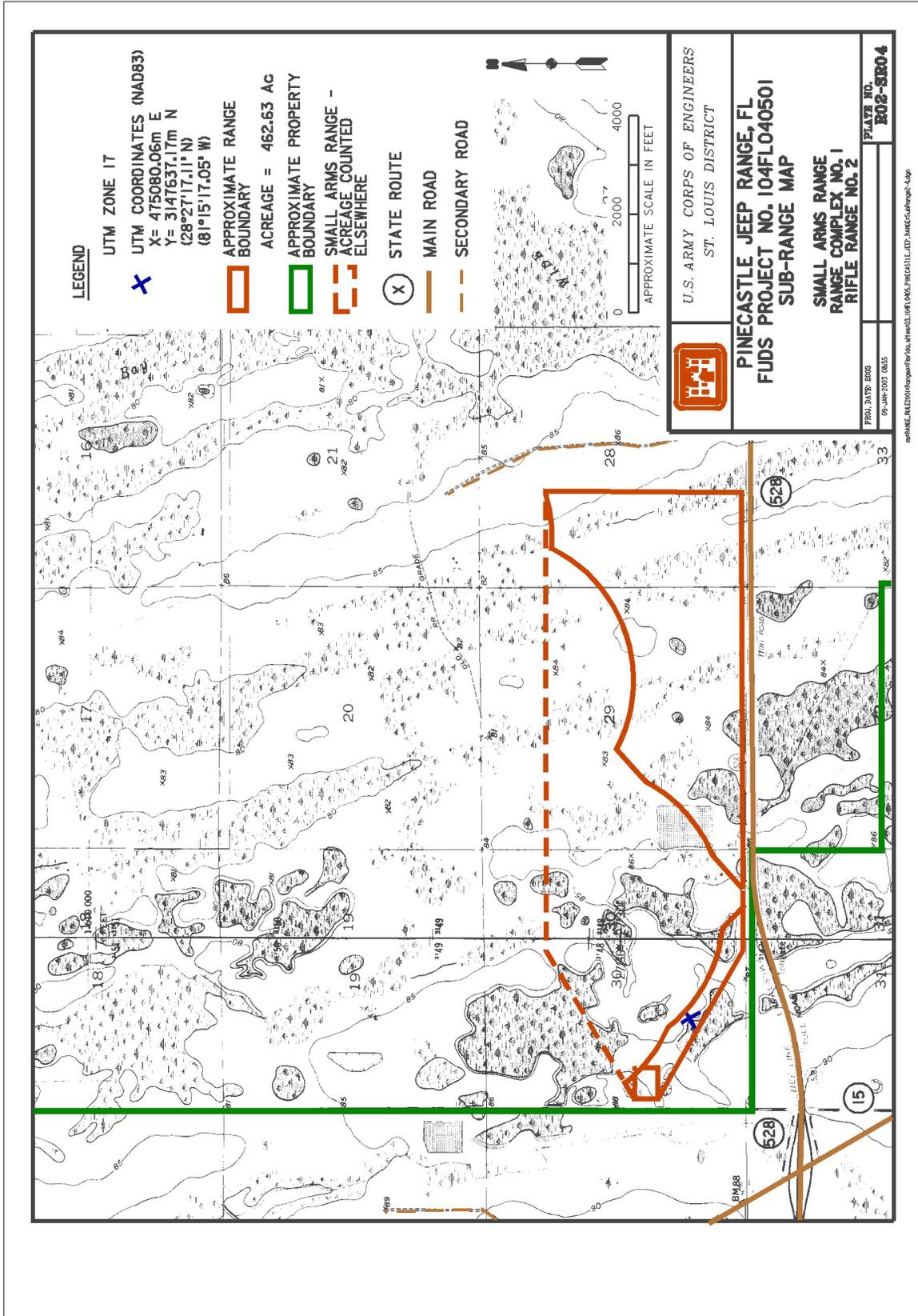
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	475080.06
UTM Y: (meters)	3147637.17
UTM ZONE:	17
Latitude:	28° 27' 18" Not Defined
Longitude:	81° 15' 16" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0204_20030110.JPG



SUB-RANGE NAME: Small Arms Range
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR05

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	287
Tidal Water:	0
Inland Water:	0
Total:	287
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	287
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	B
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Analysis of the photos indicates multiple use of this small arms range range. Two separate firing areas are suspected within its boundaries. Located in the southwest corner of the former Pinecastle range, NW¹/₄ of SW¹/₄ of Section 30, T23S, R31E.

COMMENTS: This range is not described in any historical documents or maps found during the records review. It has been identified from historical aerial photographs. Analysis of the photos indicates likely multiple use of this range. Two separate firing areas are suspected within its boundaries. Two small buildings, one tall, one short are located near the middle in the southern portion of the range. These structures appear to be a trap and skeet houses. A little further in, at the northern end of range is an area with significant ground scaring possibly from machine gun fire. No targets are recognizable on the aerial photos. A berm runs vertically along the southern boundary of the range and cuts north along the backside running the full width of the range. Because it is identified as small arms range, with no confirmed use, the danger/safety fan was selected to include the worst case, for this situation (.30 caliber).

Range dimensions were established using the historical aerial photographs. Estimates are 450 feet wide and 600 feet long.

Typically, a range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The 30° safety fan originates from the ends of the firing line, extends down range 1,000 yards, at which point it continues an additional 2,900 yards parallel to the direction of fire.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

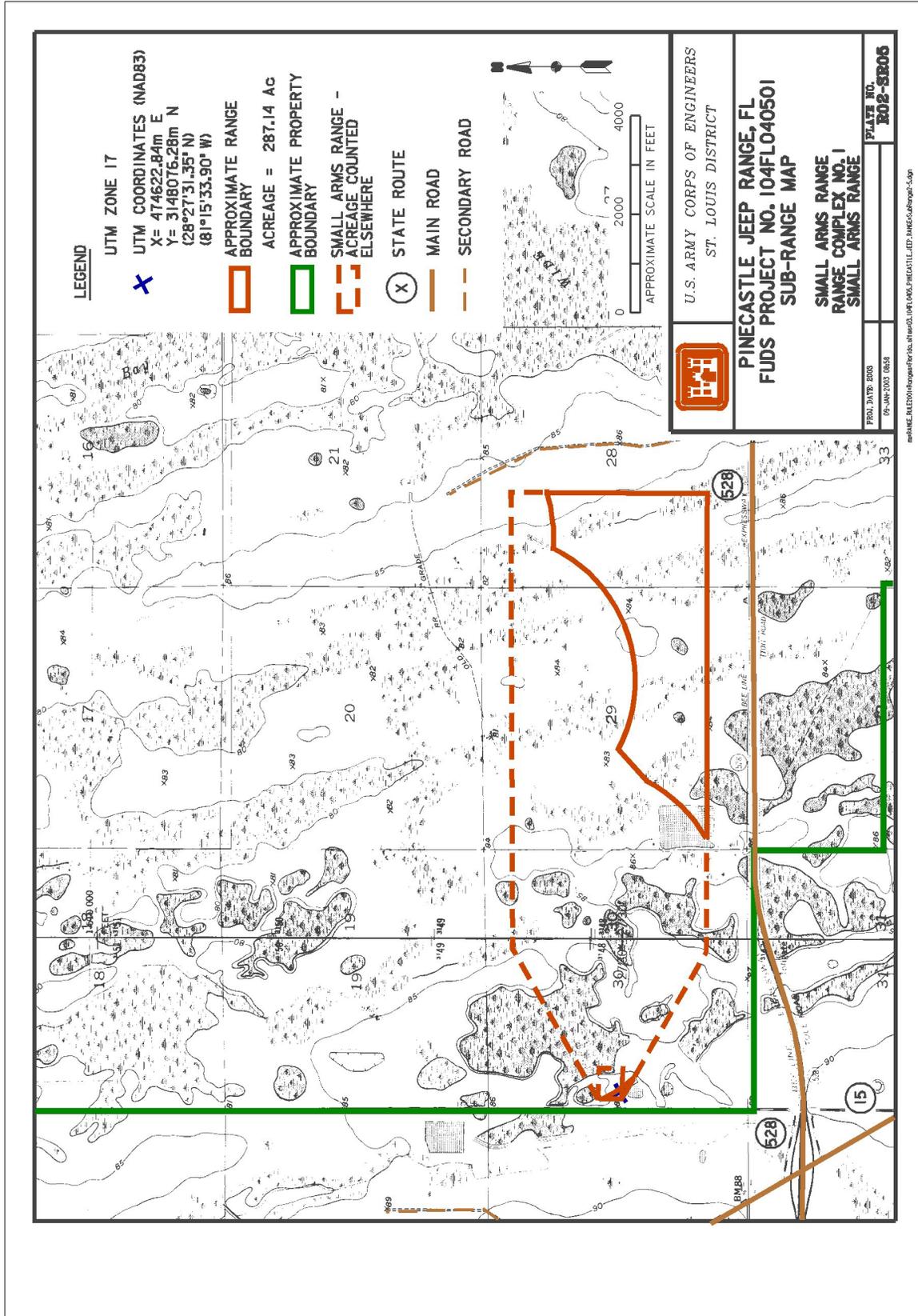
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM: NAD83
UTM X: (meters) 474622.84
UTM Y: (meters) 3148076.28
UTM ZONE: 17
Latitude: 28° 27' 32" Not Defined
Longitude: 81° 15' 33" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0205_20030110.JPG



SUB-RANGE NAME: Pistol Range
Complex Name: Range Complex No. 1

RMIS Range ID: I04FL040501R02-SR06

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	3
Tidal Water:	0
Inland Water:	0
Total:	3
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	3
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	V
Hazard Probability:	B
RAC Score:	5 <i>(RAC OVERRIDE: Small Arms Only Range)</i>

CLASSIFICATION(S):

Training
Small Arms Range

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: This range, recognized as a pistol range. Identified from historical aerial photography. Located in the southwest corner of the former Pinecastle range, SW $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 30, T23S, R31E.

COMMENTS: A pistol range is occasionally referenced in historical documents, but no location was ever identified during the archive search. This range, recognized as a pistol range, and identified from historical aerial photography. This is a small range located just north of the small arms range. Dimensions for the range are established from analysis of aerial photography. The range is approximately 220 feet wide, approximately 100 feet long.

Typically, a Pistol Range accommodated 25 firing positions, and was approximately 30 yards wide by 50 yards deep. A pistol range is comprised of a salvage wall (earthen berm), the targets, the firing line(s), safety fan, and an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The salvage wall (earthen berm) would have been constructed along the backside of the range approximately 5 feet to the rear of the target line. A five-foot opening typically separated each target. Firing lines would have been positioned at 5, 10, 15, and 25 yards in front of the targets. A 5° angle of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

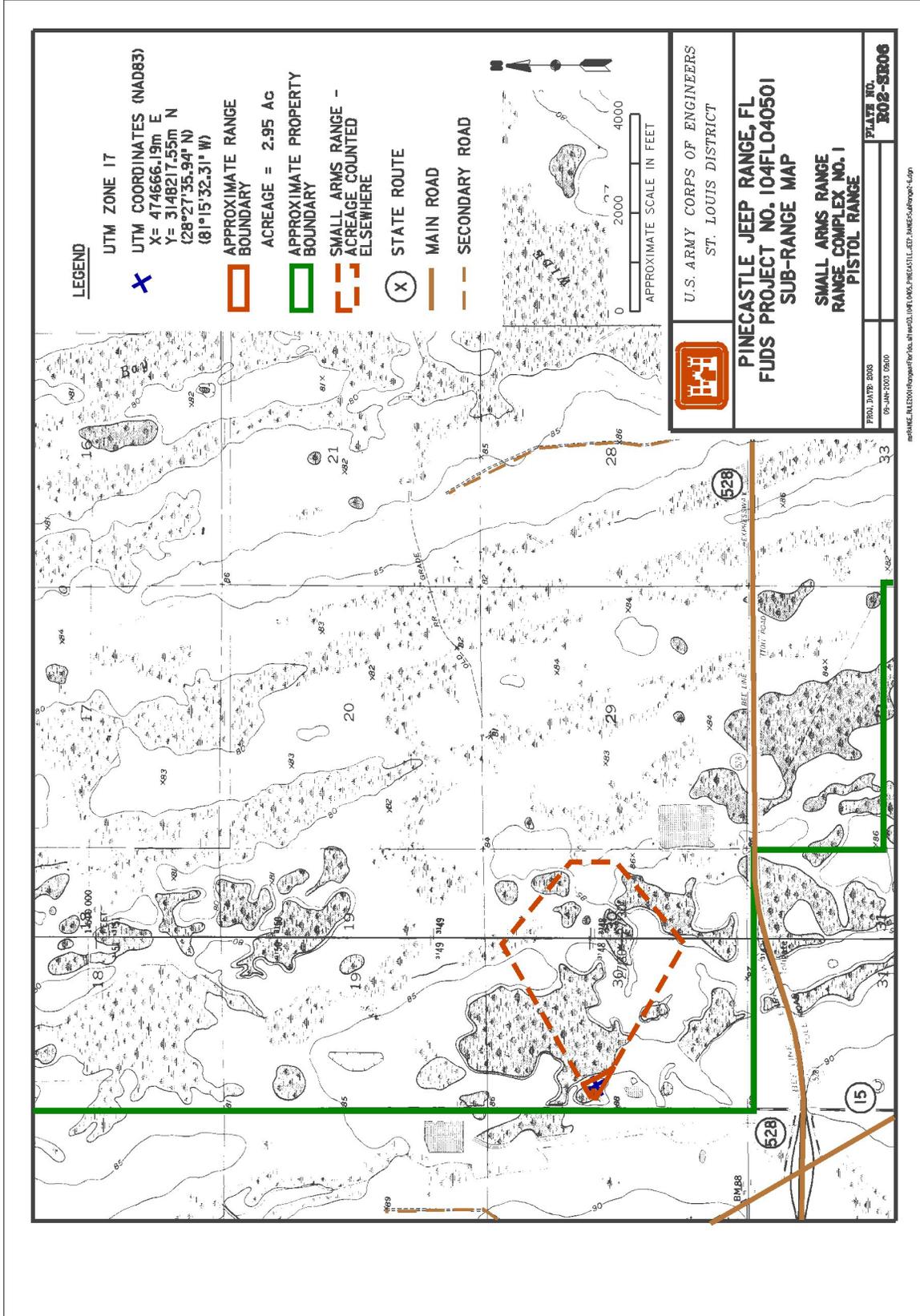
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	474666.19
UTM Y: (meters)	3148217.55
UTM ZONE:	17
Latitude:	28° 27' 36" Not Defined
Longitude:	81° 15' 31" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0206_20030110.JPG



MMR AREA NAME: Range Complex No.2

RMIS Range ID: I04FL040501R03

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
AIR-TO-GROUND	1943	1947	N/A
BOMBING	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	2452
Tidal Water:	0
Inland Water:	0
Total:	2452
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	2452
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	A
RAC Score:	1

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: The Demonstration Range complex consisted of a series of at least ten targets scattered throughout the Pinecastle Range. Demonstrations provided students a practical visual illustration of the equipment and tactics discussed in the classroom.

COMMENTS: The Demonstration Range consisted of a series of at least ten targets scattered throughout the Pinecastle Range. Demonstrations were conducted for students of the Army Air Force School and special groups. These demonstrations covered all phases of chemical attack and defense as well as demonstration of the various types of ordnance equipment used by, and in support of, the Air Force. Demonstrations were arranged to give the students a practical visual illustration of some of the equipment and tactics discussed in classroom lectures. The students, from a protected ground shelter, could observe the tactics employed by the various types of aircraft and witness the type and amount of damage caused by each weapon. These regular monthly demonstrations were timed to coincide with the final week of the senior Officers Course. The majority of records indicate that mostly practice and inert filled munitions were used. However, a letter dated July 1944, is requesting construction of a bomb-proof shelter stating, the current shelter provides inadequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. A letter dated January 1946 identifies the relocation of a number of targets specifying the approximate new location. However, except for the tanks that were moved the previous locations were not addressed. Four possible target locations (not identified in documents) were identified from ground scaring and craters observed on historical aerial photography.

The complex consists of ten individual bombing targets depicted with a 3000-foot radius danger area.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	50 Cal. Machine Gun		
SMALL ARMS(CTT01)	Small Arms, General		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M30, General Purpose Bomb, 100 lbs		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M41, Frag Bomb, 20 lbs		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M50, Incendiary Bomb, 4 lbs		

BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M52, Incendiary Bomb, 2 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M54, Incendiary Bomb, 4 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M67 Incendiary Bomb, 10 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M69 Incendiary Bomb, 6 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1
AERIAL ROCKETS (LIVE)(CTT26)	5-inch, Rocket, HVAR
AERIAL ROCKETS (PRACTICE)(CTT28)	5-inch, Rocket, HVAR, Practice
AERIAL ROCKETS (PRACTICE)(CTT28)	Rocket, 11.75-inch, Tiny Tim, Practice

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
L	Several local government agencies.			NO
O	Multiple private owners			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

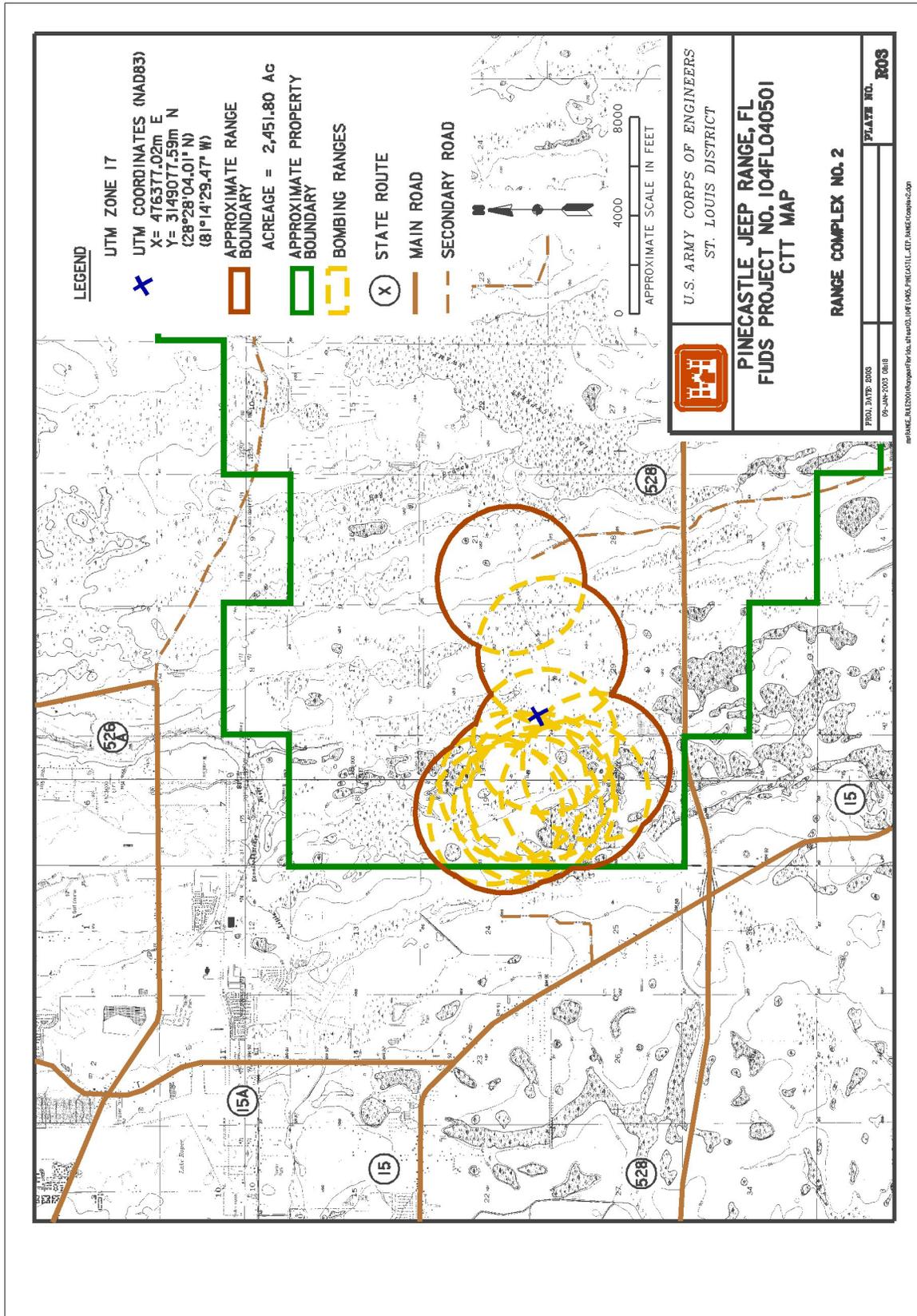
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	476377.02
UTM Y: (meters)	3149077.59
UTM ZONE:	17
Latitude:	28° 28' 5" Not Defined
Longitude:	81° 14' 28" Not Defined

RANGE MAP: FL9799F7224_CTT_MAP_03_20030110.JPG



SUB-RANGE NAME: Ship Target
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR01

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1946	1947	N/A
AIR-TO-GROUND	1946	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	III
Hazard Probability:	A
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: As described, the "Ship Target" is positioned 1650 feet on a true bearing of 95° from the center of the jeep track. Analysis of 1948 aerial photo shows an area cleared of vegetation approximately 100 yards by 75 yards.

COMMENTS: An April 1946 Document identifies placement of targets. As described, the "Ship Target" will be moved from the Second Phase range and positioned 1650 feet on a true bearing of 95° from the center of the jeep track. Analysis of 1948 aerial photo shows an area cleared of vegetation approximately 100 yards by 75 yards.

An Air Force demonstration dated July 1945 identifies this as a target in which four A-26 aircraft would make a low altitude attack against the dummy ship. Bomb load for each aircraft consists of six (6) 100-lb practice bombs with spotting charges.

A Historical Data report from 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01) BOMBS, PRACTICE(CTT10)	Small Arms, General M38A2, Practice Bomb, 100 lbs		
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CT	Orlando	FL	UNITED STATES
CO	Orange	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

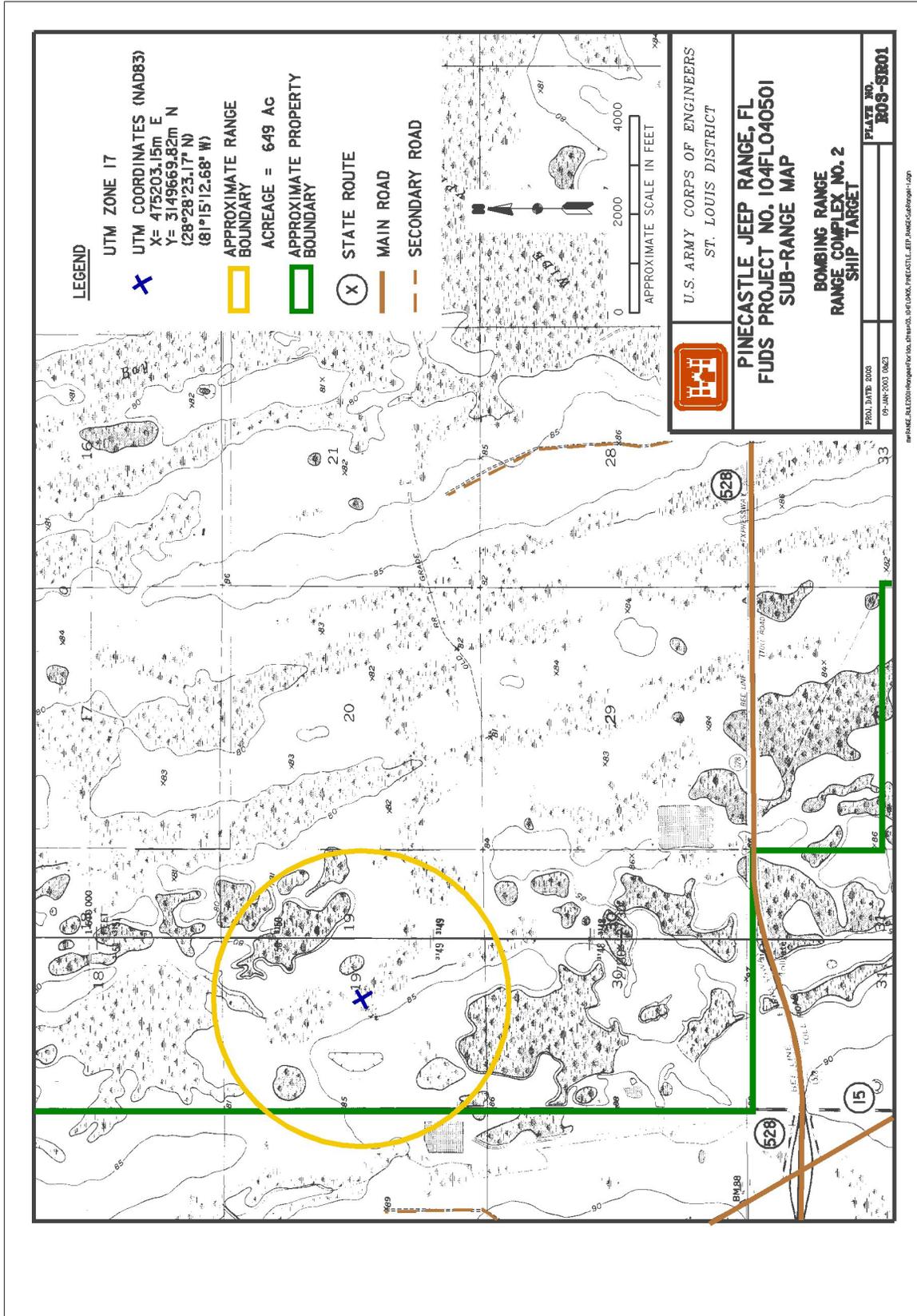
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	475203.15
UTM Y: (meters)	3149669.82
UTM ZONE:	17
Latitude:	28° 28' 24" Not Defined
Longitude:	81° 15' 11" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0301_20030110.JPG



SUB-RANGE NAME: Convoy Target
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR02

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1946	1947	N/A
AIR-TO-GROUND	1946	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	III
Hazard Probability:	A
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Non-Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: As described, the trucks in the convoy will be positioned at a true bearing of approximately 120° from the center of the jeep track and about 2300 feet from the center of the jeep track.

COMMENTS: An April 1946 Document identifies placement of targets. As described, the trucks in the convoy now located on the Second Phase range will be moved to position indicated, true bearing of approximately 120° from the center of the jeep track and about 2300 feet from the center of the jeep track. Analysis of 1948 aerial photo shows an unidentifiable, cleared area in the vicinity, approximately 675 feet long running along a bearing of 170°. Although positive identification could not be made, it is assumed that this is the location of the truck convoy.

An Air Force demonstration dated July 1945 identifies this as a target in which eight (8) P-47 aircraft would glide bomb the simulated enemy truck column. Bomb load for each aircraft consists of two (2) 100-lb practice bombs with spotting charges.

A Historical Data report from 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01) BOMBS, PRACTICE(CTT10) BOMBS, PRACTICE(CTT10)	Small Arms, General M38A2, Practice Bomb, 100 lbs Spotting Charge, M1A1		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
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L OTHER (Must Describe) No known Land Use Restrictions
A NO CONTROLS No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM: NAD83
UTM X: (meters) 475503.41
UTM Y: (meters) 3149358.99
UTM ZONE: 17
Latitude: 28° 28' 14" Not Defined
Longitude: 81° 15' 0" Not Defined

SUB-RANGE NAME: Tanks (new)
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR03

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1946	1947	N/A
AIR-TO-GROUND	1946	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	A
RAC Score:	1

CLASSIFICATION(S):

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: As described, the tanks are located in a cluster at a point approximately 2800 feet on a true bearing of 145° from the center of the jeep track. They will be placed in two lines about 100 feet apart, four (4) tanks in each line.

COMMENTS: An April 1946 Document identifies placement of targets. As described, the tanks are now located in a cluster at a point approximately 2800 feet on a true bearing of 145° from the center of the jeep track. They will be placed in two lines about 100 feet apart, four (4) tanks in each line, following an east-west line.

An Air Force demonstration dated July 1945 identifies the tanks (before they were relocated) as a target in which eight (8) P-47 aircraft would glide bomb the simulated enemy truck column. Bomb load for each aircraft consists of two (2) 100-lb practice bombs with spotting charges. It should be assumed that similar activity continued at this new location.

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs		
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1		
AERIAL ROCKETS (LIVE)(CTT26)	5-inch, Rocket, HVAR		
AERIAL ROCKETS (PRACTICE)(CTT28)	5-inch, Rocket, HVAR, Practice		
AERIAL ROCKETS (PRACTICE)(CTT28)	Rocket, 11.75-inch, Tiny Tim, Practice		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCAION OF LAND
L	Several local government agencies.			NO
O	Multiple private owners			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CT	Orlando	FL	UNITED STATES
CO	Orange	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

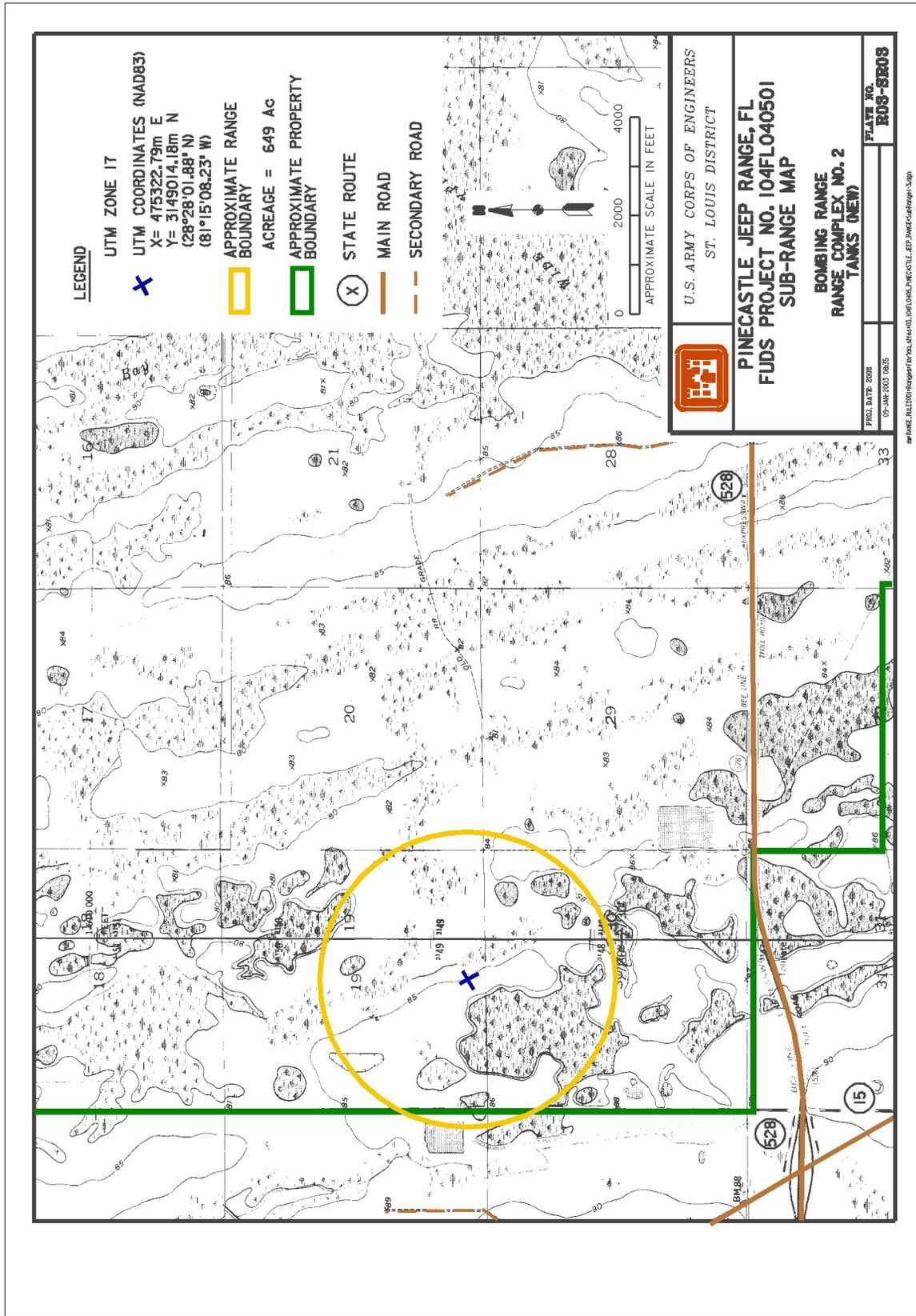
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	475322.79
UTM Y: (meters)	3149014.18
UTM ZONE:	17
Latitude:	28° 28' 2" Not Defined
Longitude:	81° 15' 7" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0303_20030110.JPG



SUB-RANGE NAME: Tanks (old)
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR04

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1946	N/A
AIR-TO-GROUND	1943	1946	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	A
RAC Score:	1

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: An April 1946 Document identifies placement of targets. As described, the tanks are located in a cluster at a point approximately 3200 feet on a true bearing of 140° from the center of the jeep track.

COMMENTS: An April 1946 Document identifies placement of targets. As described, the tanks are located in a cluster at a point approximately 3200 feet on a true bearing of 140° from the center of the jeep track.

An Air Force demonstration dated July 1945 identifies this as a target in which eight (8) P-47 aircraft would glide bomb the simulated enemy truck column. Bomb load for each aircraft consists of two (2) 100-lb practice bombs with spotting charges.

A Historical Data report from 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01) BOMBS, PRACTICE(CTT10)	Small Arms, General M38A2, Practice Bomb, 100 lbs		
BOMBS, PRACTICE(CTT10) AERIAL ROCKETS (LIVE)(CTT26)	Spotting Charge, M1A1 5-inch, Rocket, HVAR		
AERIAL ROCKETS (PRACTICE)(CTT28)	Rocket, 11.75-inch, Tiny Tim, Practice		
AERIAL ROCKETS (PRACTICE)(CTT28)	5-inch, Rocket, HVAR, Practice		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

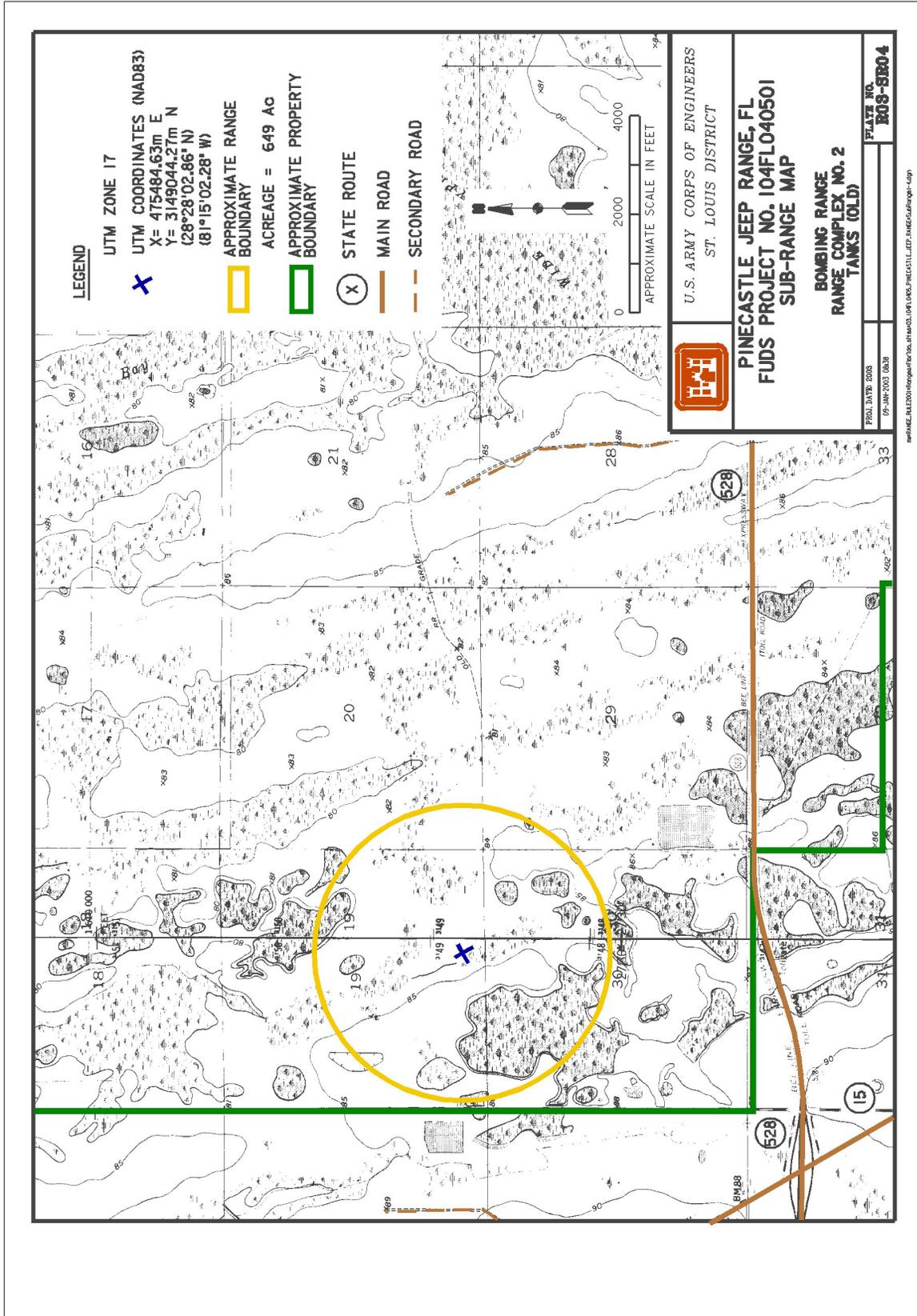
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	475484.63
UTM Y: (meters)	3149044.27
UTM ZONE:	17
Latitude:	28° 28' 3" Not Defined
Longitude:	81° 15' 1" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0304_20030110.JPG



SUB-RANGE NAME: Circular Target
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR05

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1946	1947	N/A
AIR-TO-GROUND	1946	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	A
RAC Score:	1

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Circular targets for CWS use will be positioned 2200 feet on a true bearing of 140° from the center of the jeep track. Target will be 100 feet in diameter, constructed of a bulls-eye and two rings of limerock of normal target proportions.

COMMENTS: An April 1946 Document identifies placement of targets. As described, Circular targets for CWS use will be placed at a point located 2200 feet on a true bearing of 140° from the center of the jeep track. This target will be 100 feet in diameter, constructed of a bulls-eye and two rings of limerock of normal target proportions.

No information is available to describe the ordnance dropped on this target. Historical aerial photography depicts a great deal of ground disturbance and a large number of craters near this location.

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

**RANGE MUNITIONS:
MUNITIONS ID**

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M50, Incendiary Bomb, 4 lbs		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M52, Incendiary Bomb, 2 lbs		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M54, Incendiary Bomb, 4 lbs		
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M67 Incendiary Bomb, 10 lbs		

BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M69 Incendiary Bomb, 6 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

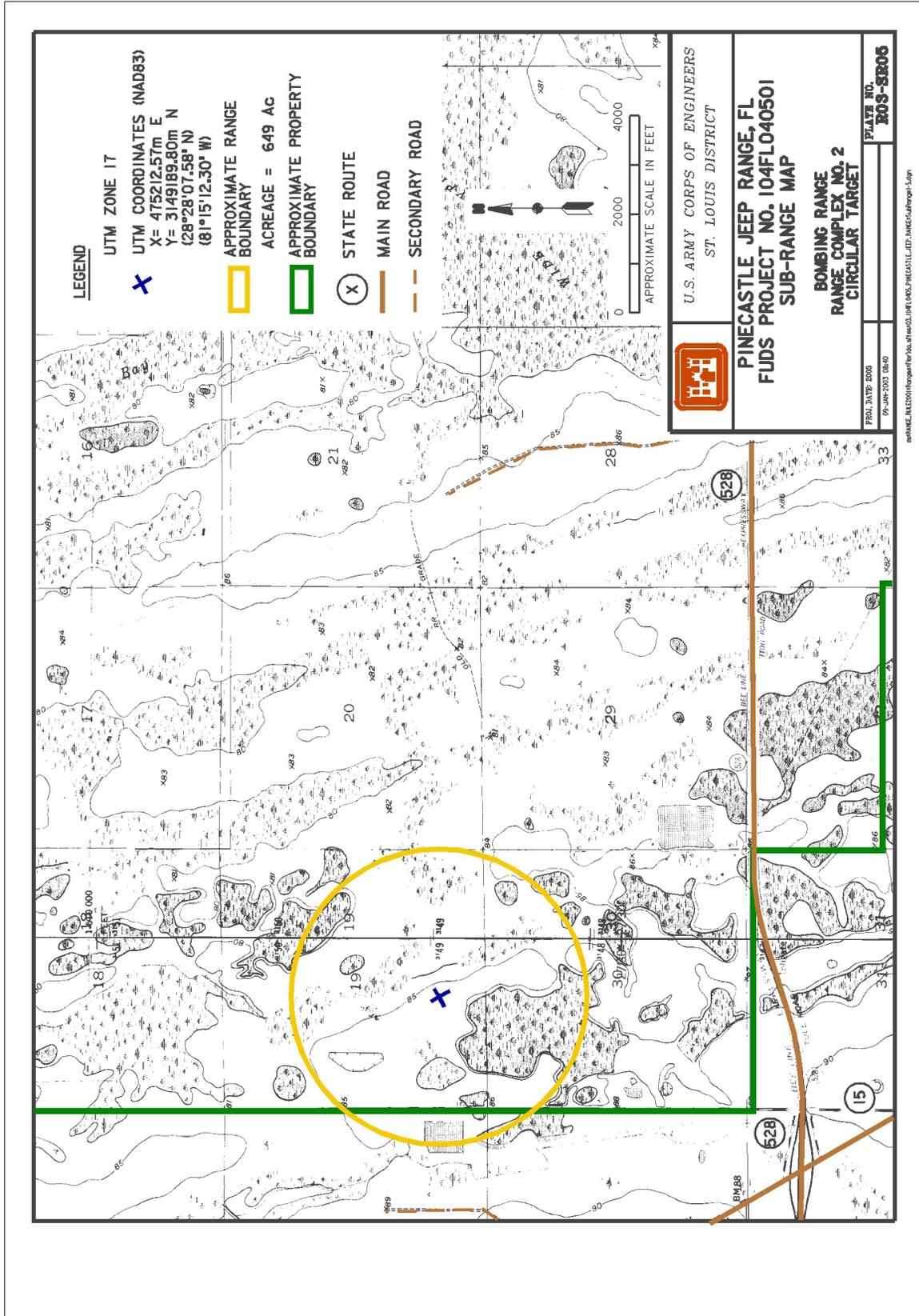
DATUM:	NAD83
UTM X: (meters)	475212.57
UTM Y: (meters)	3149189.80
UTM ZONE:	17

COORDINATES:

Latitude: 28° 28' 8" Not Defined

Longitude: 81° 15' 11" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0305_20030110.JPG



SUB-RANGE NAME: Target No.1
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR06

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1947	N/A
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	B
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Designated a target based on the analysis of aerial photos. Displays concentration of ground scars, appearing to be craters. Located approximately 4275 feet, on a bearing of 150° from the jeep track.

COMMENTS: This site was designated as a target based on the analysis of historical aerial photographs. This specific area displays a concentration of ground scars, which appear to be craters. A historical document, dated 3 April 1946, describes the relocation of several bombing targets. New locations of these targets are described in detail. However, former locations are identified only as the "Second Phase range". It is unknown as to the use of this former target. Based on extensive ground scaring it is assumed that it had had a significant amount of activity.

A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

A Historical Data report from 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01) BOMBS, HIGH EXPLOSIVE(CTT07)	Small Arms, General AN-M41, Frag Bomb, 20 lbs		

BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M50, Incendiary Bomb, 4 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M52, Incendiary Bomb, 2 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M54, Incendiary Bomb, 4 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M67 Incendiary Bomb, 10 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

COORDINATES:

DATUM: NAD83
UTM X: (meters) 475394.27
UTM Y: (meters) 3148601.56
UTM ZONE: 17
Latitude: 28° 27' 49" Not Defined
Longitude: 81° 15' 4" Not Defined

SUB-RANGE NAME: Target No.2
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR07

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1947	N/A
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	Yes

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	III
Hazard Probability:	B
RAC Score:	3

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Designated a target based on the analysis of aerial photos. Displays concentration of ground scars. Located approximately 5175 feet, bearing of 122° from jeep track.

COMMENTS: The site was designated as a target based on the analysis of historical aerial photographs and information discussed in a historical document, dated 3 April 1946, which describes the relocation of several bombing targets. New locations of these targets were described in detail. However, their former locations were identified only as the "Second Phase range". One such target moved was a convoy of trucks. Speculation is that this target identified, as Target No. 2, may have been the former location of this truck convoy. This assumption is based solely on the linear shape of the ground scaring.

It is not know if high explosive munitions had been dropped on this site. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing.

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01) BOMBS, PRACTICE(CTT10)	Small Arms, General M38A2, Practice Bomb, 100 lbs		

BOMBS, Spotting Charge, M1A1
PRACTICE(CTT10)

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

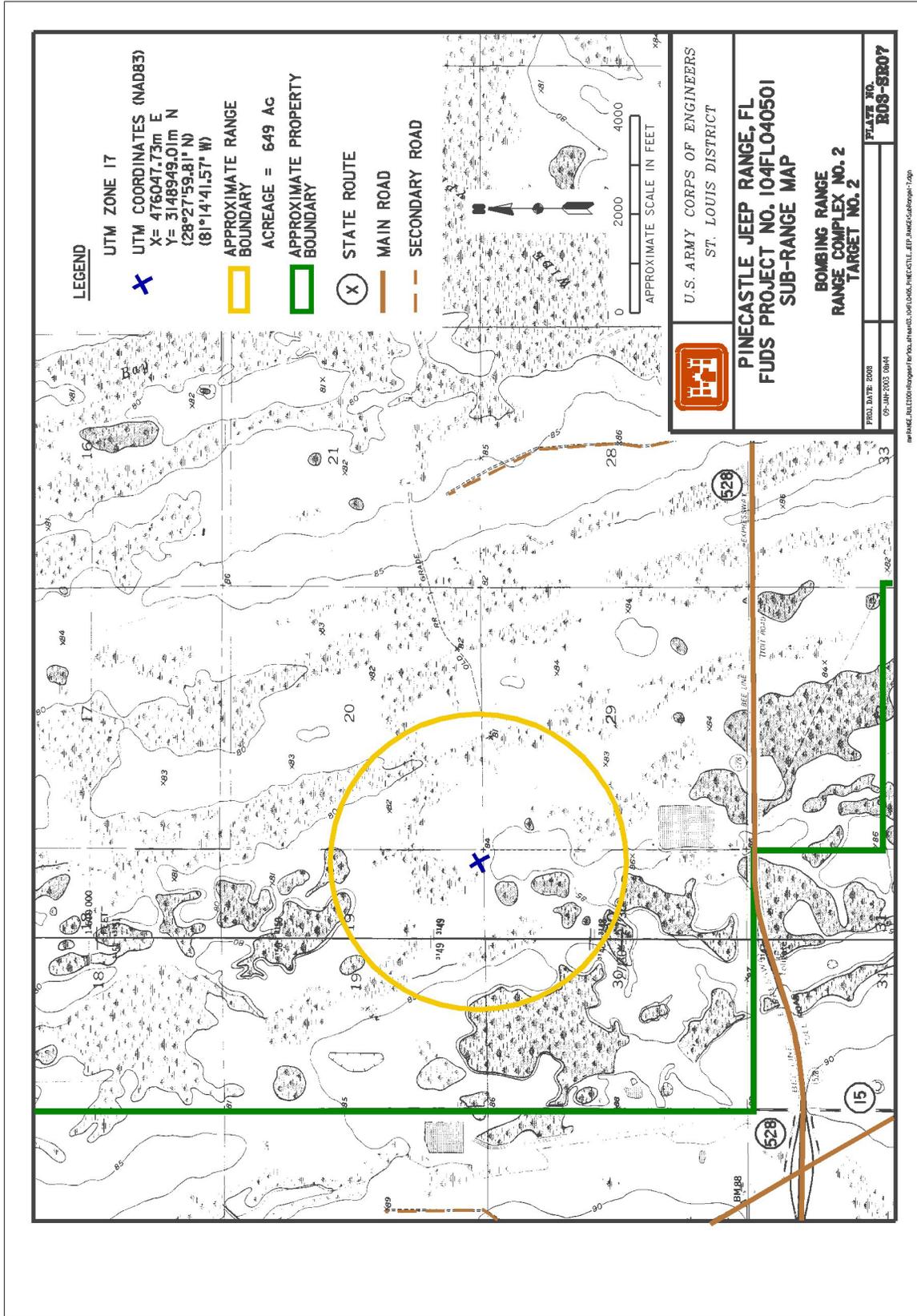
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM:	NAD83
UTM X: (meters)	476047.73
UTM Y: (meters)	3148949.01
UTM ZONE:	17
Latitude:	28° 28' 0" Not Defined
Longitude:	81° 14' 40" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0307_20030110.JPG



SUB-RANGE NAME: Target No.3
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR08

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1947	N/A
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	B
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Designated as a possible bomb target, based on analysis of aerial photos. Located approximately 8,175 feet, bearing of 112° from the jeep track.

COMMENTS: The site was designated as a potential bomb target based on the analysis of historical aerial photographs and information discussed in a historical document, dated 3 April 1946, which describes the relocation of several bombing targets. New locations of these targets were described in detail. However, their former locations were identified only as the "Second Phase range". No written evidence was found to confirm this site as a target. On aerial photos, this site shows signs of activity, possibly that of a bombing target.

It is not know if high explosive munitions had been dropped on this site. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing.

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M30, General Purpose Bomb, 100 lbs		

BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M41, Frag Bomb, 20 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M67 Incendiary Bomb, 10 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M50, Incendiary Bomb, 4 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M69 Incendiary Bomb, 6 lbs
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

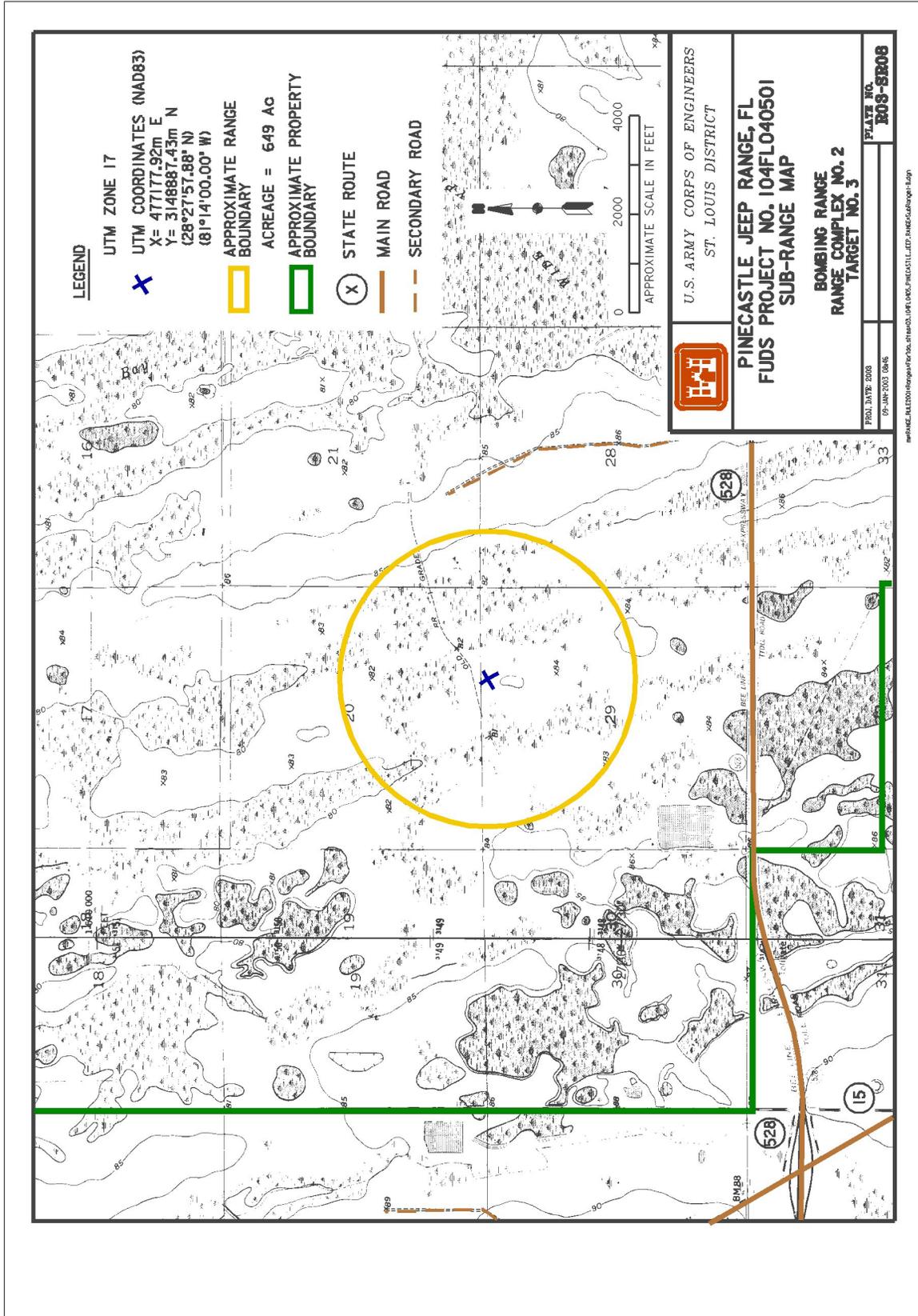
GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

DATUM: NAD83
UTM X: (meters) 477177.92
UTM Y: (meters) 3148887.43
UTM ZONE: 17
Latitude: 28° 27' 58" Not Defined
Longitude: 81° 13' 59" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0308_20030110.JPG



SUB-RANGE NAME: Target No.4
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR09

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1947	N/A
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	D
RAC Score:	4

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Designated as a possible bomb target, based on analysis of aerial photos. Located approximately 11,246 feet, bearing of 99° from the jeep track.

COMMENTS: The site was designated as a potential target based on the analysis of historical aerial photographs and information discussed in a historical document, dated 3 April 1946, which describes the relocation of several bombing targets. New locations of these targets were described in detail. However, their former locations were identified only as the "Second Phase range". No written evidence was found to confirm this site as a target. Aerial photos shows signs of activity, possibly that of a bombing target.

It is not know if high explosive munitions had been dropped on this site. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing.

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M30, General Purpose Bomb, 100 lbs		

BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M41, Frag Bomb, 20 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M67 Incendiary Bomb, 10 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M69 Incendiary Bomb, 6 lbs
BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCAION OF LAND
L	Several local government agencies.			NO
O	Multiple private owners			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

COORDINATES:

COORDINATES:

DATUM: NAD83
UTM X: (meters) 478056.86
UTM Y: (meters) 3149399.99
UTM ZONE: 17
Latitude: 28° 28' 15" Not Defined
Longitude: 81° 13' 26" Not Defined

SUB-RANGE NAME: Warehouse Target
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR10

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1946	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	III
Hazard Probability:	A
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19460101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: As described, the warehouse target is located at a point approximately 1,200 feet on a true bearing of 120° from the center of the jeep track.

COMMENTS: An April 1946 Document identifies placement of targets. As described, the "Ship Target" will be moved from the Second Phase range and positioned 1300 feet on a true bearing of 120° from the center of the jeep track.

An Air Force demonstration dated July 1945 identifies this as a target in which four A-26 aircraft would make an attack against the dummy railroad warehouse. Load for first two aircraft: four (4) 100-lb INERT G.P. Bombs with anti-ricochet devices, per aircraft. Load for last two aircraft: two (2) 500-lb Incendiary Clusters M7, per aircraft .

A Historical Data report form 1 July 1945 - 31 August 1945 states that demonstrations on the Pinecastle range occurred on a regular monthly schedule.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs		

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO

SUB-RANGE NAME: Simulated Enemy Airstrip
Complex Name: Range Complex No.2

RMIS Range ID: I04FL040501R03-SR11

HISTORIC USE:

HISTORIC USE	START YEAR	END YEAR	COMMENTS
BOMBING	1943	1947	N/A
AIR-TO-GROUND	1943	1947	N/A
SMALL ARMS	1943	1947	N/A

CURRENT USE:

CURRENT USE	START YEAR	COMMENTS
Undeveloped	1947	N/A

ACREAGE:

Land:	649
Tidal Water:	0
Inland Water:	0
Total:	649
Tidal Water with Public Exposure Pathway:	No

MMR ACREAGE:

Identified:	0
Suspected:	649
Not Suspected:	0

RISK ASSESSMENT CODE:

Hazard Severity:	II
Hazard Probability:	B
RAC Score:	2

CLASSIFICATION(S):

Training

RANGE / NON-RANGE: Range

LAND USE RESTRICTIONS: Unrestricted Public Access

CONSTRUCTION DATE: (YYYYMMDD) 19430101

THE FOLLOWING TYPES OF MUNITIONS WERE USED ON THIS RANGE:

Conventional

DESCRIPTION: Determined strictly on analysis of historical aerial photographs. Approximately 2100 feet long, running on a bearing of 43°. Located on eastern portion of Township 23 S, Range 30 E

COMMENTS: Historical Data Report from 1 July 1945 - 31 August 1945, states that demonstrations on the Pinecastle range occurred on a regular monthly schedule. Annex #1 to Demonstration Number 3-13, dated 17 July 1945, describes one such demonstration. In this document it identifies a simulated enemy airstrip. This airstrip is the site of numerous missions on this particular day. No location of the airstrip is discussed in this or any documents found during the records review. Therefore, this site was determined strictly on analysis of historical aerial photographs.

The single reference above identifies three phases of attack, which included a variety of aircraft, payloads, and targets. Specific to this target, ammunition included: .50 caliber small arms, 5-inch High Velocity Aircraft Rockets (HVAR), 100-lb Cluster Bombs with Practice M48 Parafrags M72 & M73, 100-lb Practice Bombs, 60-lb AC British Training Bombs, 100-lb Sky Marker Bombs, 500-lb Incendiary M76.

Additional references, indicates the potential for high explosive munitions at Pinecastle Demonstration Range. One such document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

The airstrip is estimated approximately 2100 feet long, running on a bearing of 43°. The range cell developed for this range includes a 3000-foot radius, center around the northern portion of the airstrip. Additional needs call for a range cell for air to ground activity. This cell begins approximately 400 feet southwest of the airstrip. It is 5000 feet wide at the base and extends downrange approximately 16,000 feet.

HAVE THERE BEEN ANY DOCUMENTED INCIDENTS ON THIS RANGE? No

RANGE MUNITIONS:

MUNITIONS ID	MUNITIONS	USED START DATE	USED END DATE
SMALL ARMS(CTT01)	Small Arms, General		
SMALL ARMS(CTT01)	50 Cal. Machine Gun		
BOMBS, HIGH EXPLOSIVE(CTT07)	AN-M41, Frag Bomb, 20 lbs		

BOMBS, (INCENDIARY, PHOTOFLASH)(CTT08)	AN-M76, Incendiary Bomb, 500 lbs
BOMBS, PRACTICE(CTT10)	Bomb, Practice, 20lbs, M48
BOMBS, PRACTICE(CTT10)	Spotting Charge, M1A1
BOMBS, PRACTICE(CTT10)	M38A2, Practice Bomb, 100 lbs
AERIAL ROCKETS (LIVE)(CTT26)	5-inch, Rocket, HVAR

RANGE LAND ACCESS AND RESTRICTIONS:

RESTRICTION TYPE	RESTRICTION	DESCRIPTION
L	OTHER (Must Describe)	No known Land Use Restrictions
A	NO CONTROLS	No known Access Controls

RANGE OWNERS:

OWNER TYPE	OWNER DESCRIPTION	LEASE	LEASE TERMINATION	REVOCATION OF LAND
O	Multiple private owners			NO
L	Several local government agencies.			NO

RANGE DEMOGRAPHICS:

TYPE	NAME	STATE	COUNTRY
CO	Orange	FL	UNITED STATES
CT	Orlando	FL	UNITED STATES

SOIL TYPE: SAND/GRAVEL SAND

TOPOGRAPHY: FLAT

VEGETATION: SHRUBS WITH SOME TREES

GROUNDWATER

AVG DEPTH (IN FEET)	NOT SPECIFIED
DRINKING WATER SUPPLY	UNKNOWN
RANGE CONTAMINATION FROM RESIDUE OF MUNITIONS	UNKNOWN

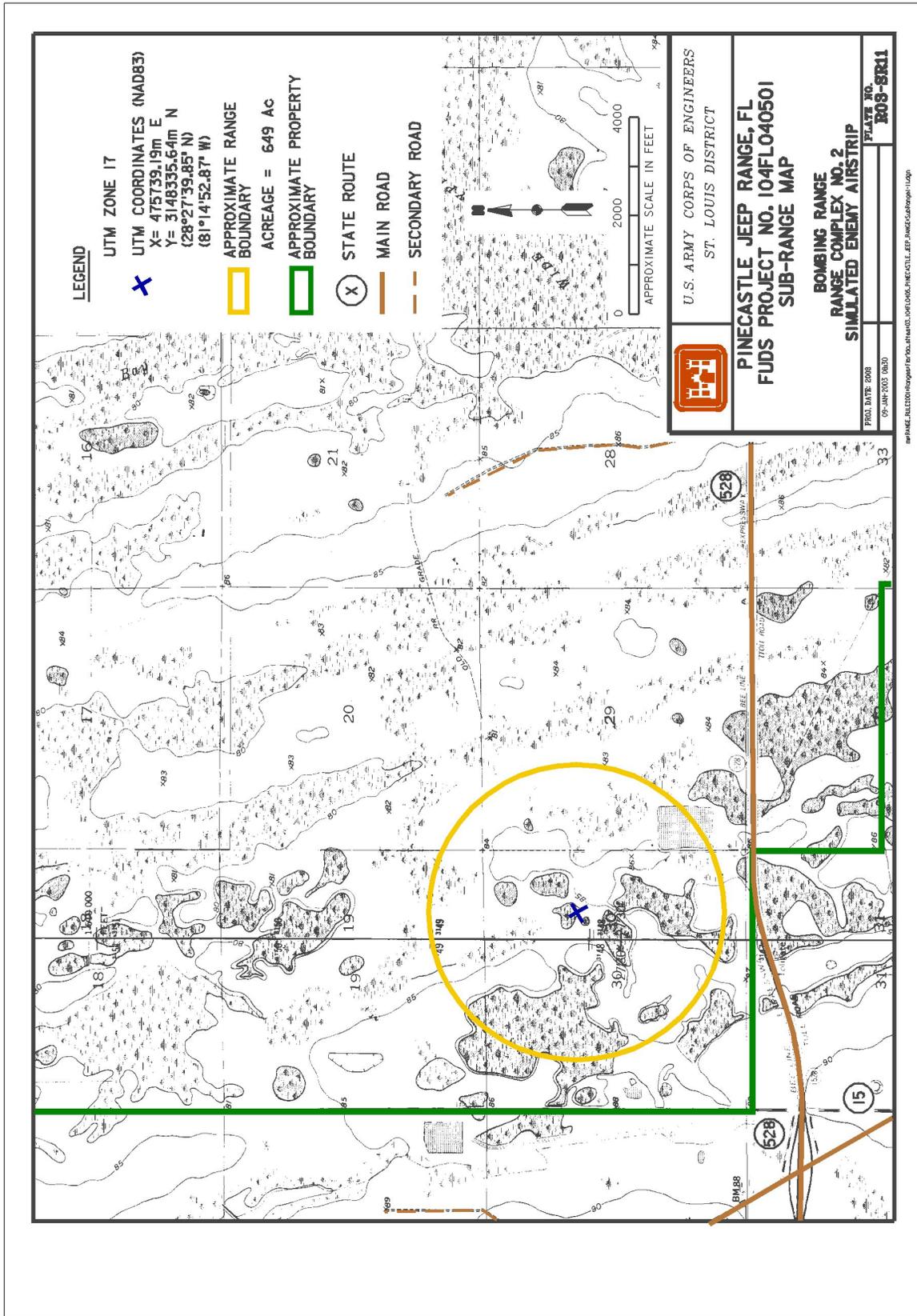
COORDINATES:

DATUM:	NAD83
UTM X: (meters)	475739.19
UTM Y: (meters)	3148335.64
UTM ZONE:	17
Latitude:	28° 27' 40" Not Defined

COORDINATES:

Longitude: 81° 14' 52" Not Defined

SUB-RANGE MAP: FL9799F7224_SR_MAP_0311_20030110.JPG



APPENDIX A
MUNITIONS DATASHEETS

MUNITIONS LIST:

ID	NAME	DATA SHEET
CTT01	50 CAL. MACHINE GUN	NO
CTT01	SMALL ARMS, GENERAL	YES
CTT07	AN-M30, GENERAL PURPOSE BOMB, 100 LBS	YES
CTT07	AN-M41, FRAG BOMB, 20 LBS	YES
CTT08	AN-M50, INCENDIARY BOMB, 4 LBS	YES
CTT08	AN-M52, INCENDIARY BOMB, 2 LBS	YES
CTT08	AN-M54, INCENDIARY BOMB, 4 LBS	YES
CTT08	AN-M67 INCENDIARY BOMB, 10 LBS	YES
CTT08	AN-M69 INCENDIARY BOMB, 6 LBS	YES
CTT08	AN-M76, INCENDIARY BOMB, 500 LBS	YES
CTT10	BOMB, PRACTICE, 20LBS, M48	YES
CTT10	M38A2, PRACTICE BOMB, 100 LBS	YES
CTT10	SPOTTING CHARGE, M1A1	YES
CTT26	5-INCH, ROCKET, HVAR	YES
CTT28	5-INCH, ROCKET, HVAR, PRACTICE	YES
CTT28	ROCKET, 11.75-INCH, TINY TIM, PRACTICE	YES
CTT39	BLASTING CAPS	NO
CTT48	CHEMICAL ID SET, DETONATION, M1	YES

CTT01

SMALL ARMS

**NO DATASHEET AVAILABLE
50 CAL. MACHINE GUN**

SMALL-ARMS AMMUNITION

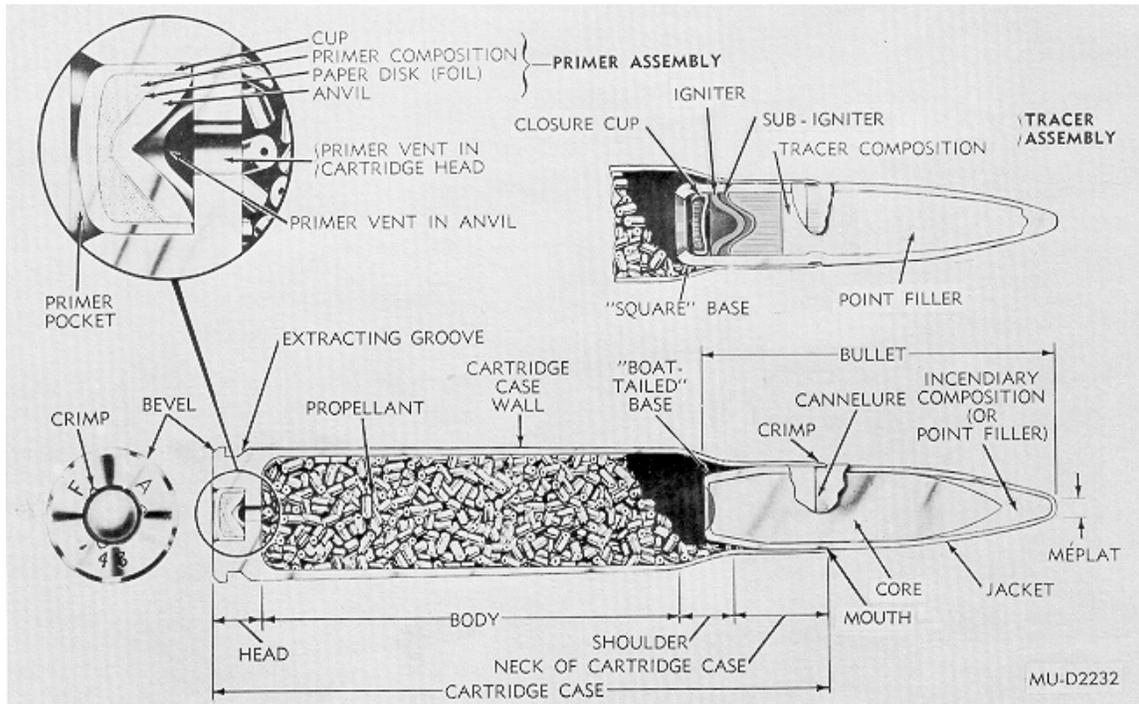
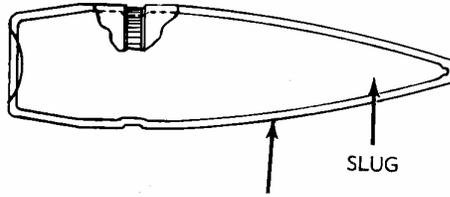


Figure 1. Typical cartridge (sectional)

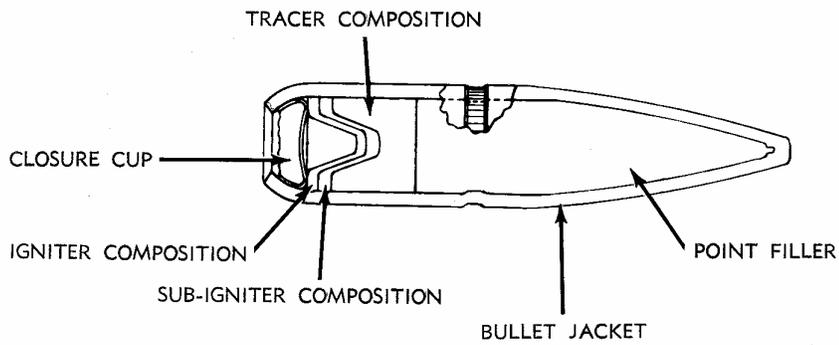
General. Small-arms ammunition, as used herein, describes a cartridge or families of cartridges intended for use in various types of hand-held or mounted weapons through 30 millimeter. Within a caliber designation, these weapons may include one or more of the following: rifles (except recoilless), carbines, pistols, revolvers, machineguns and shotguns. For purposes of this publication, small-arms ammunition may be grouped as cartridges intended primarily for combat or training purposes (API, HEI, tracer or ball); for training purposes only (blank or dummy); or for special purposes (rifle grenade or spotter-tracer). Refer to TM 9-1306-200 for more detailed information on small-arms ammunition.

Cartridges. In general, a small-arms cartridge is identified as an assembly of a cartridge case, primer, a quantity of propellant within the cartridge case, and a bullet or projectile. Blank and rifle grenade cartridges are sealed with paper closure disks in lieu of bullets. Dummy cartridges are composed of a cartridge case and a bullet. Some dummy cartridges contain inert granular materials to simulate the weight and balance of live cartridges. A typical cartridge and the terminology of its components are shown in figure 1.

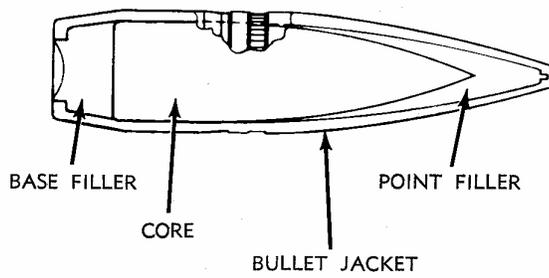
Case. Although steel, aluminum, zinc and plastic materials have been used experimentally, brass, a composition of 70 percent copper and 30 percent zinc, is the most commonly used material for cartridge cases. Steel, as well as brass, is an approved material for caliber .45 cartridge cases. Brass, paper and plastic are used for 12 gage shotshell bodies. Aluminum is used for military-type .410 gage shotshell bodies. Configurations of cartridges and bullets are illustrated in figures 2 through 9.



BALL (NATO)



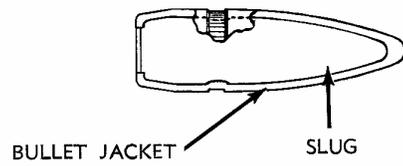
TRACER (NATO)



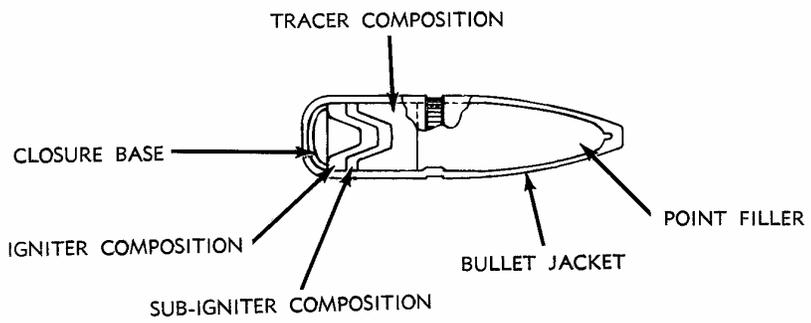
ARMOR-PIERCING (NATO)

MU-D 2233

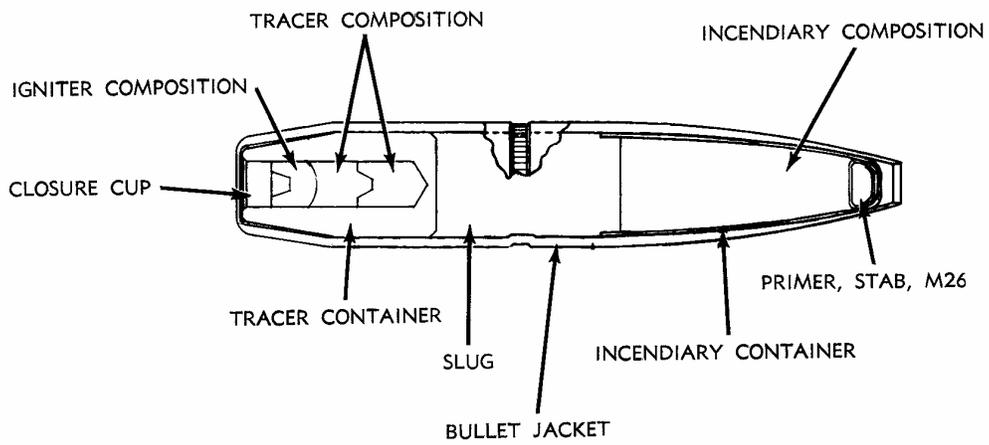
Figure 2. 7.62 mm bullets (sectional)



5.56 MM BALL



5.56 MM TRACER



CALIBER .50, SPOTTER TRACER

MU-D 2234

Figure 3. 5.56mm and caliber .50 spotter tracer bullets (sectioned)

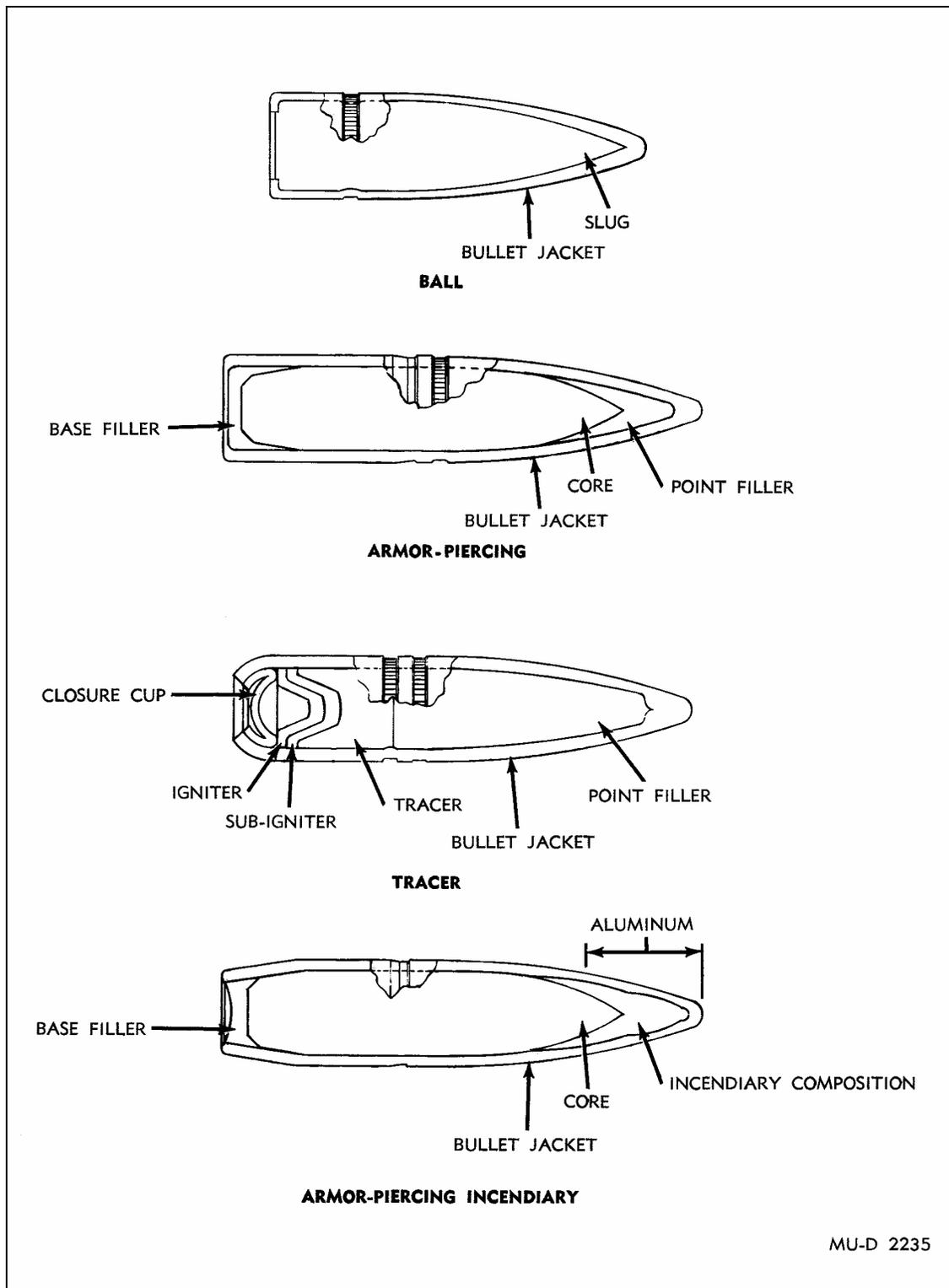


Figure 4. Caliber .30 bullets (sectional)

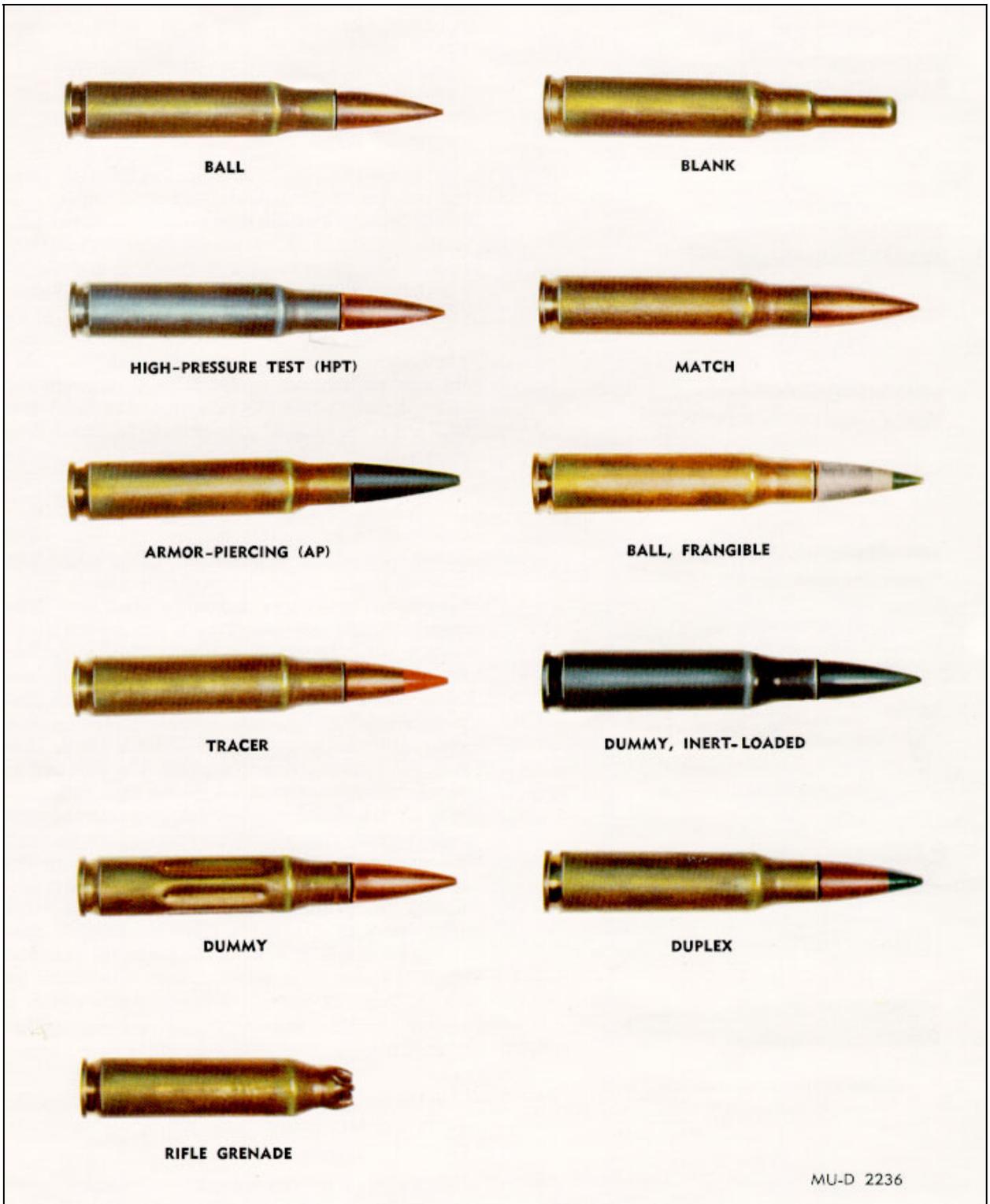


Figure 5. 7.62mm cartridges

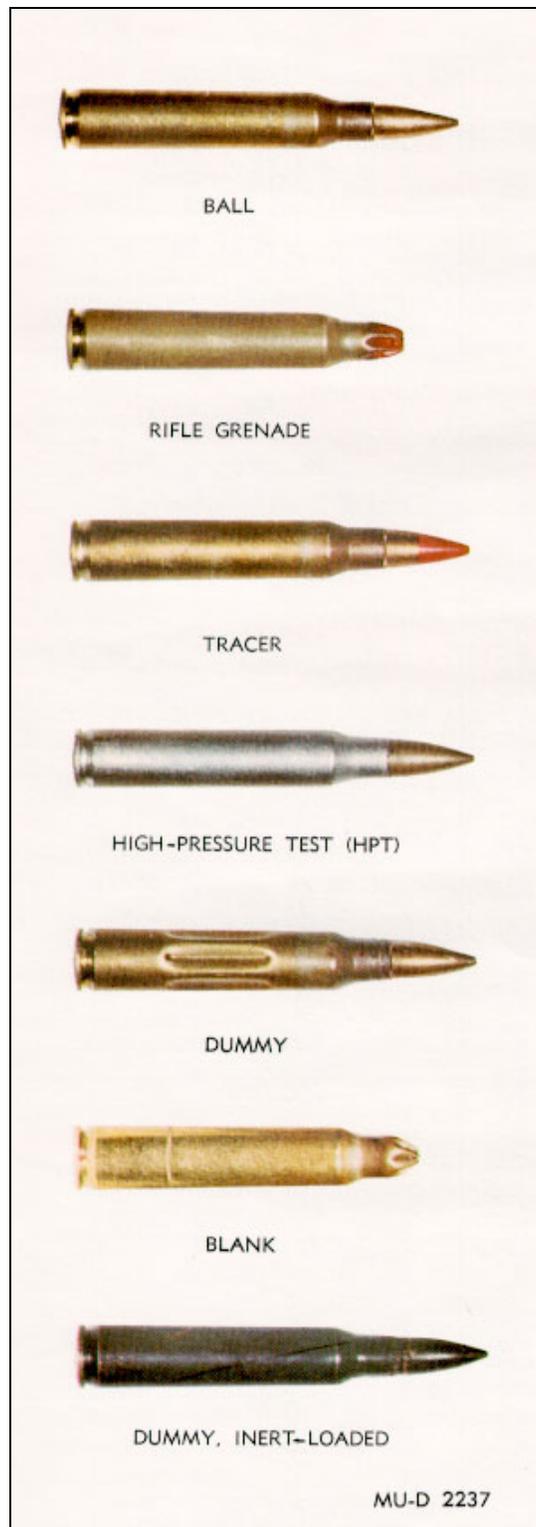


Figure 6. 5.56mm cartridges

Propellant. Cartridges are loaded with varying weights of propellant. This is to impart sufficient velocity (within safe pressures) to the projectile to obtain the required ballistic performance. These propellants are either of the single-base (nitrocellulose) or double-base (nitrocellulose and nitroglycerine) type. The propellant grain configuration may be cylindrical with a single, lengthwise perforation, spheroid (ball) or flake. Most propellants are coated with a deterrent (to assist in controlling the rate of combustion) and with a final coating of graphite (to facilitate flow of propellant and eliminate static electricity in loading cartridges).

Primer. Small-arms cartridges contain either a percussion or electric primer. The percussion primer consists of a brass or gilding metal cup that contains a pellet of sensitive explosive material secured by a paper disk and a brass anvil. The electric primer consists of an electrode button in contact with the priming composition, a primer cup assembly and insulator. A blow from the firing pin of the weapon on the center of the percussion primer cup base compresses the primer composition between the cup and the anvil. This causes the composition to explode. The function of the electric primer is accomplished by a firing pin with electrical potential, which contacts the electrode button. This allows current to flow through the energy-sensitive priming composition to the grounded primer cup and cartridge case, exploding the priming composition. Holes or vents in the anvil or closure cup allow the flame to pass through the primer vent in the cartridge case and ignite the propellant. Rimfire ammunition, such as the caliber .22 cartridge, does not contain a primer assembly. Instead, the primer composition is spun into the rim of the cartridge case and the propellant is in intimate contact with the composition. On firing, the firing pin strikes the rim of the cartridge case, compressing the primer composition and initiating its explosion.

Bullet. With few exceptions, bullets through caliber .50 are assemblies of a jacket and a lead or steel core. They may contain other components or chemicals which provide the terminal ballistic characteristics of the bullet type. The bullet jacket may be either gliding metal, gliding-metal clad steel, or copper plated steel. Caliber .30 and 7.62mm frangible bullets are molded of powdered lead and a friable plastic which pulverizes into dust upon impact with the target. The pellets used in the shotgun shells are spheres of lead alloys varying from 0.08 inch to 0.33 inch in diameter.

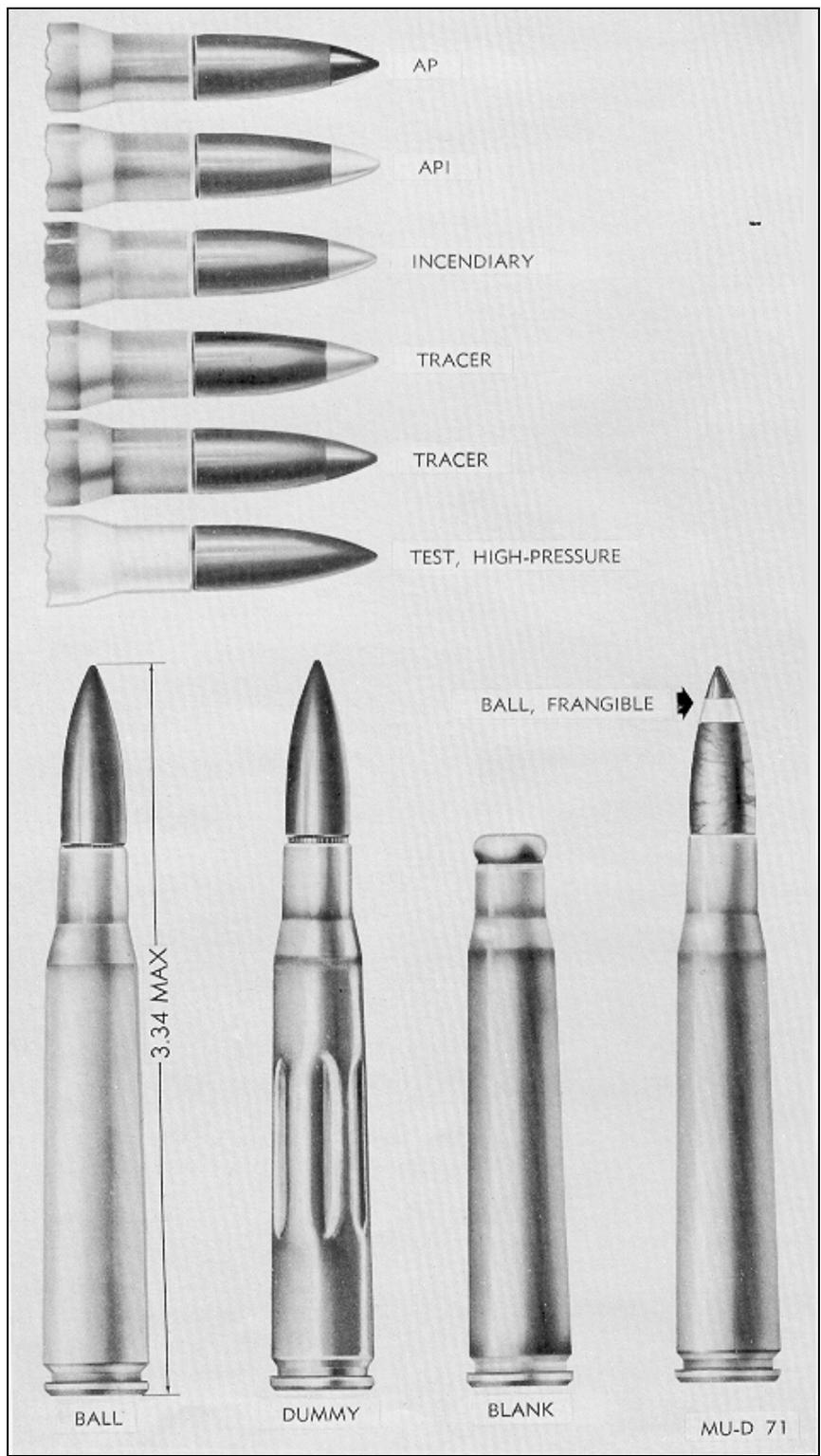


Figure 7. Caliber .30 cartridges

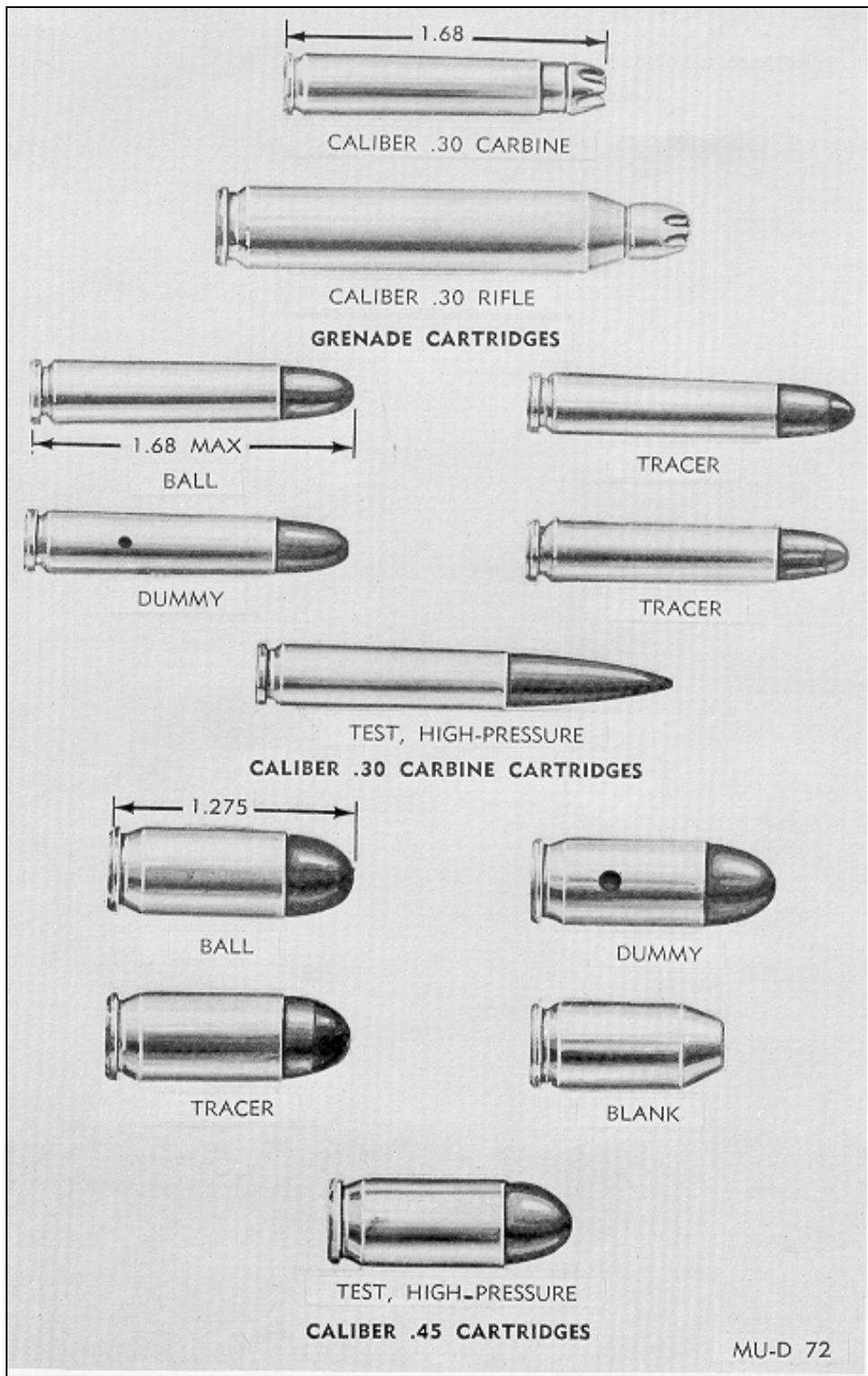


Figure 8. Caliber .30 carbine and caliber .45 cartridges



Figure 9. Caliber .50 cartridges

Ball Cartridge. The ball cartridge is intended for use in rifles, carbines, pistols, revolvers and/or machineguns against personnel and unarmored targets. The bullet, as designed for general purpose combat and training requirements, normally consists of a metal jacket and a lead slug. Caliber .50 ball bullet and 7.62-mm, Ball M59 bullet contain soft steel cores.

Tracer Cartridge. By means of a trail of flame and smoke, the tracer cartridge is intended to permit visible observation of the bullet's in-flight path or trajectory and the point of impact. It is used primarily to observe the line of fire. It may also be used to pinpoint enemy targets to ignite flammable materials and for signaling purposes. The tracer element consists of a compressed, flammable, pyrotechnic composition in the base of the bullet. This composition is ignited by the propellant when the cartridge is fired. In flight, the bullet emits a bright flame which is visible to the gunner. Trace burnout occurs at a range between 400 and 1,600 yards, depending upon the caliber of ammunition.

Match Cartridge. The match cartridge is used in National and International Match Shooting competitions. The bullet consists of a gliding-metal jacket over a lead slug. The cartridges are identified on the head face with the designation NM (National Match) or Match.

Armor-Piercing Cartridges. The armor-piercing cartridge is intended for use in machineguns or rifles against personnel and light armored and unarmored targets, concrete shelters, and similar bullet-resisting targets. The bullet consists of a metal jacket and a hardened steel-alloy core. In addition, it may have a base filler and/or a point filler of lead.

Armor-Piercing-Incendiary Cartridge. The armor-piercing-incendiary cartridge is used in rifles or machineguns as a single combination cartridge in lieu of separate armor-piercing and incendiary cartridges. The bullet is similar to the armor-piercing bullet, except that the point filler is incendiary mixture instead of lead. Upon impact with the target, the incendiary mixture burst into flame and ignites flammable material.

Armor-Piercing-Incendiary Tracer Cartridge. The bullet of the armor-piercing-incendiary-tracer cartridge combines the features of the armor-piercing, incendiary, and tracer bullets and may be used to replace those cartridges. The bullet consists of a hard steel core with compressed pyrotechnic mixture in the cavity in the base of the core. The core is covered by a gliding-metal jacket with incendiary mixture between the core point and jacket. This cartridge is for use in caliber .50 weapons only.

Duplex Cartridge. The duplex cartridge contains two special ball type bullets in tandem. The front bullet is positioned partially in the case neck, similarly to a standard ball bullet. The rear bullet, positioned completely within the case, is held in position by a compressed propellant charge. The base of the rear bullet is angled so that in flight, it follows a path slightly dispersed from that of the front bullet.

Spotter-Tracer Cartridge. The spotter-tracer cartridge is intended for use in coaxially mounted caliber .50 spotting rifles. The bullet trajectory closely approximates that of

106mm projectiles. Thus, this cartridge serves as a fire control device to verify weapon sight settings before firing 106mm weapons. The bullet contains an impact detonator and incendiary composition which identify the point of impact by flash and smoke.

Blank Cartridge. The blank cartridge is distinguished by absence of a bullet. It is used for simulated fire, in training maneuvers, and for saluting purposes. It is fired in rifles and machineguns equipped with blank firing attachments.

Grenade Cartridge. The grenade cartridge is used to propel rifle grenades and ground signals from launchers attached to rifles or carbines. All rifle grenade cartridges are distinguished by the rose petal (rosette crimp) closure of the case mouth.

Frangible Cartridge. The caliber .30 frangible cartridge, designed for aerial target training purposes, is also used in rifles and machineguns for target shooting. Caliber .30 and 7.62mm frangible cartridges are used in tank machineguns, firing single shot, for training in tank gunnery. At its normal velocity, the bullet, which is composed of powdered lead and friable plastic, will completely disintegrate upon striking a 3/16-inch aluminum alloy plate at 100 yards from the muzzle of the gun. These cartridges are not to be used on any but well ventilated indoor ranges to preclude buildup of toxic bullet dust. Inhalation of bullet dust may be injurious to health.

Incendiary Cartridge. The incendiary cartridge was designed for aircraft and ground weapon use to ignite combustible targets (e.g., vehicular and aircraft fuel tanks). The bullet contains a compressed incendiary mixture which ignites upon impact with the target. The incendiary cartridge has been superseded by the API and APIT cartridges because of their improved terminal ballistic effects.

Special Purpose Cartridge

Cartridges of various calibers. (figures. 10 through 12), which consist of different types of projectiles and bullets, are used for training and special purposes. They include the following:

- (1) Caliber .22 long rifle and caliber .38 and .45 wad-cutter cartridge for target shooting.
- (2) Caliber .45 blank cartridges fired in exercises to condition dogs to gun fire.
- (3) Caliber .22 hornet and .410 shotgun cartridges for firing in Air Force combination (survival) weapons for hunting purposes.
- (4) Caliber .45 line-throwing cartridges for firing in caliber .45 line-throwing rifles. The Navy uses these for throwing lines from ship-to-ship. The Army Signal Corps uses these for projecting signal wires over elevated terrain.

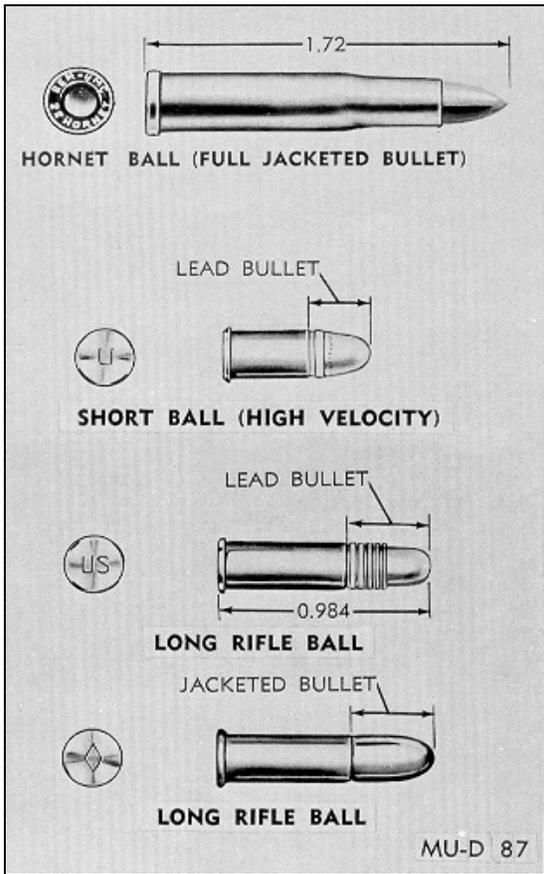


Figure 10. Caliber .22 cartridges

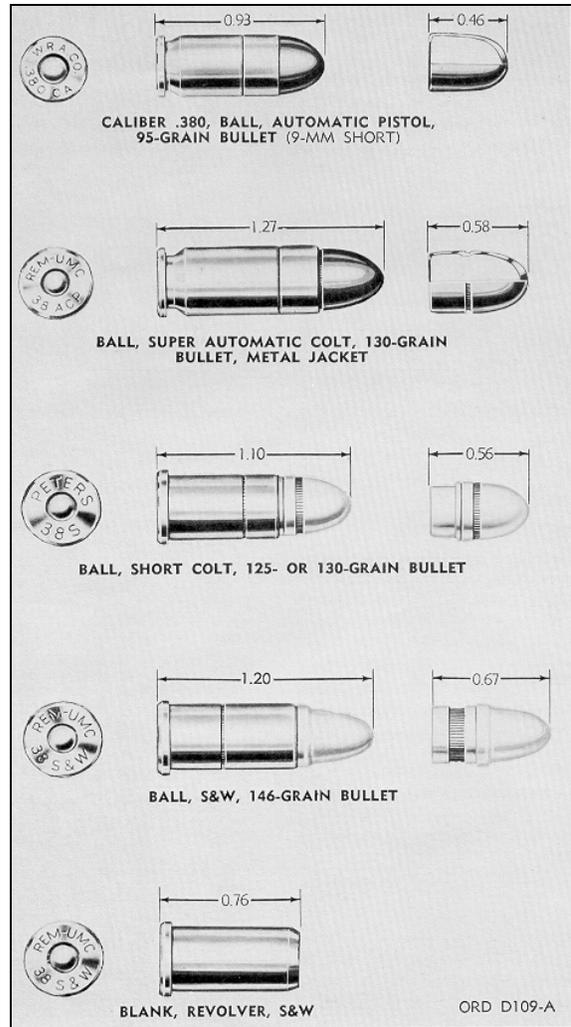


Figure 11. Caliber .38 cartridges

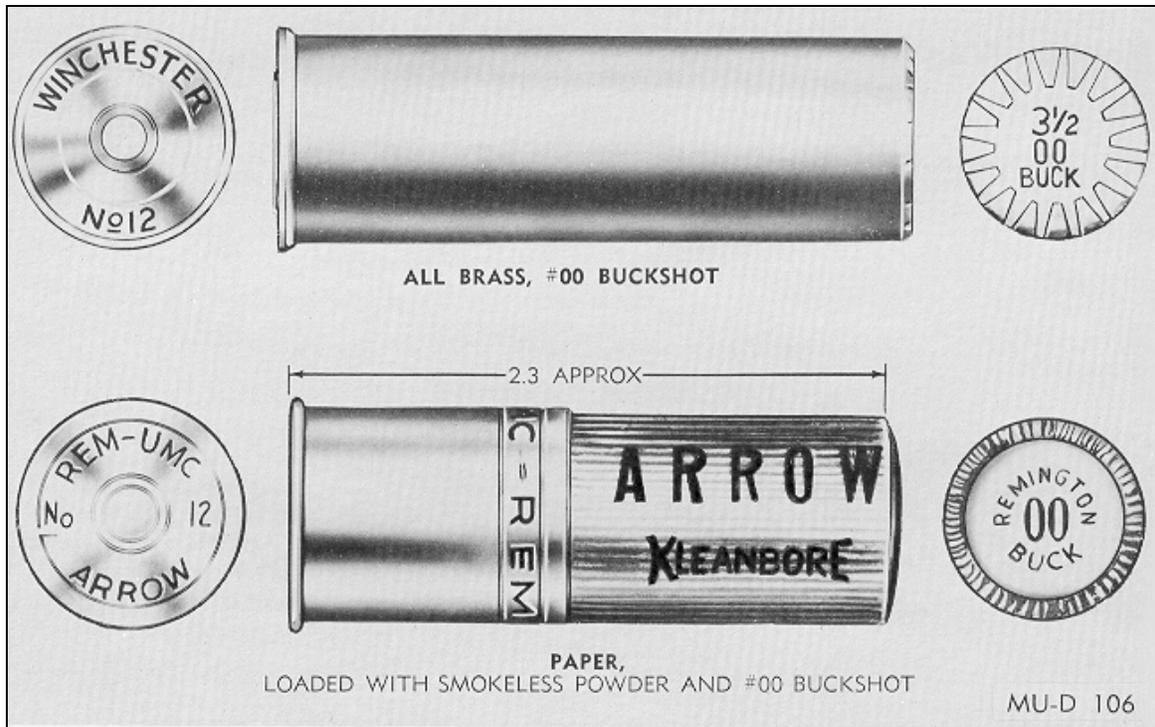


Figure 12. 12 gage shotgun shells

(5) Shotshells containing the designated shot sizes as required for the following:

- 12 gage #00 Buck for guard duty
- 12 gage #4 Buck for guerrilla purposes.
- 12 gage #6, 7½ and 8 shot for clay target shooting for training purposes.
- .410 gage #7 shot for caliber .22/.410 survival weapons maintained by aircraft

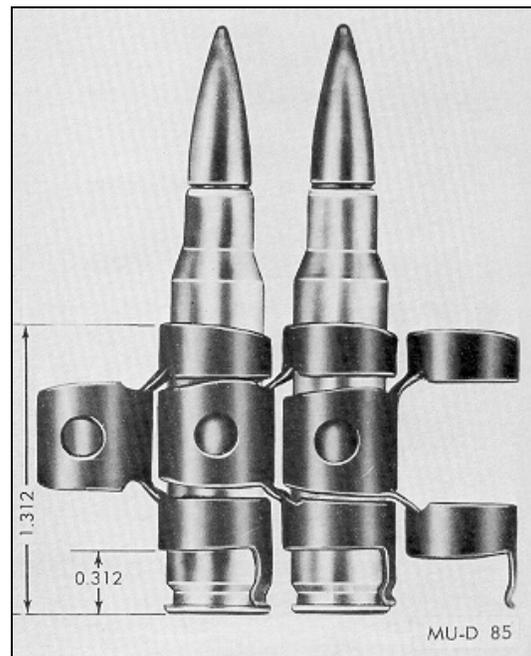


Figure 13. Linked 7.62-mm cartridges

Special purpose cartridges also include the following types of military cartridges:

(1) Dummy. The dummy cartridge is used for practice in loading weapons and simulated firing to detect flinching of personnel when firing weapons. It consists of a cartridge case and a ball bullet. Cartridge identification is by means of holes through the side of the case or longitudinal corrugations in the case and by the empty primer pocket.

(2) Dummy inert-loaded. This cartridge consists of a cartridge case, a ball bullet and inert granular material in the case simulating the weight and balance of a live cartridge. The exterior of the cartridge is identified by a black chemical finish and by the absence of a primer. This cartridge is used by installations for testing weapon function, linkage and feed chutes.

(3) High-pressure test. High-pressure test ammunition is specially loaded to produce pressures substantially in excess of the maximum average or individual pressures of the corresponding service cartridge. This cartridge is not for field issue. It is used only by armorers and weapons mechanics for proof firing of weapons (rifles, pistols, machine guns) at place of manufacture, test and repair. Because of excessive pressures developed by this type of ammunition, and the potential danger involved in firing, proofing of weapons is conducted only by authorized personnel from fixed and shielded rests by means of a lanyard or other remote control methods.

Metallic Links and Clip

Metallic links. (figures. 13 and 14) are used with caliber .30, caliber .50, 5.56mm, 7.62mm and 20mm cartridges in machine guns. The links are made of steel, surface treated for rust prevention. They are used to assemble cartridges into linked belts of 100 to 750 cartridges per belt. The links must meet specific test and dimension requirements to assure satisfactory ammunition feed and functioning in the machine gun under all training and combat service conditions.

Different configurations of cartridge clips. These permit unitized packages of ammunition. This facilitates transfer of cartridges to appropriate magazines for caliber .30, 7.62mm and 5.56mm rifles. The caliber .30 eight-round clip feeds eight cartridges as a unit into the receiver of the rifle. The caliber .45 clip feeds three cartridges as a unit into the revolver cylinder. Five-round and eight-round clips are used with caliber .30 cartridges; five-round clips with 7.62mm cartridges; ten-round clips with caliber .30 carbine and 5.56-mm cartridges; and three-round clips with caliber .45 cartridges.

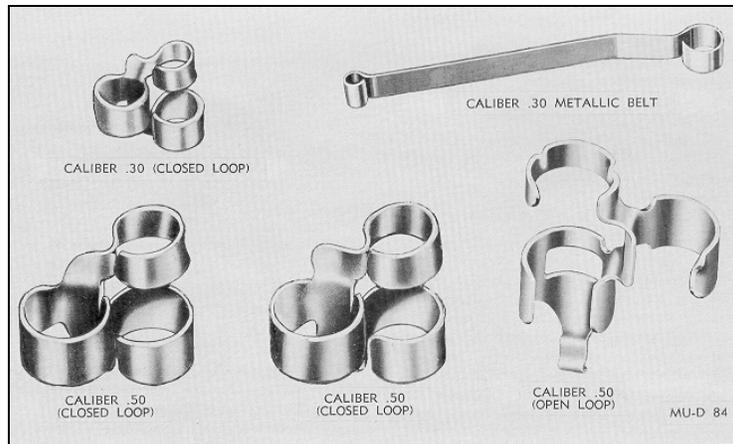


Figure 14. Links for caliber .30 and caliber .50 ammunition

Identification Markings. Each outer shipping container and all inner containers are fully marked to identify the ammunition. Wire-bound boxes are marked in black and ammunition boxes are painted olive drab, with markings in yellow. When linked ammunition is functionally packed, component lot numbers are replaced by a functional lot number. Typical packing and identification markings are illustrated in figures 15 through 17.

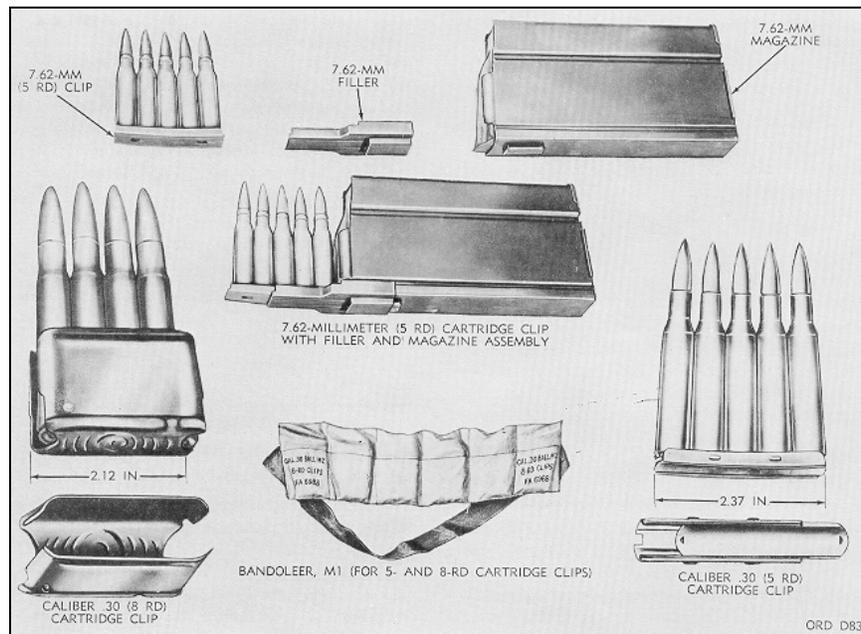


Figure 15. Cartridges, links, belt, cartons, bandoleers and ammunition box

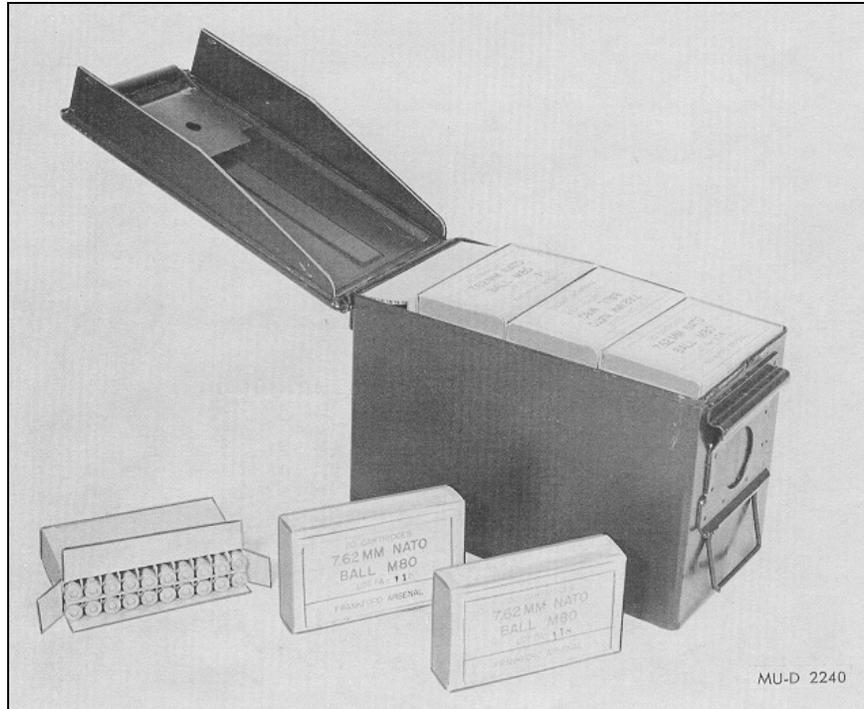


Figure 16. Cartridges, link belt, cartons, bandoleers and ammunition box

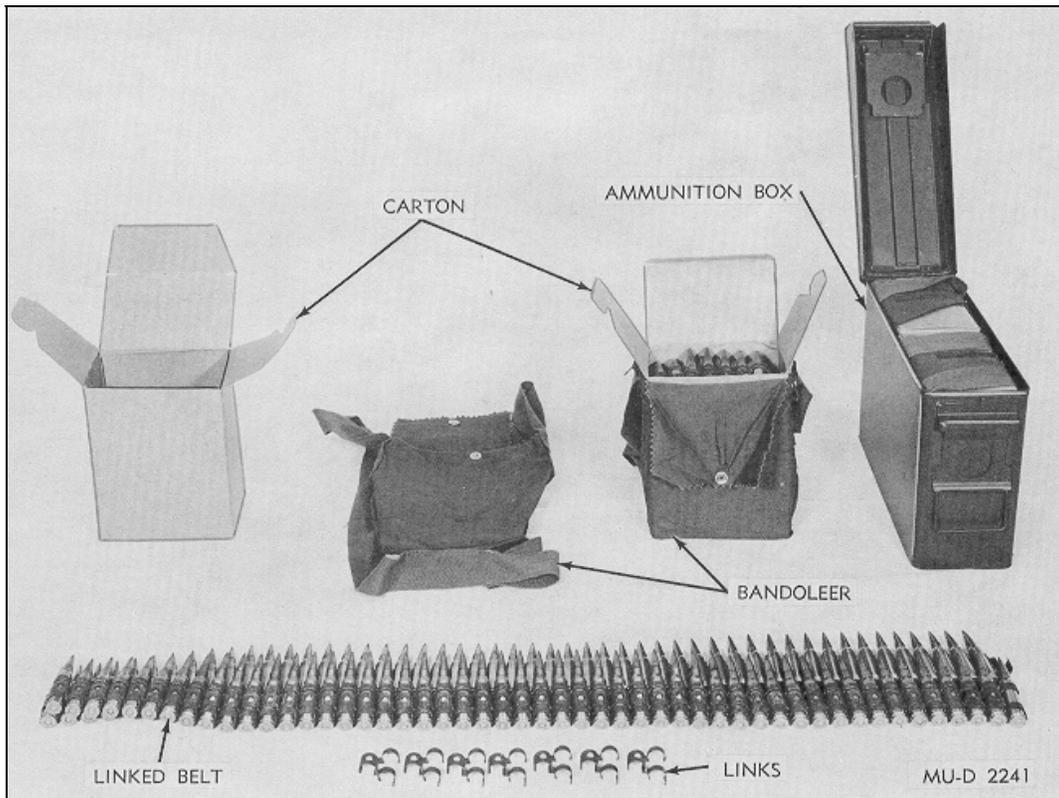


Figure 17. Cartridges, link belt, cartons, bandoleers and ammunition box

Care, Handling and Preservation

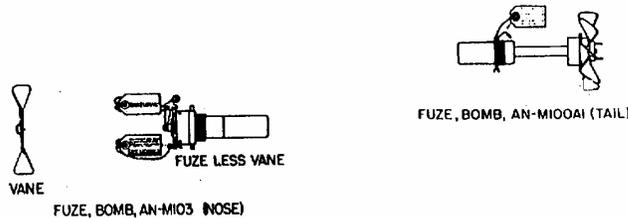
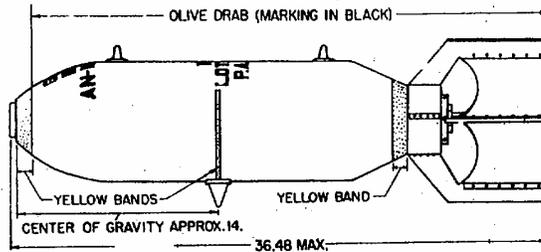
Small-arms ammunition is comparatively safe to handle. It is packed to withstand transportation, handling and storage conditions normally encountered in the field. However, consideration should be given to general handling precautions pertaining to ammunition and explosives.

Reference: This data is a reprint of Chapter 3, TM 9-1300-200, *Ammunition General*, October 1969

CTT07

BOMBS, HIGH EXPLOSIVE

BOMB, GP, 100-POUND, AN-M30



Description. The GP and M series bombs of 100-pound weight have the same dimensions. The GP is distinguishable from the M-series by the fact that it has a base plug in the tail and a single suspension lug in addition to two Army lugs. The old GP bombs are a relatively thin-cased bomb with an ogival nose, parallel sidewalls, and a tapered aft section. It uses both the box type and conical type fin assembly. The box-type fin assembly is secured to the aft end of the bomb with a fin locknut, while the conical-type fin assembly is secured to the bomb body by means of a support tube. The two Army lugs are 14 inches apart, each 7 inches from the center of gravity. The single suspension lug is on the center of gravity 14 inches behind the nose. The weight of the case is 42.1 pounds and the fins weigh between 5.6 to 17.5 pounds. The filler is 50/50 amatol, TNT, or Tritonal. Percentage of filler is approximately 49 percent. The AN-M30 Bomb is fuzed in the nose with the AN-M103 Fuze and in the tail with the AN-M100A2 Fuze. Alternate fuzes that may be used as substitutes or for special purposes are the M103, M118, or M119 Nose Fuzes, and the M112, M100, M106, or its modifications, or the AN-M100A1 Tail Fuzes.

Length, assembled bomb

Fin assembly AN-M103A1 40.26 inches

Fin assembly M135 54.2 inch

Diameter 8.18 inch

Weight of Filler

TNT 57 pound

Amatol 54 pound

Tritonal 62 pound

Fuze:

Nose AN--M103, M103, M118,

M119

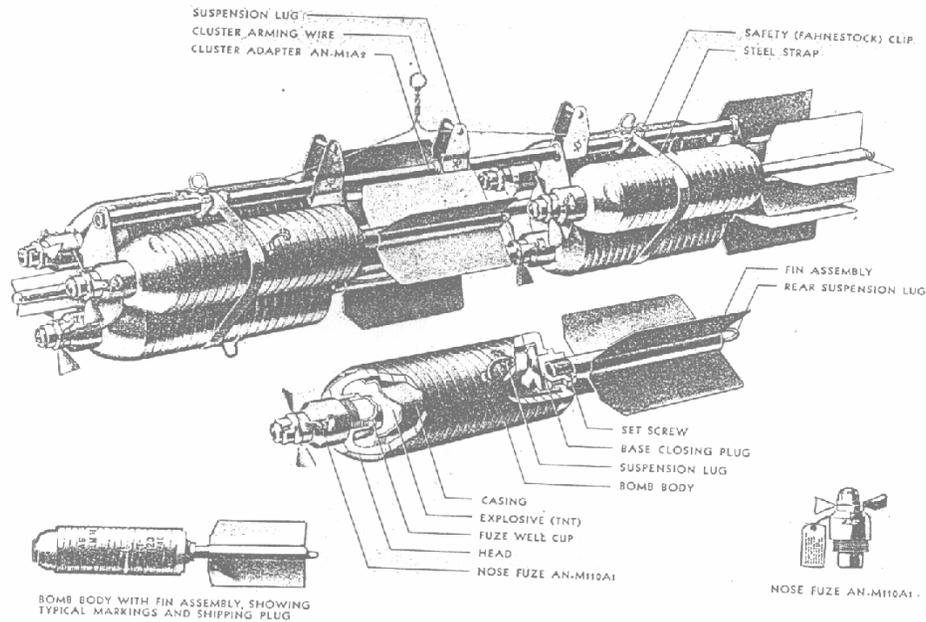
Tail AN-M103, M112, M100,
M106,
AN-M100A1

Painting and Markings Olive drab with black stencil,
2 yellow bands (1aft, 1

center)

References: TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944, TM 9-1325-200, *Bombs and Bomb Components*, April 1966

BOMB, FRAGMENTATION, 20-LBS, AN-M41 & AN-M41A1



Body. This bomb is constructed of cast-steel nose and tailpieces, a seamless steel inner tube, and a helically wrapped drawn steel wire wrapping around the inner tube. The tube is threaded to hold the nose and tail section

Suspension. For individual suspension of this bomb, a U-shaped eyebolt of steel is welded to the body at the center of gravity for horizontal suspension, and an eyebolt is welded to the tail for vertical suspension. The bomb may be dropped in a cluster of six bombs in the *Cluster Adapter AN-M1A2* or *M1*, forming the *Cluster AN-M1A1* or *M1*. The cluster adapter is made of sheet steel, and does not use eyebolts of bombs for suspension.

Tail. Four rectangular sheet-steel vanes are welded to a length of one-inch cast-iron pipe which screws into the base-filling plug.

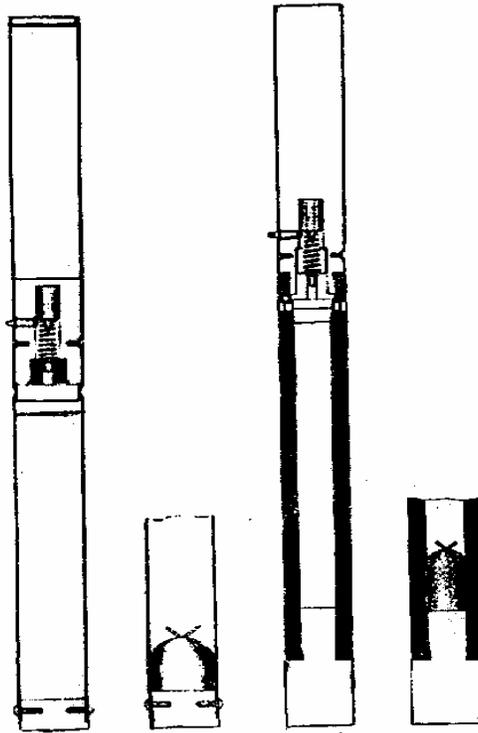
Over-all length	19.5 inches
Body length	11.3 inches
Diameter	3.6 inches
Over all weight	20.3 pounds
Filler	TNT
Filler weight	2.7 pounds
Fuzing	M158, AN-M110A1, M110, M109

Reference: NAVSEA OP 1664, *U.S. Explosive Ordnance*, May 1947

CTT08

BOMBS, (INCENDIARY, PHOTOFLASH)

BOMB, INCENDIARY, M50

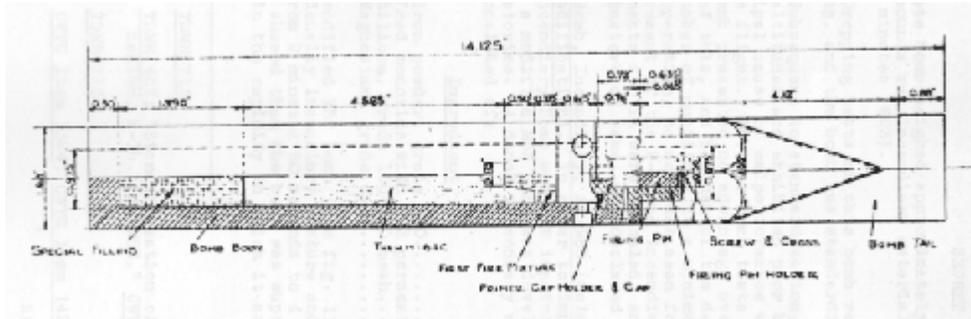


General. Principally used against buildings of frame construction, in conjunction with the use of demolition bombs. These bombs are normally unpainted metal but may be painted a light green to prevent oxidation during storage. A purple band around center of the body denotes incendiary nature of bomb. Nose of bomb is stamped with designation and manufacturer's markings. Fuze tail mechanical impact, no designation.

Over-all length 21.35 inches
Diameter 1.7 inches
Weight 4 pounds
Filler Thermit

Reference: TM 9-1984, *Disposal of American and Allied Bombs and Fuses*, Nov 1942

BOMB, INCENDIARY, 2-LB, AN-M52 SERIES

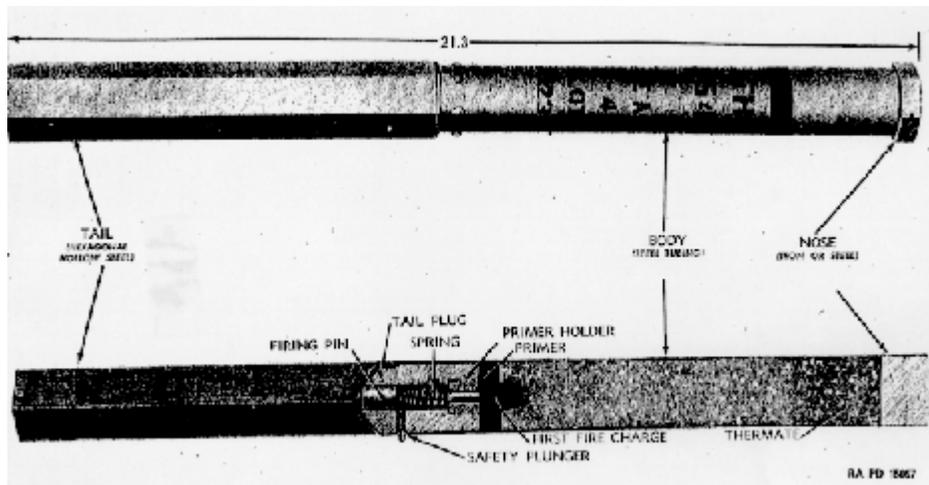


General. This bomb is similar to the AN-M50A1. It is shorter but is the same width. It has no steel nose, the body is made from a magnesium alloy, it does not have a long hollow tail assembly, although it has a short sheet metal tail. The one hundred pound cluster contains 51 M52 bombs, the 500 pound cluster contains 192 bombs.

- Over-all length** 14.2 inches
- Diameter** 1.7 inches
- Weight**..... 2 pounds
- Filler** Incendiary mixture

Reference: TM 9-1984, *Disposal of American and Allied Bombs and Fuses*, Nov 1942; TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944

BOMB, INCENDIARY, 4-LB, AN-M54 SERIES AND AN-M54X SERIES

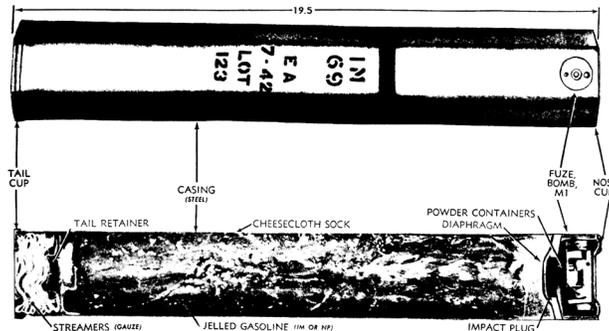


General. Principally used against buildings of frame construction, in conjunction with the use of demolition bombs. These bombs are normally unpainted metal but may be painted a light green to prevent oxidation during storage. A purple band around center of the body denotes incendiary nature of bomb. Nose of bomb is stamped with designation and manufacturer's markings. Fuze tail mechanical impact, no designation. The "X" designation indicates that an explosive charge was added to the munition as a deterrent to fire fighters.

Over-all length 21.35 inches
Diameter 1.7 inches
Weight 4 pounds
Filler Thermate

Reference: TM 9-1984, *Disposal of American and Allied Bombs and Fuses*, Nov 1942; NAVSEA OP 1664, US Explosive Ordnance, 28 May 1947 w/Change 1, 15 January 1969

BOMB, INCENDIARY, 6-POUND, AN-M69 10-POUND, AN-M67



General. The AN-M69 and AN-M67 is a scatter type bomb designed to be dropped from clusters to produce an incendiary effect. The 100-pound cluster contains 14 individual bombs; the 500-pound cluster contains 60 individual bombs.

AN-M69, 6-lb, Incendiary Bomb, Oil. This is contained with a hexagonal light steel case 19.5 inches long and 2.9 inches wide (TM9-1904), 3.134 inches wide (TM 9-1984). This outer case is divided into three compartments. The tail compartment contains a gauze streamer that occupies 1.5 inches. The main body of the bomb is loaded with oil emulsion filler. The fuze, bomb, M1, occupies about 1.5 inches in the nose end and is separated from the filler by an impact diaphragm.

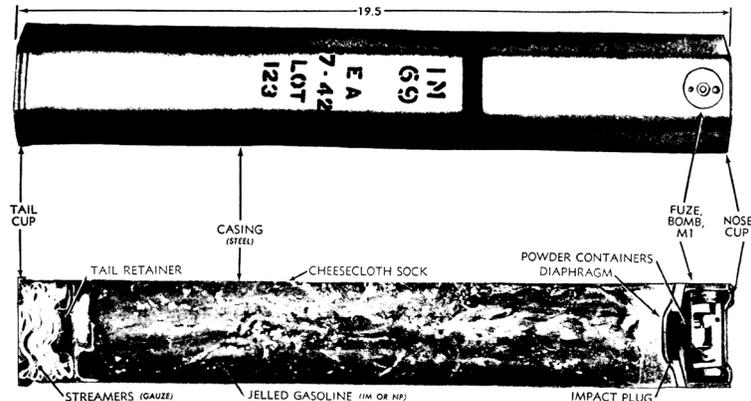
Function. Upon release from the plane, the cluster breaks apart and the safety plunger that had been imprisoned by intimate contact with the bomb next to it, is now free and is partially ejected by its spring from the fuze housing. The striker is now free, but is restrained from striking the primer by a restraining spring. At the same time, the gauze streamer is forced out by air pressure and serves to stabilize the bomb in flight. On impact, the force of inertia causes the striker to move against its spring bringing the firing pin into the primer. The flame from the primer ignites a black powder spitter fuze, which in turn sets off a black powder booster charge. The booster charge functions a charge of black powder and magnesium mixture that ruptures the bomb case, spreads the filler, and ignites it.

AN-M67, 10-lb, Incendiary Bomb, WP. This is identical to the AN-M69 described above in description and operation, but filler is white phosphorous rather than incendiary oil.

Over-all length	19.5 inches
Diameter	2.9 - 3.134 inches
Weight	6 and 10 pounds, respectively
Filler	
AN-M69	Jelled Gasoline (IM or NP)
AN-M67	White Phosphorous
Fuze	M1, Impact
Color	Grey

Reference: TM 9-1984, *Disposal of American and Allied Bombs and Fuses*, November 1942;
TM 9-1904, *Ammunition Inspection Guide*, March 1944

BOMB, INCENDIARY, 6-POUND, AN-M69 10-POUND, AN-M67



General. The AN-M69 and AN-M67 is a scatter type bomb designed to be dropped from clusters to produce an incendiary effect. The 100-pound cluster contains 14 individual bombs; the 500-pound cluster contains 60 individual bombs.

AN-M69, 6-lb, Incendiary Bomb, Oil. This is contained with a hexagonal light steel case 19.5 inches long and 2.9 inches wide (TM9-1904), 3.134 inches wide (TM 9-1984). This outer case is divided into three compartments. The tail compartment contains a gauze streamer that occupies 1.5 inches. The main body of the bomb is loaded with oil emulsion filler. The fuze, bomb, M1, occupies about 1.5 inches in the nose end and is separated from the filler by an impact diaphragm.

Function. Upon release from the plane, the cluster breaks apart and the safety plunger that had been imprisoned by intimate contact with the bomb next to it, is now free and is partially ejected by its spring from the fuze housing. The striker is now free, but is restrained from striking the primer by a restraining spring. At the same time, the gauze streamer is forced out by air pressure and serves to stabilize the bomb in flight. On impact, the force of inertia causes the striker to move against its spring bringing the firing pin into the primer. The flame from the primer ignites a black powder spitter fuze, which in turn sets off a black powder booster charge. The booster charge functions a charge of black powder and magnesium mixture that ruptures the bomb case, spreads the filler, and ignites it.

AN-M67, 10-lb, Incendiary Bomb, WP. This is identical to the AN-M69 described above in description and operation, but filler is white phosphorous rather than incendiary oil.

Over-all length	19.5 inches
Diameter	2.9 - 3.134 inches
Weight	6 and 10 pounds, respectively
Filler	
AN-M69	Jelled Gasoline (IM or NP)
AN-M67	White Phosphorous
Fuze	M1, Impact

Color Grey

Reference: TM 9-1984, *Disposal of American and Allied Bombs and Fuses*, November 1942;
TM 9-1904, *Ammunition Inspection Guide*, March 1944

BOMB, INCENDIARY, 500 LB, AN-M76

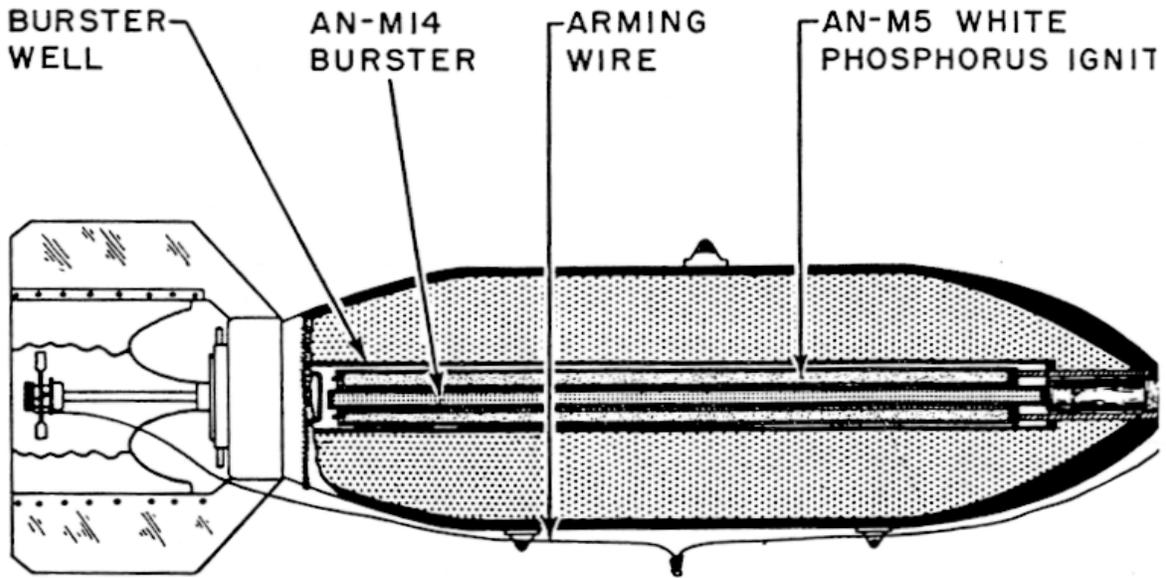


Figure 307. 500-pound Incendiary Bomb AN-M76

Description. This bomb is similar in outside appearance to the M64 General Purpose Bomb. The burster tube used in this bomb is 3.5 inches in diameter and 35.75 inches long containing 1.25 pound terrytol burster and a nine pound white phosphorus igniter. The incendiary filling is PT1 that is a mixture of magensium, gasoline, and a thickner

Body Length 45.3 inches
Body Diameter 14 inches
Total Weight..... 475 lbs
Filler Weight..... 180 lbs

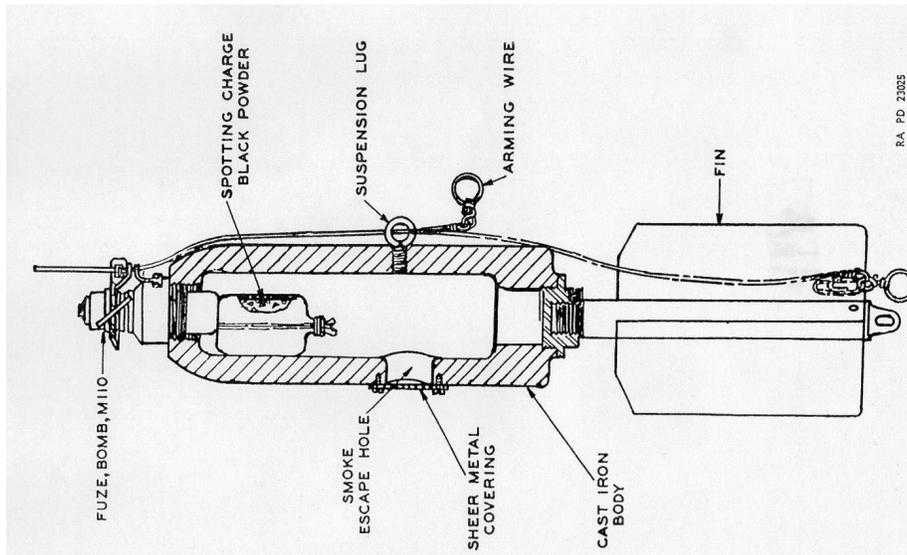
	Nose	Tail
Fuze	M103, M103A1 M135, M135A1 M136, M136A1 M139, M139A1 M140, M140A1 M164, M165 T50, M166, T82	M101, M101A1, M101A2

References: NAVSEA OP 1664, dated 28 May 1947, with change 1, dated 15 January 1969; TM 9-1980, dated December 1950; FM 3-6, dated October 1946

CTT10

BOMBS, PRACTICE

BOMB, PRACTICE, 20-LBS, M48



General. This bomb was designed to give practice in high-altitude fragmentation bombing. The bomb body may be reused after it has been dropped in practice unless badly damaged.

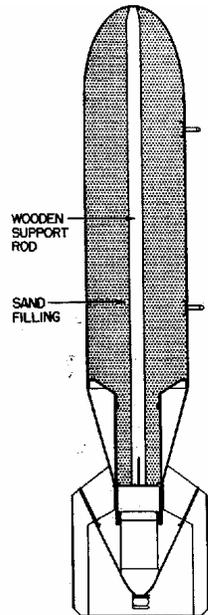
Description. The bomb body is cylindrical in shape and is made of heavy cast iron. To the rear of the bomb body, a hole in the side of the bomb, covered by a sheet metal disc is provided to allow for the escape of smoke. Opposite the hole on the other side of the bomb body is a lug for horizontal suspension. The nose is threaded to receive the M110 or the AN-M110A1 Bomb Nose Fuze. The body is hollow and receives a spotting charge of 0.13 pounds of black powder. The rear of the bomb body is closed by means of a threaded cap. The cap is also threaded to receive the fin assembly. The fin assembly is bladed and the same as that of the 20-pound AN-M41 Fragmentation Bomb. Attached to the fin assembly is a lug for vertical suspension of the bomb. The fin is held securely to the threaded cap by means of a set screw. The over-all length is 21.7 inches. The total weight with spotting charge (no inert filler is used) is 20.5 pounds.

Functioning. In function, it acts exactly as the 20-pound AN-M41 High Altitude Fragmentation Bomb using the same fuze. The cluster is dropped and the arming wire is retained in the plane. The cluster opens and the bombs drop out. After several hundred revolutions of the cane, the fuze will arm. Upon impact, the fuze will function the black powder spotting charge. The smoke produced will blow out the metal disc and will show a white puff at the point of impact. The bomb body may be reused although the other components, fuze and spotting charge, must be replaced.

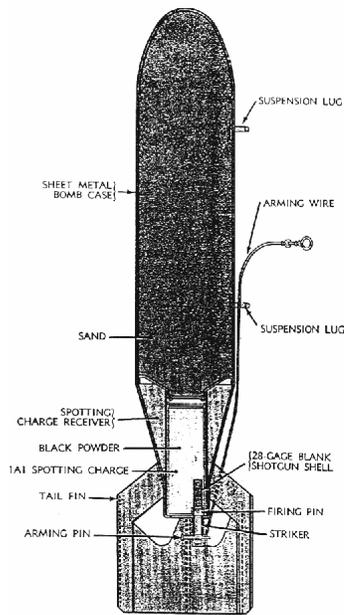
Length	21.7 inches
Weight of assembled signal	20.5 pounds
Body	Cast Iron
Explosive Charge	Black Powder, 0.13 pounds
Fuze	M110

Reference: TM 9-1904, *Ammunition Inspection Guide*, March 1944

BOMB, PRACTICE, 100 POUND, M38A2



with M5 spotting charge



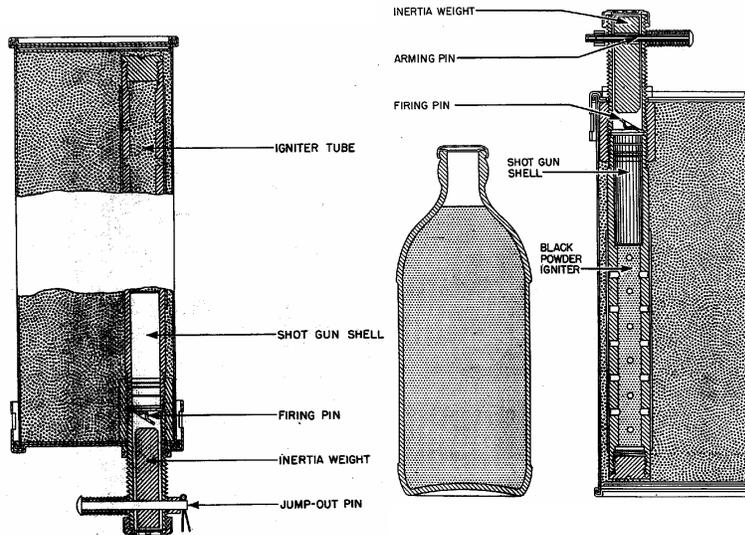
with M1A1 spotting charge

Description. This bomb simulates a General Purpose bomb of the same size. It is constructed of light sheet metal, approximately 22 gage, formed by rolling a rectangular sheet of metal into the form of a cylinder approximately 8 inches in diameter, and spot-welding the seam. The rounded nose is pressed from the same metal, as is the tail, which is formed in the shape of a cone. The tail portion ends in box type fins, which is welded to the cone. Inside of the smaller end of the conical tail section is welded the spotting charge receiver. The spotting charge is assembled in a sleeve at the base of the bomb, within the fin box. Authorized spotting charges are the M1A1, M3, and M5. When using the M5 spotting charge a wooden support rod is installed in the bomb. Two suspension lugs are bolted to the bomb body during fabrication. The Suspension Band M1 is provided for single suspension. The band is a separate component. The over-all length of the bomb body is 47.2 inches. When empty, the bomb body weighs approximately 14 pounds. When completely loaded with sand and spotting charge, the weight of the bomb is approximately 100 pounds.

Over-all length	47.5 inches
Diameter	8.13 inches
Weight empty	15.7 pounds
Weight sand loaded & spotting charge	100 pounds

Reference: TM 9-1904, *Ammunition Inspection Guide*, March 1944; NAVSEA OP 1664 Volume 2, *U.S. Explosive Ordnance*, February 1954; *Complete Round Chart #5981*, October 1944

SPOTTING CHARGES, M1A1, M3, M5



M1A1

M5

M3

M1A1 Spotting Charge. This type of spotting charge fits in the after end of the 100-pound Practice Bomb M38A2. It produces a flash of flame and white smoke for observation of bombing accuracy. It is made from a large tin can, 11.18-inches long, 3.43-inches diameter, weighing 4.25-pounds. At the top of the can is a cover, which has a hole in it for the insertion of a 28-gage blank shotgun shell and firing mechanism. Upon impact, the inertia weight drives the firing pin into the shotgun-type primer, igniting the 3-pounds of black powder.

M3 Spotting Charge. The spotting charge has a 2 1/3-pound dark smoke filling and a black-powder igniter. It is 5/8 of an inch longer than the Spotting Charge M1A1, but otherwise similar. The M3, with its dark smoke filler, is well adapted for bombing practice over snow-covered terrain. The black-powder igniter charge contains approximately 425 grains. It is used in the M38A2 Practice bomb.

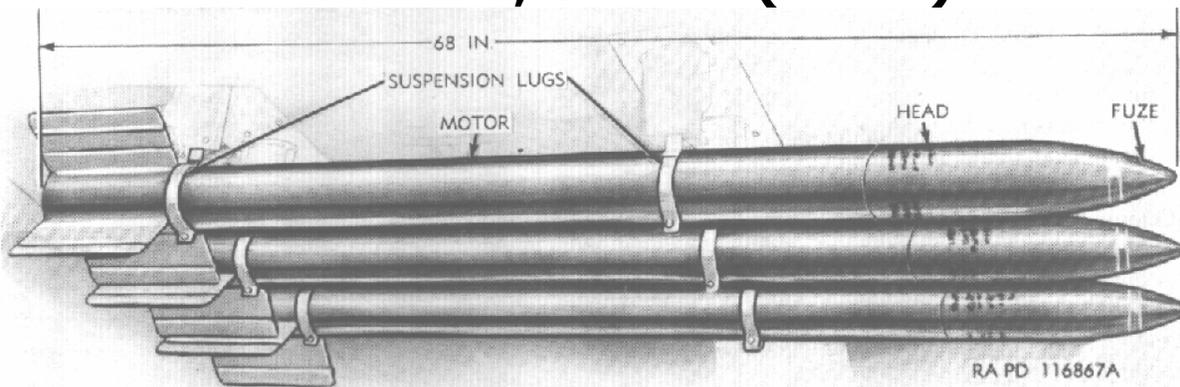
M5 Spotting Charge. The spotting charge consists of a glass bottle filled with FS smoke mixture. An ordinary bottle cap seals the mixture. The bottle is held to the Practice Bomb M38A2 by a wire twisted around the neck of the bottle and attached to the tail vanes. The charge assembly weighs 2.54 pounds.

Reference: TM 9-1904, *Ammunition Inspection Guide*, March 1944; NAVSEA OP 1664 Volume 2, *U.S. Explosive Ordnance*, February 1954

CTT26

AERIAL ROCKETS (LIVE)

ROCKETS, 5 INCH (HVAR)



General. The 5.0-inch fin stabilized, high-velocity aircraft rocket is a Navy type used by the Air Force for forward firing from aircraft. The 5.0-inch rocket is fired from retractable jettisoning launcher using suspension bands. Electrical energy to fire the rocket is derived from the electrical system of the aircraft. The rocket consists of a fuzed head and a motor.

Rocket Heads. Listed below are the various HVAR heads, which are assembled with 5.0-inch rocket motors to form HVAR complete rounds. Complete round data and nomenclature are given in tables. The TNT loaded heads Mk 6 and Mods are shipped with permanently installed base fuze Mk 159 Mod 1 or Mk 164 and Mods and a shipping cap that is replaced by nose fuze Mk 149. The TNT-filled head Mk 6 Mod 4 is especially deep cavitized to receive a VT fuze. The head Mk 25 Mod 1 is a shaped charge type (having an internal copper cone) loaded with composition B. As shipped, the head Mk 25 Mod 1 has a nose shipping plug, which is replaced by nose fuze Mk 149, and a shipping cap to protect the base threads.

HEAD, HIGH EXPLOSIVE, 5.0-inch ROCKET: HVAR, Mk 6 Mod 0, 1, 2, and 3, TNT loaded, with fuze, rocket base AN-Mk 159 (Mk 159 Mod 1) or AN-Mk 164 (Mk 164) and Mods installed.

HEAD, HIGH EXPLOSIVE, 5.0-inch ROCKET: HVAR, Mk 6 Mod 4, TNT loaded, adapted for fuze, VT, M403, with fuze, rocket, base AN-Mk 159 (Mk 159 Mod 1) and Mods or AN-Mk 164 (Mk 164) and Mods installed.

HEAD, INERT, 5.0-inch ROCKET: Mk 6 and Mods.

Fuze. The 5.0-inch HVAR head Mk 6 Mods is permanently fuzed with base fuze Mk 159 Mod 1 or Mk 164 and Mods. The heads Mk 6 and Mods and Mk 25 Mod 1 receive nose fuze Mk 149 Mod 0 or 1 after removal of the nose-shipping cap. The Mk 6 Mod 4 receives VT fuze M403 or M403E2 (Mk 172 Mod 2).

Motor. Listed below are various similar 5.0-inch rocket motors, which are assembled with 5.0-inch HVAR heads to form complete rockets as, indicated in tables. The motor Mk 10 differs from the motor Mk 2 principally in having an Army igniter plug instead of a Navy (bayonet-type) plug. The 5.0-inch motor is externally threaded at the forward end to engage the head. It consists of the motor tube, front closure disk, igniter, propellant, nozzle plate, suspension lugs and fin assembly and suspension lugs.

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3 (with bayonet-type connector plug)

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5 (with electrical connector Mk 11 Mod 5 or M3)
 MOTOR, 5.0-INCH ROCKET: Mk 10 Mod 7 (without fin)
 MOTOR, 5.0-INCH ROCKET, EMPTY: Mk 2 Mod 3
 MOTOR, 5.0-INCH ROCKET, INERT: Mk 2 Mod 3

Fin Assembly. The fin assembly, which is clamped to the rear end of the motor, is a sleeve with four equally spaced rectangular fins extending radially.

Propellant. The propellant is a single grain Mk 18 Mod 0 of ballistite.

Igniter. The igniter is a metal can containing 55 grains of black powder and an electric squib. Two lead wires from the squib extend from the igniter passing through the perforation in the propellant grain to the nozzle where they are connected to the electrical cable and igniter plug (connector).

Head			Motor			Fuze		Velocity (fps)	Use
Dia. (in)	Mark & Mod	Fillers	Dia. (in)	Mark & Mods	Propellant grain	Nose	Base		
5.0	Mk 6 Mods	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0 or 1	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mod 4	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mod	Plaster	5.0	Mk 10 Mods	Mk 18 Mod 0	None	None	1,325	Practice
5.0	Mk 6 Mods	Plaster	5.0	Mk 2 Mod 3	None	None	None	None	Drill
5.0	Mk 25 Mod 1	Comp B	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	None	1,325	Service (AP)

Army Complete Round Nomenclature	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR, AT	Rocket, Practice, 5", HVAR	Rocket, Dummy, 5", HVAR
Navy Complete Round Nomenclature	5" Rocket, Mk 4 Mod 0 (aircraft general purpose)	5" Rocket, Mk 28 Mod 4 (aircraft general purpose)	5" Rocket, Mk 32 Mod 1 (aircraft, HEAT)	5" Rocket, Mk 5 Mod 0 (aircraft practice)	5" Rocket, Mk 6 Mod 0 (aircraft dummy)
HEAD- Mark & Mod Length (in.) Diameter (in.) Weight (lb.) Filler Weight (lb.)	Mk 6 Mod 4 16.73 5.0 45.5 7.5 TNT	Mk 6 Mods 16.73 5.0 45.5 7.5 TNT	Mk 25 Mod 1 ----- ----- ----- 7.5 COMP B	Mk 6 Mods 16.73 5.0 45.5 7.5 Plaster	Mk 6 Mods 16.73 5.0 45.5 7.5 plaster

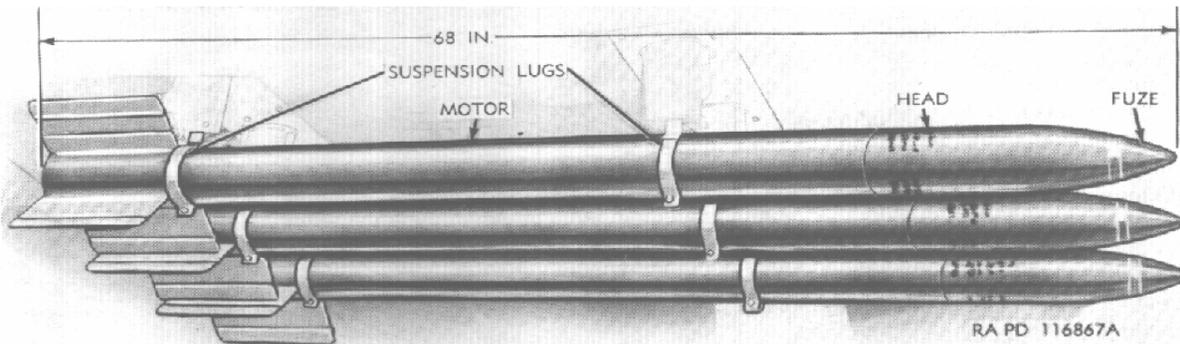
Army Complete Round Nomenclature	Rocket, HE, 5.", HVAR	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR, AT	Rocket, Practice, 5", HVAR	Rocket, Dummy, 5", HVAR
MOTOR-Mark & Mod	Mk 10 Mod 6	Mk 10 Mod 6	Mk 10 Mods	Mk 10 Mod 6	Mk 10 Mod 6
Length (in.)	-----	52.0	52.0	52.0	52.0
Diameter (in.)	--	5.0	5.0	89.3	89.3
Weight (lb.)	5.0	89.3	89.3	Mk 18 Mod 0	Mk 18 Mod 0
Model of Propellant	-----	Mk 18 Mod 0	Mk 18 Mod 0	23.9	23.9
Propellant weight (lb.)	Mk 18 Mod 0 23.9	23.9	23.9		
FUZE-type, Mark and Mod	Nose: VT, M403 or M403E2 Base: Mk 164 Mods	Nose: Mk 149 Mod 0 or 1 Base: Mk 164 Mod 0	Nose: Mk 149 Mod 0 Base: None	None	None
ROCKET (assembled)	68.6	68.6	68.6	68.6	68.6
Length (in.)	-----	134.0	134.0	134.0	109.0
Weight (lb.)	--	1,325	1,325	1,325	
Velocity (max) (fps)	1360				

Reference: TM 9-1950 *Rockets*, July 1945

CTT28

AERIAL ROCKETS (PRACTICE)

ROCKETS, 5 INCH (HVAR)



General. The 5.0-inch fin stabilized, high-velocity aircraft rocket is a Navy type used by the Air Force for forward firing from aircraft. The 5.0-inch rocket is fired from retractable jettisoning launcher using suspension bands. Electrical energy to fire the rocket is derived from the electrical system of the aircraft. The rocket consists of a fuzed head and a motor.

Rocket Heads. Listed below are the various HVAR heads, which are assembled with 5.0-inch rocket motors to form HVAR complete rounds. Complete round data and nomenclature are given in tables. The TNT loaded heads Mk 6 and Mods are shipped with permanently installed base fuze Mk 159 Mod 1 or Mk 164 and Mods and a shipping cap that is replaced by nose fuze Mk 149. The TNT-filled head Mk 6 Mod 4 is especially deep cavitized to receive a VT fuze. The head Mk 25 Mod 1 is a shaped charge type (having an internal copper cone) loaded with composition B. As shipped, the head Mk 25 Mod 1 has a nose shipping plug, which is replaced by nose fuze Mk 149, and a shipping cap to protect the base threads.

HEAD, HIGH EXPLOSIVE, 5.0-inch ROCKET: HVAR, Mk 6 Mod 0, 1, 2, and 3, TNT loaded, with fuze, rocket base AN-Mk 159 (Mk 159 Mod 1) or AN-Mk 164 (Mk 164) and Mods installed.

HEAD, HIGH EXPLOSIVE, 5.0-inch ROCKET: HVAR, Mk 6 Mod 4, TNT loaded, adapted for fuze, VT, M403, with fuze, rocket, base AN-Mk 159 (Mk 159 Mod 1) and Mods or AN-Mk 164 (Mk 164) and Mods installed.

HEAD, INERT, 5.0-inch ROCKET: Mk 6 and Mods.

Fuze. The 5.0-inch HVAR head Mk 6 Mods is permanently fuzed with base fuze Mk 159 Mod 1 or Mk 164 and Mods. The heads Mk 6 and Mods and Mk 25 Mod 1 receive nose fuze Mk 149 Mod 0 or 1 after removal of the nose-shipping cap. The Mk 6 Mod 4 receives VT fuze M403 or M403E2 (Mk 172 Mod 2).

Motor. Listed below are various similar 5.0-inch rocket motors, which are assembled with 5.0-inch HVAR heads to form complete rockets as, indicated in tables. The motor Mk 10 differs from the motor Mk 2 principally in having an Army igniter plug instead of a Navy (bayonet-type) plug. The 5.0-inch motor is externally threaded at the forward end to engage the head. It consists of the motor tube, front closure disk, igniter, propellant, nozzle plate, suspension lugs and fin assembly and suspension lugs.

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3

MOTOR, 5.0-INCH ROCKET: Mk 2 Mod 3 (with bayonet-type connector plug)

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5

MOTOR, 5.0-INCH ROCKET: Mk 10 Mods 4 and 5 (with electrical connector Mk 11 Mod 5 or M3)

MOTOR, 5.0-INCH ROCKET: Mk 10 Mod 7 (without fin)
MOTOR, 5.0-INCH ROCKET, EMPTY: Mk 2 Mod 3
MOTOR, 5.0-INCH ROCKET, INERT: Mk 2 Mod 3

Fin Assembly. The fin assembly, which is clamped to the rear end of the motor, is a sleeve with four equally spaced rectangular fins extending radially.

Propellant. The propellant is a single grain Mk 18 Mod 0 of ballistite.

Igniter. The igniter is a metal can containing 55 grains of black powder and an electric squib. Two lead wires from the squib extend from the igniter passing through the perforation in the propellant grain to the nozzle where they are connected to the electrical cable and igniter plug (connector).

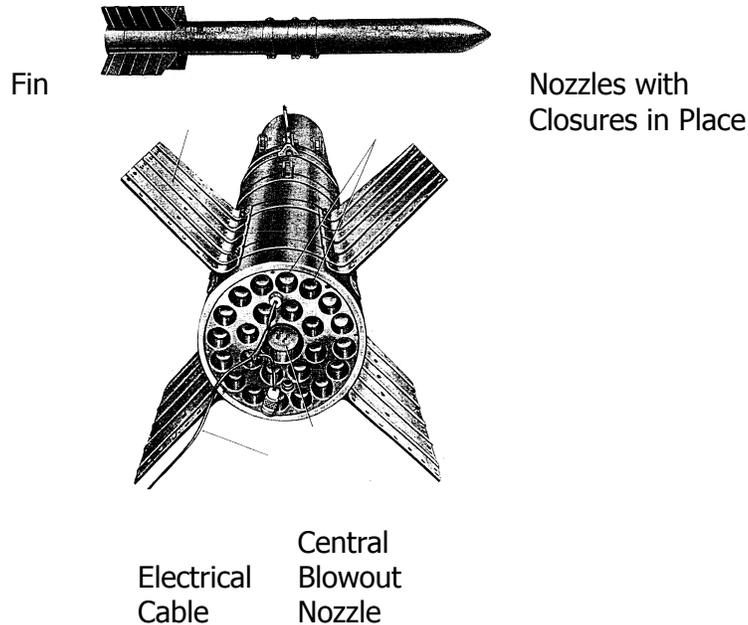
Head			Motor			Fuze		Velocity (fps)	Use
Dia. (in)	Mark & Mod	Fillers	Dia. (in)	Mark & Mods	Propellant grain	Nose	Base		
5.0	Mk 6 Mods	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0 or 1	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mod 4	TNT	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	Mk 164 Mod 0	1,325	Service
5.0	Mk 6 Mod	Plaster	5.0	Mk 10 Mods	Mk 18 Mod 0	None	None	1,325	Practice
5.0	Mk 6 Mods	Plaster	5.0	Mk 2 Mod 3	None	None	None	None	Drill
5.0	Mk 25 Mod 1	Comp B	5.0	Mk 10 Mods	Mk 18 Mod 0	Mk 149 Mod 0	None	1,325	Service (AP)

Army Complete Round Nomenclature	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR, AT	Rocket, Practice, 5", HVAR	Rocket, Dummy, 5", HVAR
Navy Complete Round Nomenclature	5" Rocket, Mk 4 Mod 0 (aircraft general purpose)	5" Rocket, Mk 28 Mod 4 (aircraft general purpose)	5" Rocket, Mk 32 Mod 1 (aircraft, HEAT)	5" Rocket, Mk 5 Mod 0 (aircraft practice)	5" Rocket, Mk 6 Mod 0 (aircraft dummy)
HEAD- Mark & Mod Length (in.) Diameter (in.) Weight (lb.) Filler Weight (lb.)	Mk 6 Mod 4 16.73 5.0 45.5 7.5 TNT	Mk 6 Mods 16.73 5.0 45.5 7.5 TNT	Mk 25 Mod 1 ----- ----- ----- 7.5 COMP B	Mk 6 Mods 16.73 5.0 45.5 7.5 Plaster	Mk 6 Mods 16.73 5.0 45.5 7.5 plaster

Army Complete Round Nomenclature	Rocket, HE, 5.", HVAR	Rocket, HE, 5", HVAR	Rocket, HE, 5", HVAR, AT	Rocket, Practice, 5", HVAR	Rocket, Dummy, 5", HVAR
MOTOR-Mark & Mod	Mk 10 Mod 6	Mk 10 Mod 6	Mk 10 Mods	Mk 10 Mod 6	Mk 10 Mod 6
Length (in.)	-----	52.0	52.0	52.0	52.0
Diameter (in.)	--	5.0	5.0	5.0	5.0
Weight (lb.)	5.0	89.3	89.3	89.3	89.3
Model of Propellant	-----	Mk 18 Mod 0	Mk 18 Mod 0	Mk 18 Mod 0	Mk 18 Mod 0
Propellant weight (lb.)	--	23.9	23.9	23.9	23.9
FUZE-type, Mark and Mod	Nose: VT, M403 or M403E2 Base: Mk 164 Mods	Nose: Mk 149 Mod 0 or 1 Base: Mk 164 Mod 0	Nose: Mk 149 Mod 0 Base: None	None	None
ROCKET (assembled)	68.6	68.6	68.6	68.6	68.6
Length (in.)	-----	134.0	134.0	134.0	109.0
Weight (lb.)	--	1,325	1,325	1,325	
Velocity (max) (fps)	1360				

Reference: TM 9-1950 *Rockets*, July 1945

ROCKET, 11.75 INCH, (TINY TIM) w/INERT HEAD, Mk 3 Mod 0, 1, & 2



11.75-inch rocket--rear view

General. These rockets are used in forward firing from aircraft against shipping and large ground targets. The assembled rocket consists of head, motor, and tail fin. Total weight is 1,255 to 1,283 pounds depending upon the particular model and modification.

Head. The Practice Head Mk 3 Mod 0 or 1 and head Mk 3 Mod 2 simulates the Mk 2 Mod 0. The heads have no fuzes. The shell body is filled with plaster.

Motor. The motor Mk 1 Mod 0 & 1, 2, 3 and Mk2 Mod 0 is a steel tube, 11.75-inch outside diameter. A nozzle plate having 25 nozzles is at the rear end. The motor contains 4 cruciform inhibited grains of Mk 19 Mod 0 propellant with a total weight of 150 pounds and 4 black powder charges of about 0.5 pounds each, contained in plastic cases provide the ignition for the propellant.

Over-all length	126 inches
Diameter	11.75 inches
Weight	1255 pounds
Filler	Inert (Plaster)
Propellant	Mk 19 Mod 0
Propellant weight	150 pounds
Igniter	Black Powder 0.5 pound w/two electric squibs

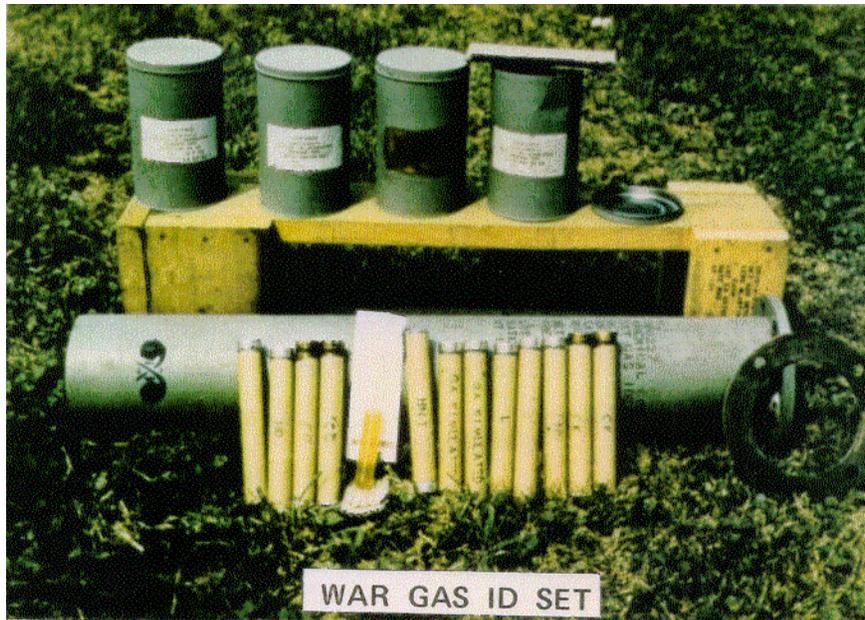
Reference: TM 9-1950, *Rockets*, July 1950

**NO DATASHEET AVAILABLE
BLASTING CAPS**

CTT48

GAS ID SETS

GAS IDENTIFICATION SET, DETONATION, M1 K951/K952



Use. Designed to be used outdoors. The gas tubes would be detonated, creating an agent cloud. Soldiers would then try to identify the agent based on its odor and other characteristics.

Description. The K951/952 Chemical Agent Identification Set (CAIS) contained 48 Pyrex, flame sealed ampoules, 12 each containing 1.4 ounce solution of Mustard (H, 5% in chloroform) Lewisite (L, 5% in chloroform), Chloropicrin (PS, 50% in chloroform), and Phosgene (CG) for a total of 26 fluid ounces (0.768 liters) of agent, less the chloroform, per set. Each ampoule is 1 inch in diameter and 72 inches long. Each ampoule is packed in a cardboard screw cap container (mailing tube type) with agent type indicated by letters on the cardboard container. Twelve (12) cardboard containers each are packaged into 4 press fit metal cans, which are 93 inches high. The cans are packed into a steel cylinder 6ε inches in diameter, approximately 38 inches long and 0.145 inches thick. A flanged end cover that is secured by eight bolts closes the open end of the cylinder. The only difference between the K951 and K952 is that the K951 was issued with blasting caps that were packed and shipped in a separate container.

Time frame of use Korean Era

Old Stock Number FSN 1365-025-3273 (K951)
FSN 1365-025-3783 (K952)

Reference: *Chemical Agent Identification Set Information Package*, date unknown, U.S.A. Chemical Material Destruction Agency, Aberdeen Proving Ground, Md.

APPENDIX B

RANGE INFORMATION/DESCRIPTIONS/CELLS

APPENDIX B

RANGE INFORMATION / DESCRIPTIONS / CELLS

Range cells included in this appendix were created, which included *historical* regulations, manuals, photos, drawings, and documents. They represent typical (general) layouts, which include firing lines, target areas, target berms, and danger areas (aka SDZ). Each cell is a two-dimensional model, which does not take into account (during time of use) terrain, boundaries, or local requirements and/or restrictions.

As stated in an obsolete Army Regulation, AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, dated May 22, 1939, "It is obviously impossible for any general range regulation to cover each local situation completely. Such additional regulations as may be necessary to meet local condition will therefore, be prepared and enforced by the post, camp, or station commander."

When the ranges were established, regulations such as AR 750-10 (now obsolete), along with others, such as TM 9-855, *Targets, Target Material, and Training Course Lay-Outs*, dated August 17, 1944 (now obsolete) would have been referenced. These guidelines would have been applied to the local environment at the time of construction.

Where applicable, right and left firing limits and down-range limits were required and set based on the local conditions. Taking in-to account the scores of ranges and the lack of first-hand knowledge, many ranges were estimated using the best available resources. Topographic maps were analyzed to determine if terrain features could be used to limit the extent of the range.

For most sites it's likely to locate numerous historical maps displaying firing ranges drawn in a various configurations, but not necessarily with a true representation. For instance, they may show the range as nothing more than a dot, a box, circles, or a V-shaped fan. However, in rare cases, a range map displays what appears to be a true fan with a calculated danger area. In these cases, the range fans may be a true representation of the actual range boundaries, and therefore be considered for use instead of the general *Range Cells*. An example where this applies is shown below:

A historical range map found for Fort Custer, Michigan identified numerous ranges, all having range fans drawn. The fans displayed on this map appear to be proportioned, and closely represent correct angles and distances according to regulations. It is believed this map was done with a high degree of accuracy; therefore the range fans were used instead of the general *Range Cells*. Also recovered, was a document referring to the artillery range. It explained the necessity to discontinue firing of artillery on this facility because of the inconvenience of reducing the propelling charges

on 155mm Artillery Shells. The rationale behind this reduced charge was to minimize the down-range distance the projectile would travel. At charge 7 (max), a 155mm projectile had a maximum range of approximately 17,400 yards. In addition to this distance, regulations required a mandatory 1,000-yard buffer zone beyond the max range. If the max charge had been used to calculate the danger area, the downrange distance for this artillery range would have extended more than 6-miles beyond the installation boundary. Maximum distance on artillery munitions can be calculated using appropriate Ammunition Firing Tables.

Unfortunately, this detailed information is seldom available. Other options to consider are included in the following example where the use of topographic maps and site inspections were used to determine the boundaries of Spencer Mountain Rifle Range in North Carolina.

The only available map displayed the range as a small rectangular box. Documents recovered stated that the range was positioned at the base of the mountain in order to reduce the danger area. The *range cell* for a rifle range was designed to include 50 firing positions, which calculates to a width of 400 yards. However, during the site inspection, the actual width of the range was determined to be no more than 150 feet. By reducing the width of the *range cell*, and using contour lines on a topographic map the delineated boundaries was realistically reduced from the standard 1259 acres down to 72 acres.

As indicated, there are many variables to account for when developing range boundaries, and it is unlikely that all of the data used when the range was originally laid out will be available. Therefore, the historical data found during research (maps, aerial photos, documentation, etc.) was utilized to represent the range as accurately as possible. In most cases, the only option was to use the general *Range Cell*.

Each range description contains a list of Ammunition Data sheets. The intention of this list is to provide a general idea of the ordnance that could have been used on the range. It is not intended to be all-inclusive and by no-means is an indication that these munitions are actually present.

A significant number of manuals, drawings, letters, instructions, reports, and miscellaneous documents were referenced in order to calculate the *Range Cells*. The following non-inclusive list are published Range Manuals that were referenced to create the range cells.

- TR 140-5, *Range Regulations for Firing Ammunition in Time of Peace*, dated November 1931
- AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, dated May 1939

- AAF Manual 85-0.1, *Army Air Forces Gunnery and Bombardment Ranges*, dated June 1945
- AD-A954 905, *Training in the Ground Army 1942-1945, Study No. 11*, dated May 1948
- *Second Air Force Ground Gunnery Range*, dated July 24, 1943
- TM 9-855, *Targets, Target Material, and Training Course Lay-Outs*, dated August 1944
- TM 9-855, *Targets, Target Material, and Training Course Lay-Outs*, dated November 1951
- AFM No. 66, *Poorman Flexible Gunnery Trainer*, dated March 1945
- TC 25-1, *Training Land*, dated August 1978
- TC 25-8, *Training Ranges*, dated February 1992
- AFI 13-212, Vols 1,2,3, *Space, Missile, Command, and Control, Weapons Ranges*, dated July 1994
- AR 210-21, *Army Ranges and Training Land Programs*, dated May 1997
- AR 385-62, *Regulation for Firing Guided Missiles and Heavy Rockets for Training, Target Practice, and Combat*, dated June 1983
- AR 385-63, *Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat*, dated November 1983

HISTORIC USE: AIR-TO-GROUND

AIR to GROUND GUNNERY

Range Type: Air-to-Ground

Cell Name(s): A2GGUN

The location and size of the air-to-ground gunnery installation will vary considerably with local conditions.

An area of approximately five miles behind the targets, subject to fire and ricocheting bullets, will be designated a danger zone. A safety area in front of the targets will be marked off. A foul line should be clearly marked 600' in front of and parallel to the target line, and a range line should be marked 600' in front of and parallel to the foul line. These two lines should be the length as the target lines or, where only one or two targets are installed on a range, should be of sufficient length to be visible to the pilot from a position directly over them.

Targets should have been of sufficient size to provide a 6' x 6' scoring area. Targets must be placed a minimum of 100' apart. The number of targets on the range will vary, according to space provided.

Extract from the *History of the Army Air Forces Proving Ground Command* – "In ground gunnery, the 6 X 10 targets . . . are attacked from an altitude of 800 feet, at an angle of 30° and an air speed of 150 mph. The attack begins at 1,200 feet, and ends at 600 feet, when an abrupt 90° turn is made, with a shallow climb for recovery. Four planes may fire simultaneously on a range of four targets . . ."

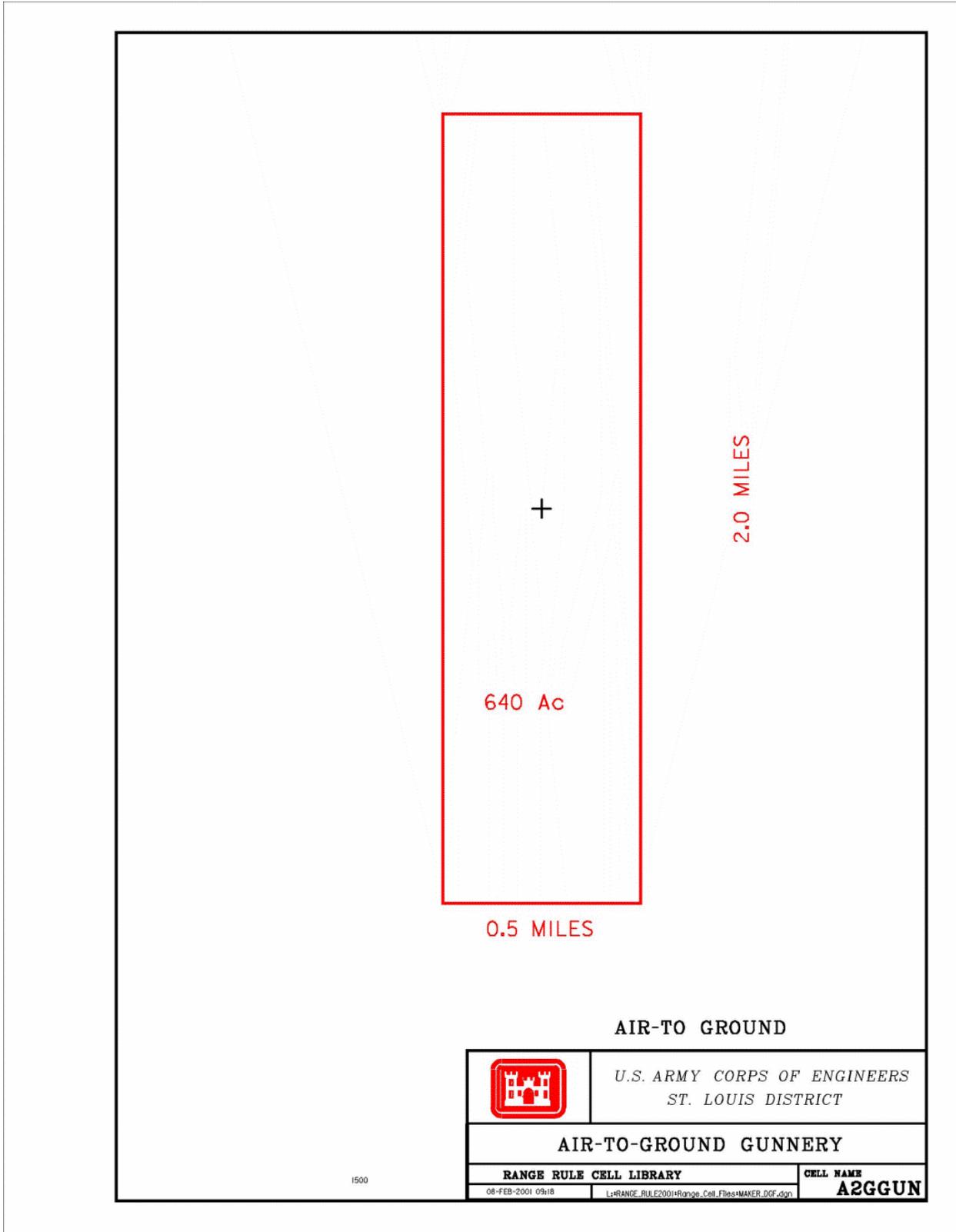
The range cell, which was taken from the referenced letter, was derived using the following assumptions: .30 caliber single gun from P-36 aircraft and At-6 flying at 210 mph and 150 mph, respectively; gun fires at least 600 rounds per minute, uses 50-yard belts, and can fire 50 rounds in a maximum of 5 seconds; a single row of targets located 4,060 feet into the range; and the worst accident that can happen. This worst accident is a runaway gun firing 50 rounds beginning 700 feet from the targets and stopping 800 feet beyond the targets. The range boundary, which is 2.0 miles by 0.5 miles, accounts for this worst accident.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>
Small arms	N/A

Data sheet(s):

CTT01 Small arms, General

Reference(s): AAF Manual 85-0-1, *Army Air Forces Gunnery and Bombardment Ranges*, June 1945; Letter from the War Department, Office of the Chief of the Air Corps, addressed to Maj. Partridge, Southeast Air Corps Training Center, dated July 18, 1940; Extract from *History of the Army Air Forces Proving Ground Command, Gunnery Training 1935-1944*



ROCKET, AIR TO GROUND

Range Type: Air-to-Ground

Cell Name(s): RKTA2G

The range cell was derived using a target area approximately 500 feet by 500 feet. A safety fan of 15° originates from the ends of the 500-foot firing line, which is a minimum of 4,375 yards in front of the target area, and extends 2,734 yards beyond the target area.

It was common for air-to-ground rocket ranges to be co-located within a practice bombing target. Targets may have consisted of derelict vehicles, wooden structures, or merely outlines on the ground.

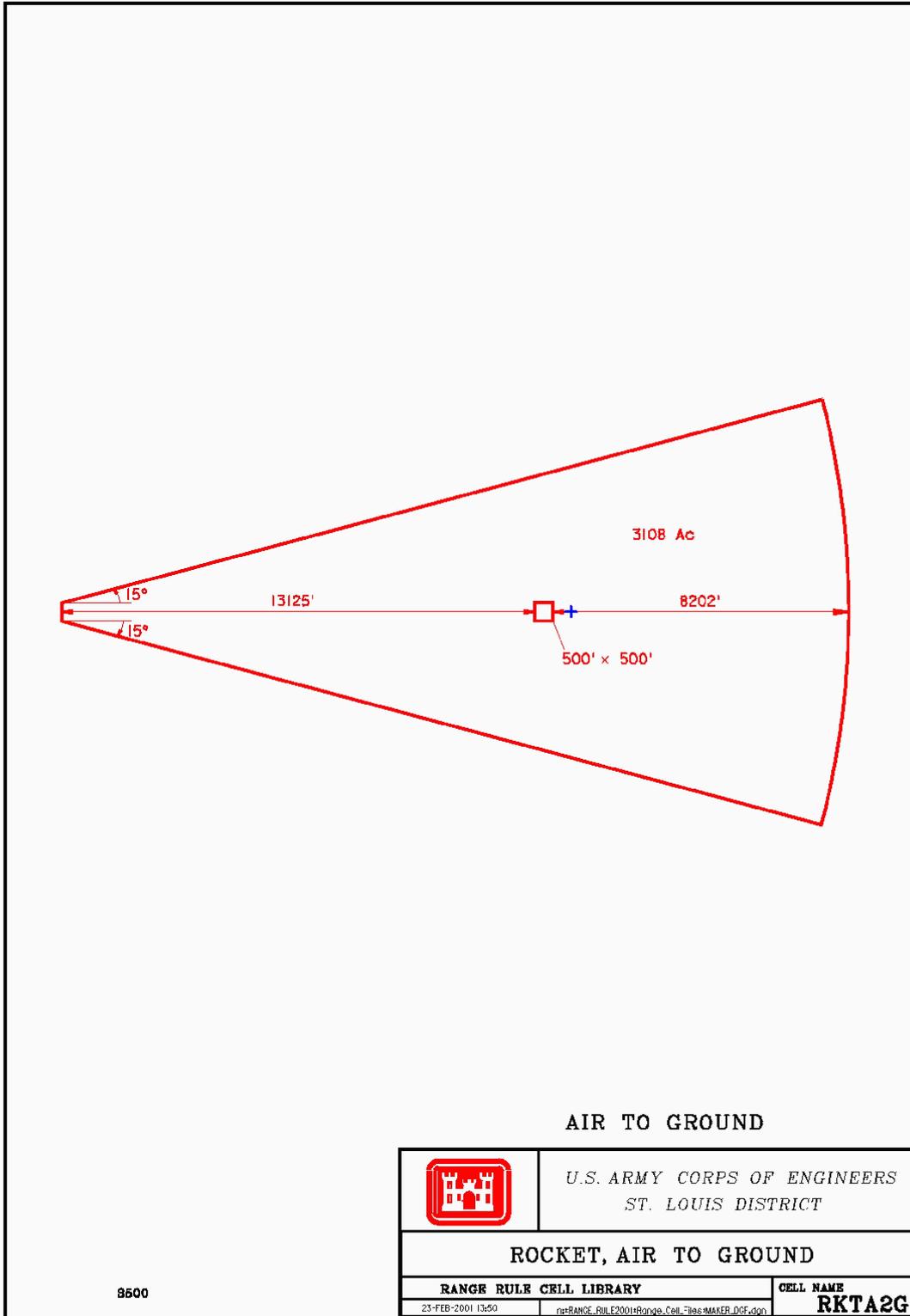
Information may not be available in which to determine the approach line; therefore, best judgment is necessary when laying out this range cell.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>
Aircraft Rockets, Practice	2,000 yards
Aircraft Rockets, Live	2,000 yards

Data sheet(s):

CTT19	3.5-inch, Rocket, Aircraft, Mk4 5-inch, Rocket, HVAR
CTT21	2.25-inch Practice Rocket, Mk6 2.25-inch Practice Rocket, Mk4 2.25-inch Practice Rocket 2.75-inch Practice Rocket, FFAR

Reference(s): AR 385-63, *Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat*, November 1983



AIR TO GROUND



U.S. ARMY CORPS OF ENGINEERS
 ST. LOUIS DISTRICT

ROCKET, AIR TO GROUND

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CELL NAME

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RKTA2G

8600

HISTORIC USE: BOMBING

BOMBING TARGET, LIVE (aka: PBR, Precision Bombing Target, Bombing Range)

Range Type: Bombing

Cell Name(s): BOMB

The Purpose of the range for use with tactical bombs is to familiarize students of handling and releasing combat ammunition.

The range area, adequate for use with 100-lb. demolition bombs below 15,000', will be a minimum of One and one-half miles square with the target located centrally. The target is a cross-shaped ground area scraped free from vegetation and whitewashed. A night target is not used on this type range.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

Ammunition (probable)

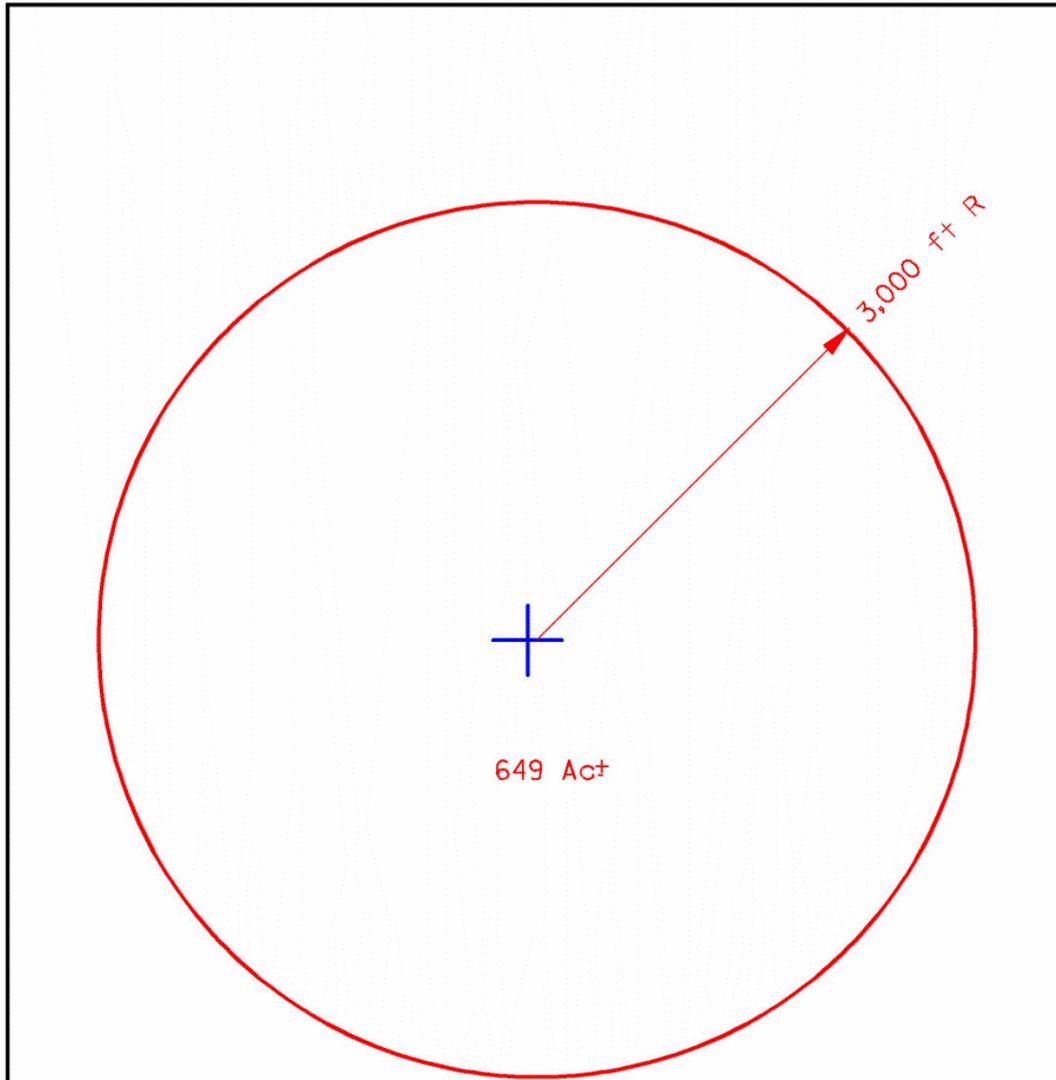
Bomb, High Explosive

Data sheet(s):

When selecting datasheets, it is important to consider the time frame the range was used. Possibilities include:

CTT05 Bomb, General Purpose, Old Style
 AN-M30, General Purpose Bomb, 100-lbs
 AN-M57 & AN-M57A1, GP, 250-lbs

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *AAF Manual 85-0-1, Army Air Forces Gunnery and Bombardment Ranges*, June 1945; *Army Air Corps Studies and Reports on Bombing Analysis and Bombing Accuracy*, 1942



BOMBING



U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

BOMBING TARGET (LIVE)

RANGE RULE CELL LIBRARY

CELL NAME

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BOMB

BOMBING TARGET, PRACTICE (aka: PBR, Precision Bombing Target, Bombing Range)

Range Type: Bombing

Cell Name(s): BOMB (same as Bombing Target, Live)

The range area should be sufficiently large so that the center of any target placed on it will be a minimum of 2500' from the range boundary. For bombing from 25,000' and above, a 5000' radius is advisable.

The typical and widely used target design consists of a series of concentric circles with four legs indicating N/S and E/W in True direction. Four reference squares were placed along each leg at 100' intervals to facilitate scoring. For the purpose of indicating True North, the north leg is extended within the 100' circle towards the target center a distance of 40'. At the extreme end of the north leg, a numeral (75' to 150' in size) is set with its base towards the center of the target. While the 100' circle is an essential feature of the target, the 200' and 500' circles should be described, whenever possible, to facilitate scoring. For bombing above 15,000', it is recommended that only the 200' and 500' circles be described. The legs and circles of the target were constructed of crushed rock or dirt sprayed with white paint, whitewash, or with a contrasting color to the surrounding soil. In the center of the target circle, a pyramid, 12' high with a base approximately 30'x30', is constructed of native earth, or wood, and is whitewashed.

Target lighting was provided by mounting light bulbs on 8' poles, at 22½ feet intervals around the circle. Lights were also mounted at each of the four legs intersecting the 100' circle. Numerals were also illuminated with light bulbs.

Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. OE debris is typically found throughout the entire property and occasionally beyond the property boundaries. The range cell area was calculated to extend beyond the target center 3000 feet, for a total of 649 acres. Many factors, all of which are unknown, such as altitude and flight speed, affect targeting accuracy. From studies completed in WWII, 99 percent of the bombs should be found within 3,000 feet for bombers flying at 25,000 feet or below and at speeds up to 250 mph. The same study implied a 2,000-foot radius should include 95 percent of the bombs under the same conditions.

Ammunition (probable)

Bomb, Practice

Data sheet(s):

When selecting datasheets, it is important to consider the time frame the range was used. Possibilities include:

CTT07 AN-Mk 5, AN-Mk 23, AN-Mk 43, Prac
 M38A2 Practice Bomb, 100-lbs
 M85 Practice Bomb, 100-lbs
 Mk 15 Mod 3, Practice Bomb, 100 lbs
 Mk 15 series, Practice Bomb, 100 lbs
 Mk 5, Mk 15, Mk21, Prac., 500lbs
 Spotting Charge, M1A1

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *AAF Manual 85-0-1, Army Air Forces Gunnery and Bombardment Ranges*, June 1945; *Army Air Corps Studies and Reports on Bombing Analysis and Bombing Accuracy*, 1942

DEMONSTRATION BOMBING TARGET, (PRACTICE)

Range Type: Bombing

Cell Name(s): DEMBMB

Demonstration bombing targets were typically utilized for competition and/or public demonstrations. Typically, targets were located adjacent to runways and observation points. Under normal circumstances one can expect bombs to have been released from a relatively low altitude with substantial accuracy. Although OE will be concentrated around the target, evidence of bombing is almost always found beyond the scoring arcs. The Characterization Acreage for this type of bombing target is calculated to extend beyond the target center 1,000 feet, for a total of 72 acres

Ammunition (probable)

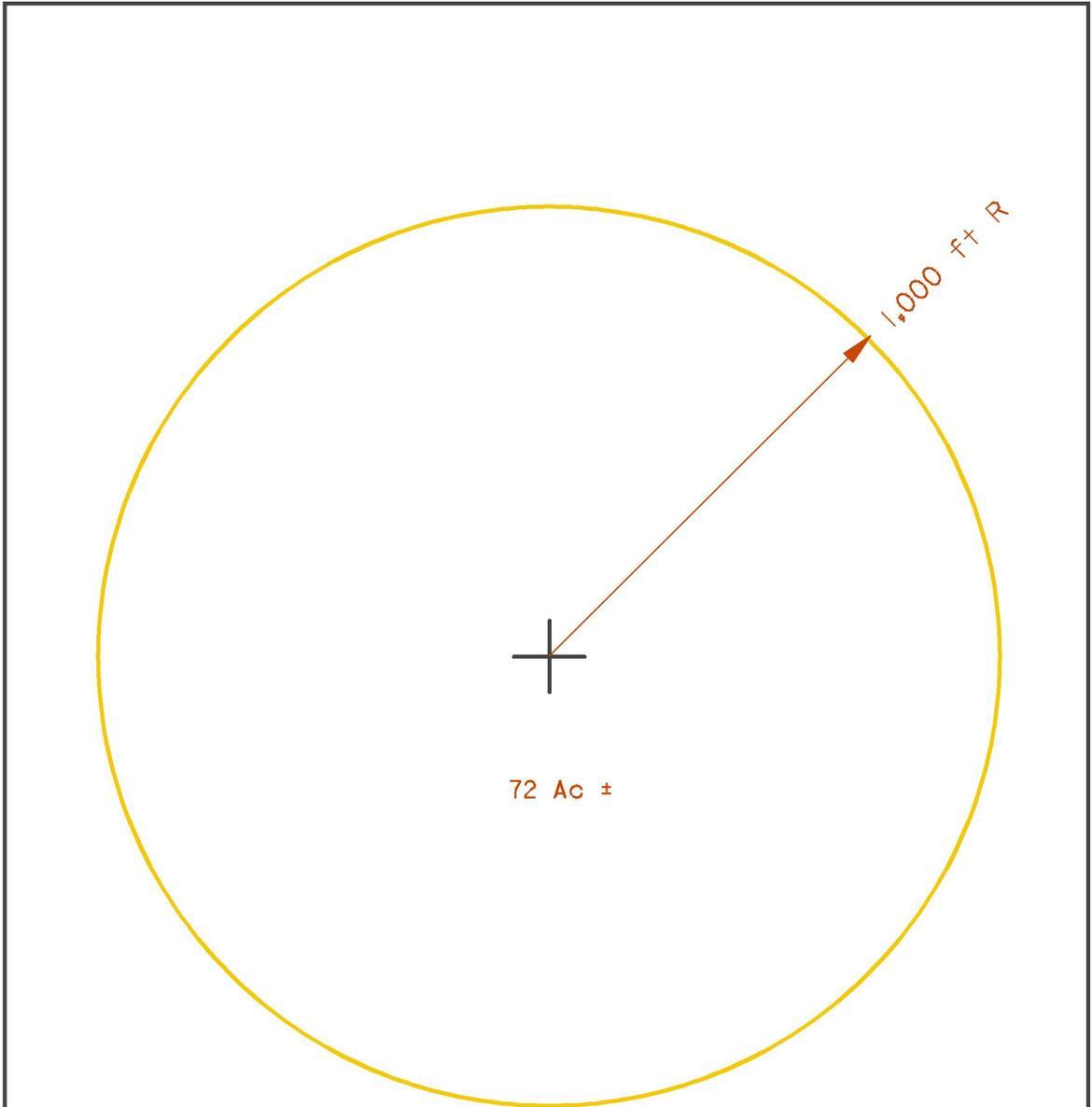
Bomb, Practice

Data sheet(s):

When selecting datasheets, it is important to consider the time frame the range was used. Possibilities include:

CTT07 AN-Mk 5, AN-Mk 23, AN-Mk 43, Prac
 M38A2 Practice Bomb, 100 lbs
 M85 Practice Bomb, 100 lbs
 Mk 15 Mod 3, Practice Bomb, 100 lbs
 Mk 15 series, Practice Bomb, 100 lbs
 Spotting Charge, M1A1

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace,*
May 1939 – January 1944



BOMBING



U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

DEMONSTRATION BOMBING TARGET

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DEMBMB

HISTORIC USE: OTHER

OTHER

Range Type: Other

Cell Name(s): None available

Examples of areas where "other" is the historic use include ammunition accidents (e.g., explosions at ordnance plants), ranges / training areas not otherwise categorized, ammunition residue from unknown source (e.g. contaminated backfill), or locations of found ordnance where there is no evidence of a burial or range, but there may be additional surface contamination. No standard dimensions are available for this site. Boundaries should be established using available resources and known data.

Ammunition (probable)

Varies

Max Range (yards)

Varies

Data sheet(s):

Varies

Reference(s): AR 385-63, *Range Safety*, 19 May 2003; DoD Directive 4715.11 *Environmental and Explosives Safety Management on DoD Active and In-active Ranges within the United States*, 17 August 1999; DoD Directive 6055.9 *DoD Explosives Safety Board (DDESB) and Component Explosives Safety Responsibilities*, July 1966.

HISTORIC USE: SMALL ARMS

ANTI-AIRCRAFT, MINIATURE .22 CALIBER (aka: Miniature AA Range)

Range Type: Small Arms

Cell Name(s): AAMINI

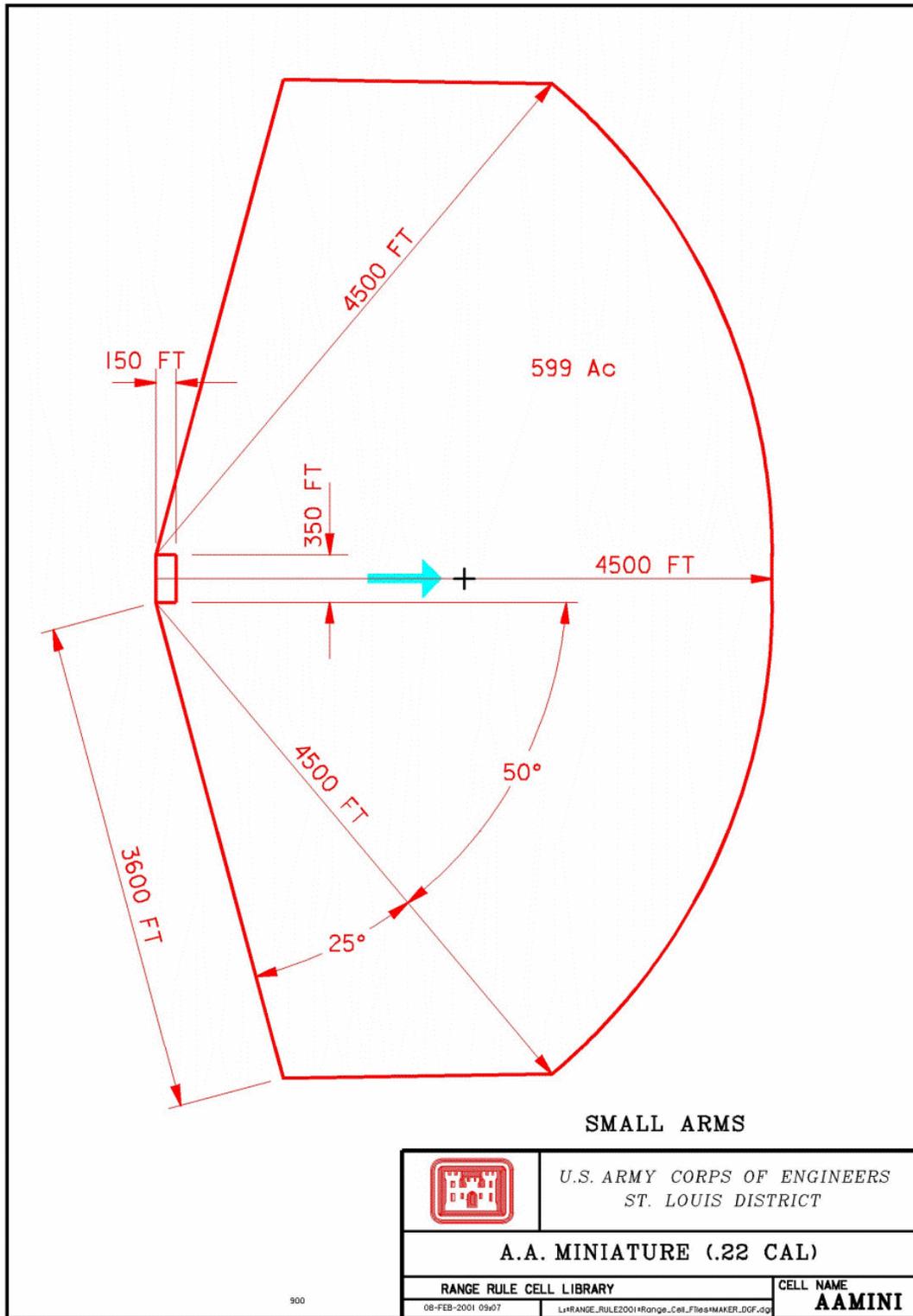
This range requires an area approximately 350 feet wide by 150 feet long. It accommodates three types of targets: Parachute, Climbing-Diving, and Horizontal. A single firing line runs the full length of the range. The Parachute target is located 92 feet down range, and the Climbing-Diving and Horizontal targets are positioned 500 inches down range. The danger area consists of the 50° angle of fire plus a required safety angle of 25°. The 50° angle of fire extends from the beginning of the range down range a distance of 1,500 yards; and the additional 25° safety angle extends from the same point down range a distance of 1,200 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



**ANTI-AIRCRAFT, TOWED TARGET and/or OQ (.30-CALIBER, .50-CALIBER)
(aka: AA Range, AAA Range)**

Range Type: Small Arms

Cell Name(s): AATT50, AATT30

Details of these ranges were established locally. Construction would have consisted only of the necessary clearing to provide a firing point and the required visibility within the limits of fire and adjacent danger area.

The range was used for firing at either towed or radio controlled airplane targets. The designation "OQ" refers to the type of target used on the range. The "O" means pilotless and the "Q" stands for radio-controlled. The firing point should accommodate at least 50 men, spaced at 1½ yards, in a line. A level strip of ground, 100 yards long by 2 yards wide, preferably on a hill, was suitable. A firing point similar to that of a Known Distance rifle range may have been constructed. The angle of fire included a 5° angle added to the left limit, and a 10° angle to the right. Without specific information as to the location of the left and right limits of fire, a 30° safety fan is assumed (but could be as much as 40°) to extend down-range a distance of 4,300 yards for .30 caliber ammunition and less.

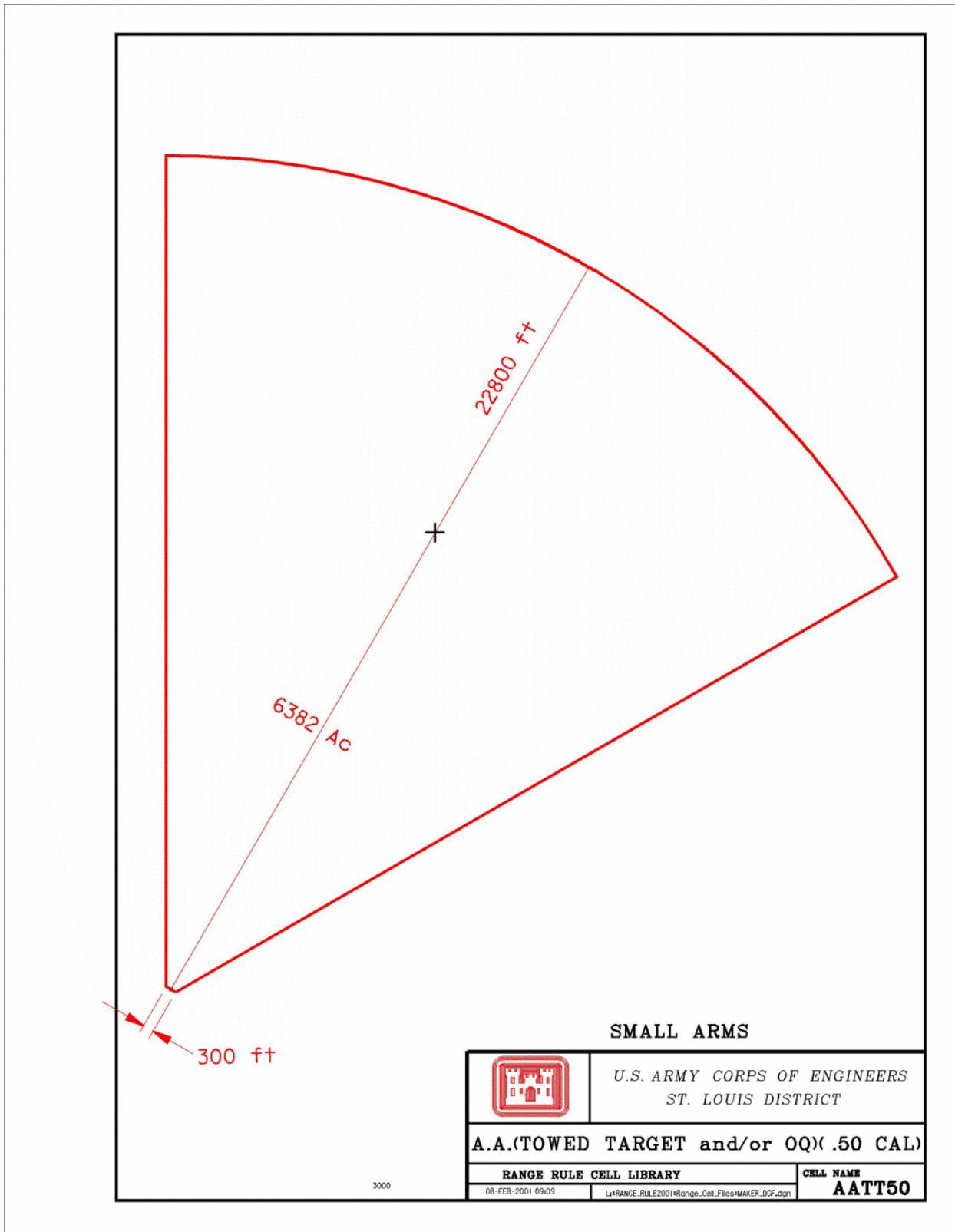
For ranges utilizing .50-caliber ammunition, this safety fan would be increased to 7,600 yards. Cells for both .30-caliber and smaller and .50-caliber are shown.

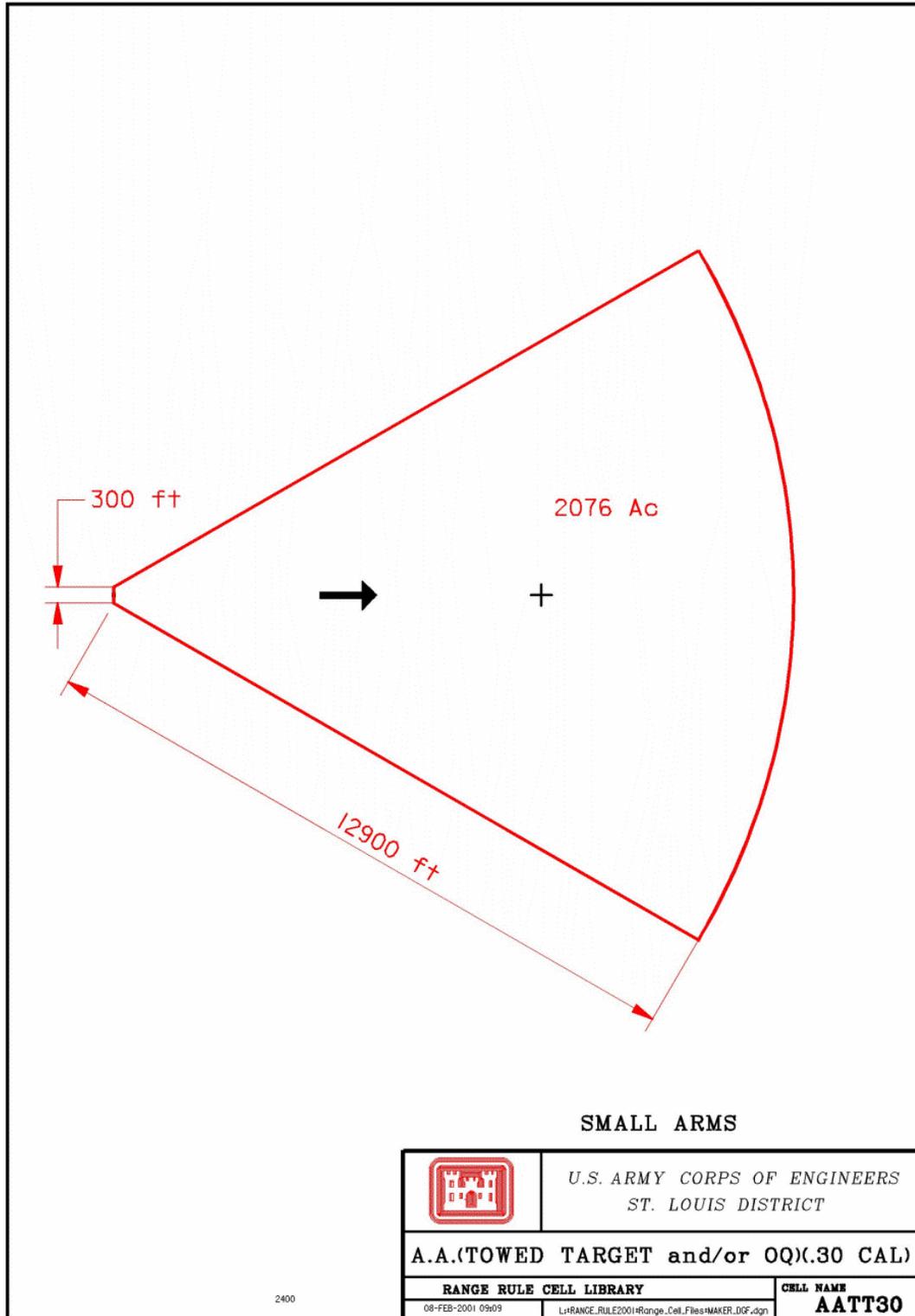
<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951; *Range-Safety Factors & Range Facilities for Infantry Regiments* (circa 1944)





ANTI-TANK, 1,000-inch

Range Type: Small Arms

Cell Name(s): ANTANK

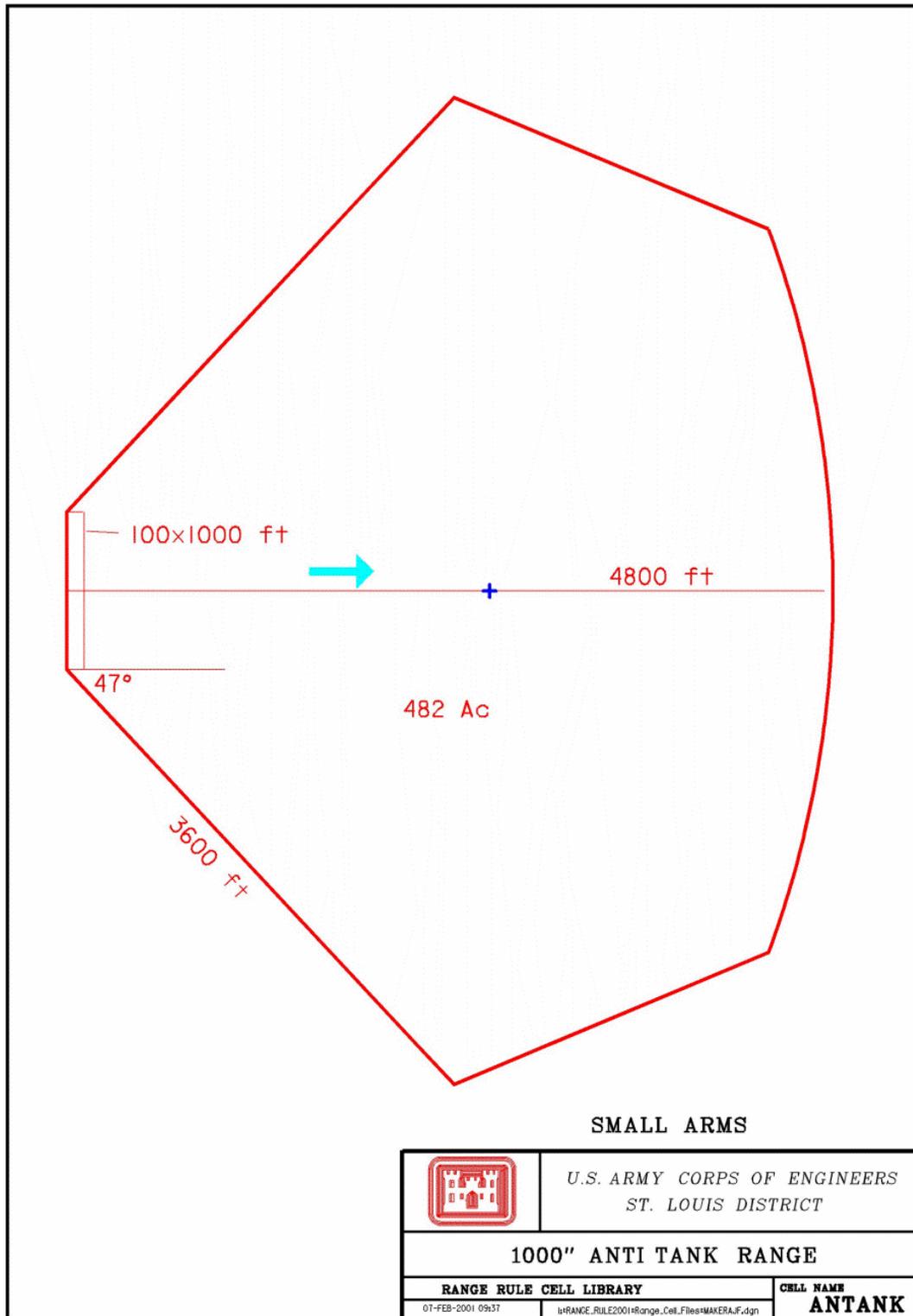
An Infantry Division would require that this range have twelve 48-foot wide target units. Allowing for separation between units, the range would be approximately 1,000 feet wide by 100 feet long. A single firing line would stretch across the width of the range and target tracks would be positioned 1,000-inches down-range. The danger area would include a 22° angle of fire that extends 1,600 yards down range, and a 25° safety fan, added to both sides, which extends 1,200 yards down range.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



COMBAT/FIELD TARGET (MACHINE GUN)

Range Type: Small Arms

Cell Name(s): CFTMG

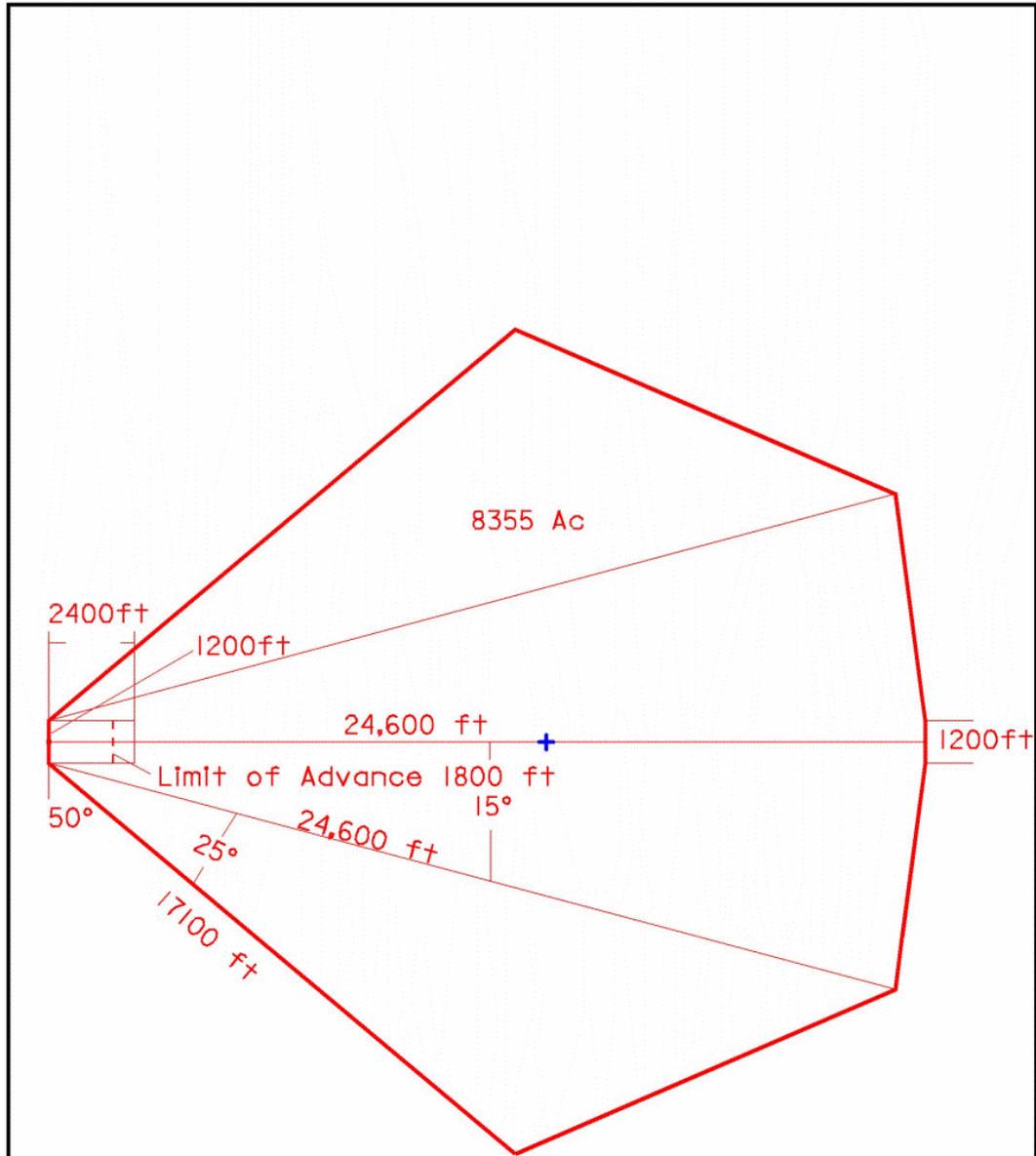
The "typical" Combat Range is comprised of various components. Once the training officer determined the locations of these components, the danger areas could be established. When practical, target units would have been placed on reverse slopes approximately 1 foot below the crown of a rise. Typical dimensions of a range were 400 yards wide by 800 yards long. A limit of advance would have generally been established 600 yards downrange. The safety/danger area included a 15° angle of fire that extended from each side of the range down range a distance of 8,200 yards, and an additional 25° safety fan, which originated from the same points as the angle of fire, that extended down range a distance of 5,700 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	COMBAT/FIELD TARGET (MACHINE GUN)	
RANGE RULE CELL LIBRARY	CELL NAME	
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CLOSE COMBAT COURSE

Range Type: Small Arms

Cell Name(s): CLOSE-D

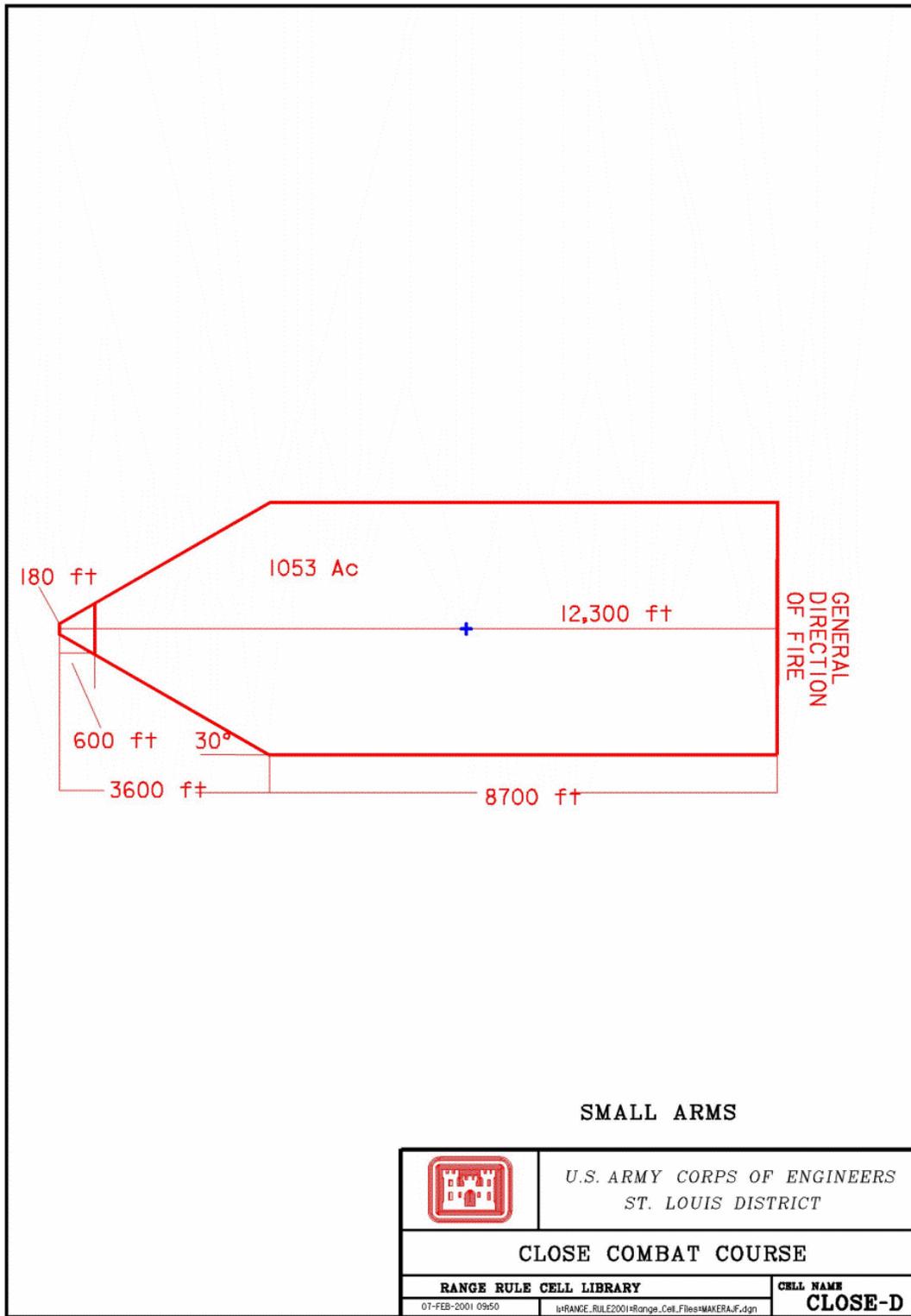
A Close Combat Course/Range is basically an assault course approximately 200 yards long. The range may consist of one or two individual courses commonly referred to as a single leg or double leg course. Each leg was approximately 30 yards wide; however, the width, in addition to the overall range boundaries, was established with consideration given to terrain and local restrictions. Where multiple courses joined each other, pronounced changes in direction of fire were not considered practical. Targets were arranged so that they could appear and disappear quickly and were positioned at various points ranging from 5 to 50 yards. Men were required to engage targets while negotiating wire entanglements, shell craters, trenches, or other obstacles. The quantity of targets varied, but 16 positions were identified in the reference. At least one situation (target) should have been present for the use of a practice grenade (likely at the end of the course). The danger area consisted of a 5° angle of fire and a 25° safety fan. The danger area is represented as a 30° fan originating from the beginning of the range and extending 1,000 yards past the forward limit of advance. At this point the fan extends an additional 2,900 yards parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100
Practice Hand Grenades		

Data sheet(s):

CTT01	Small arms, General
CTT04	M21, Practice Hand Grenade Mk 1A1 Practice Hand Grenade

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



COMBAT/FIELD (RIFLE & LIGHT MACHINE GUN)

Range Type: Small Arms

Cell Name(s): COMBAT

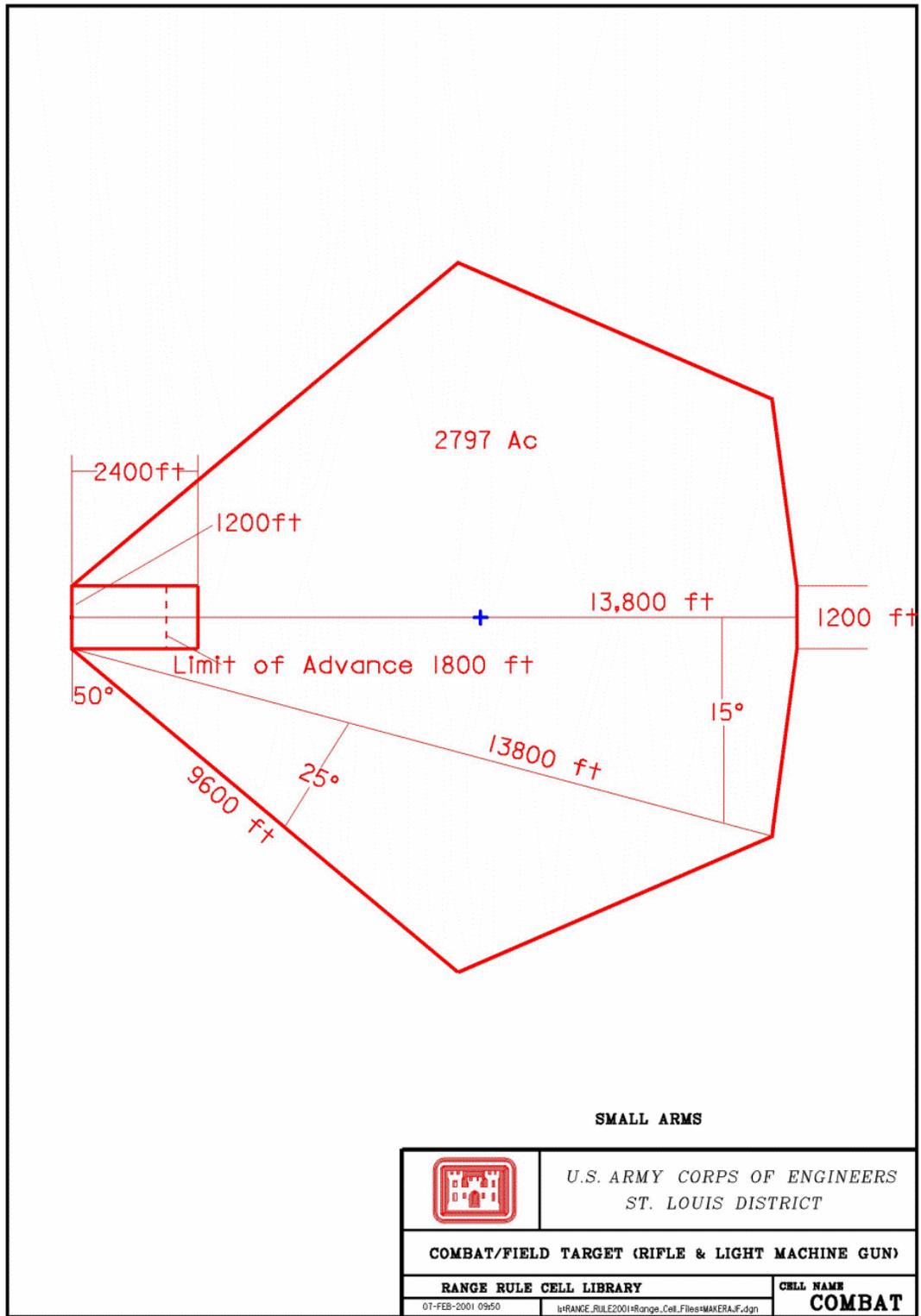
The "typical" Combat Range is comprised of various components. Once the training officer determined the locations of these components, the danger areas could be established. When practical, target units would have been placed on reverse slopes approximately 1 foot below the crown of a rise. Typical dimensions of a range were 400 yards wide by 800 yards long. A limit of advance would have generally been established 600 yards downrange. The safety/danger area included a 15° angle of fire that extended from each side of the range down range a distance of 4,600 yards, and an additional 25° safety fan, which originated from the same points as the angle of fire, that extended down range a distance of 3,200 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.22 caliber	1,500	1,100
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



FIRING-IN-BUTT (aka: Harmonizing Range)

Range Type: Small Arms

Cell Name(s): FIRINB

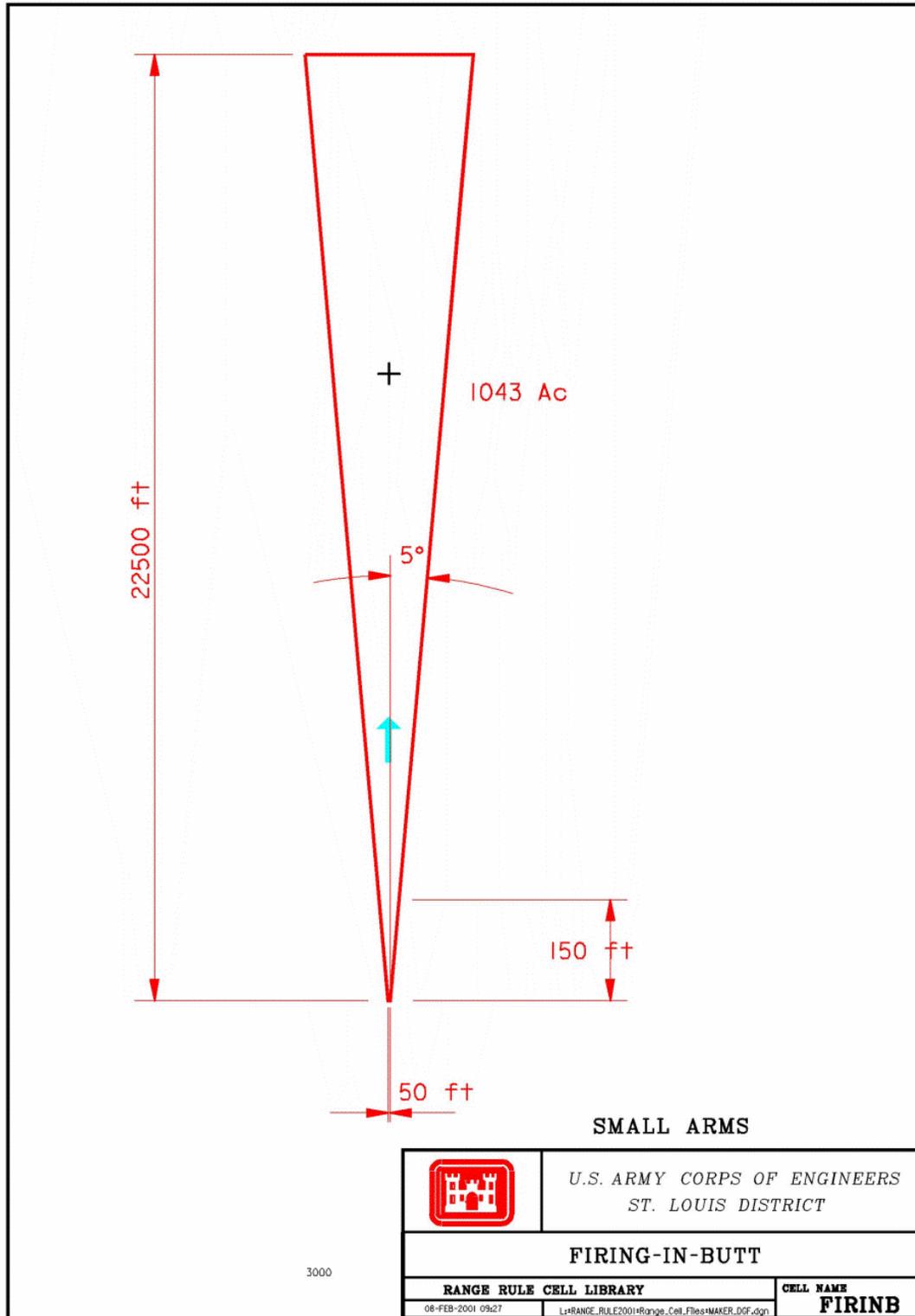
Firing-in-butts were common to airfields. This range provided a designated area for crews to zero, service, and maintain aircraft weapon systems (fixed guns). Typical construction consisted of a hardstand for aircraft positioning. An earthen berm would have been necessary and constructed to the front of the aircraft. The distance from the hardstand is unknown, and may differ at various airfields. Based on experience (archive searches, site inspections, etc.), 150 feet is an accurate estimate. The safety zone for this range was derived using 5° angles that extended downrange a distance of 7,600 yards (consistent with .50 caliber ammunition). There is a possibility that when the berm was constructed, personnel considered it to be satisfactory in limiting the downrange distance for fixed guns. Therefore, firing-in-butts may be found in areas not favorable for a general range safety fan.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
20mm		

Data sheet(s):

CTT01 Small arms, General

Reference(s): AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944



TANK, 1,000-inch

Range Type: Small Arms

Cell Name(s): IKTANK

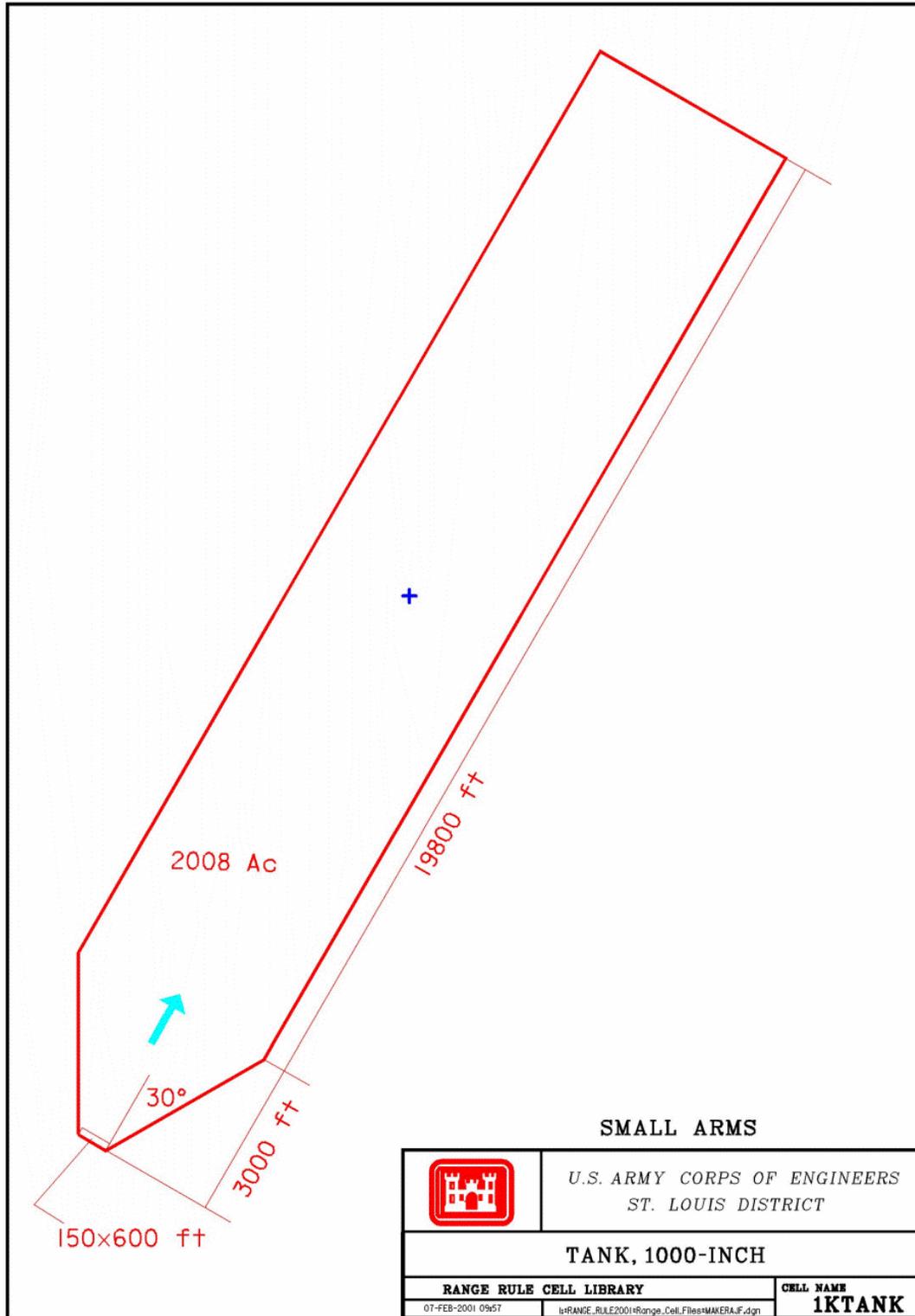
A 1,000" Tank Range is designed for practice with the cal. 30 and cal. 50 machine guns mounted on tanks (stationary). Targets would have been placed 1,000 inches (83 feet, 4 inches) in front of a firing line. The firing line would need to be large enough to accommodate several light tanks. The estimated size of the range area is approximately 200 yards wide by 150 feet long. A 30° safety fan originating from both ends of the firing line would extend down range 1,000 yards, at which point it would continue an additional 6600 yards parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



INFILTRATION COURSE

Range Type: Small Arms

Cell Name(s): INFILTX

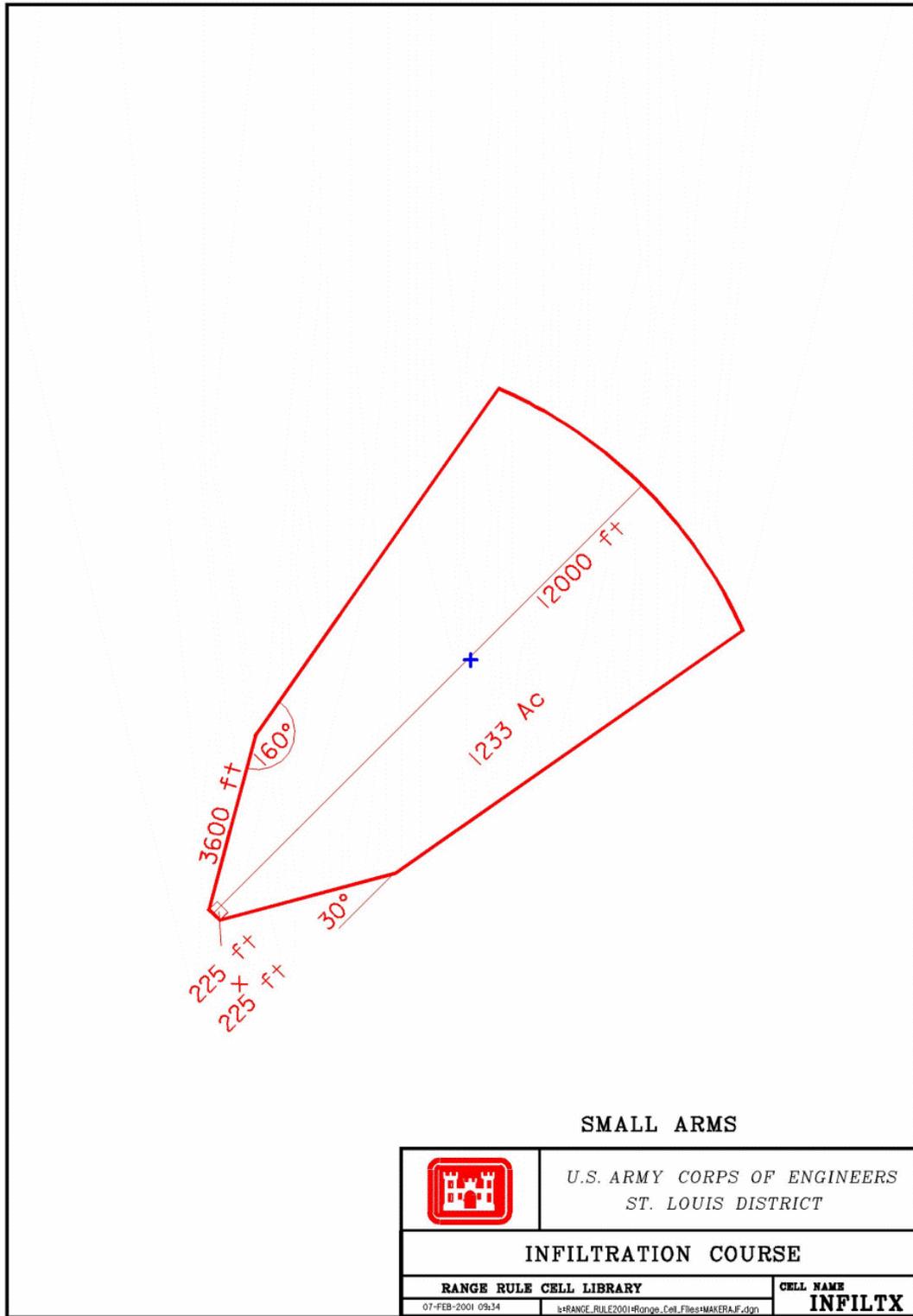
The typical range would occupy an area 75 yards wide by 50 to 100 yards deep. The range cell represents an area 75 yards wide by 75 yards deep. The ground for the infiltration course would generally be level, with logs and small mounds of dirt 10 to 12 inches in height for men to roll over. The ground would have contained shell holes, trenches, slit trenches, wire entanglements, stumps, sparse brush, and other obstacles. Two to three machine guns would have been bolted to stable platforms at the front of the range. Reduced charges of explosives were placed in craters throughout the course. The dimensions of the embankment into which the machine guns fired would have been 15 feet high by a distance long enough to provide safety to the flanks of the infiltration course. The 30° safety fan extends 1,200 yards, at which point it continues at a 10° angle an additional 3,000 yards. Because of the fixed machine guns, a safety fan would not be required beyond a suitable earthen berm constructed to the rear of the range.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700
TNT		
Dynamite		
Blasting Caps		

Data sheet(s):

CTT01	Small arms, General
CTT27	Explosives, Dynamite, Commercial Explosives, TNT Blasting Caps

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MACHINE GUN, ROLLING TARGET, 1,000-inch

Range Type: Small Arms

Cell Name(s): K.50C

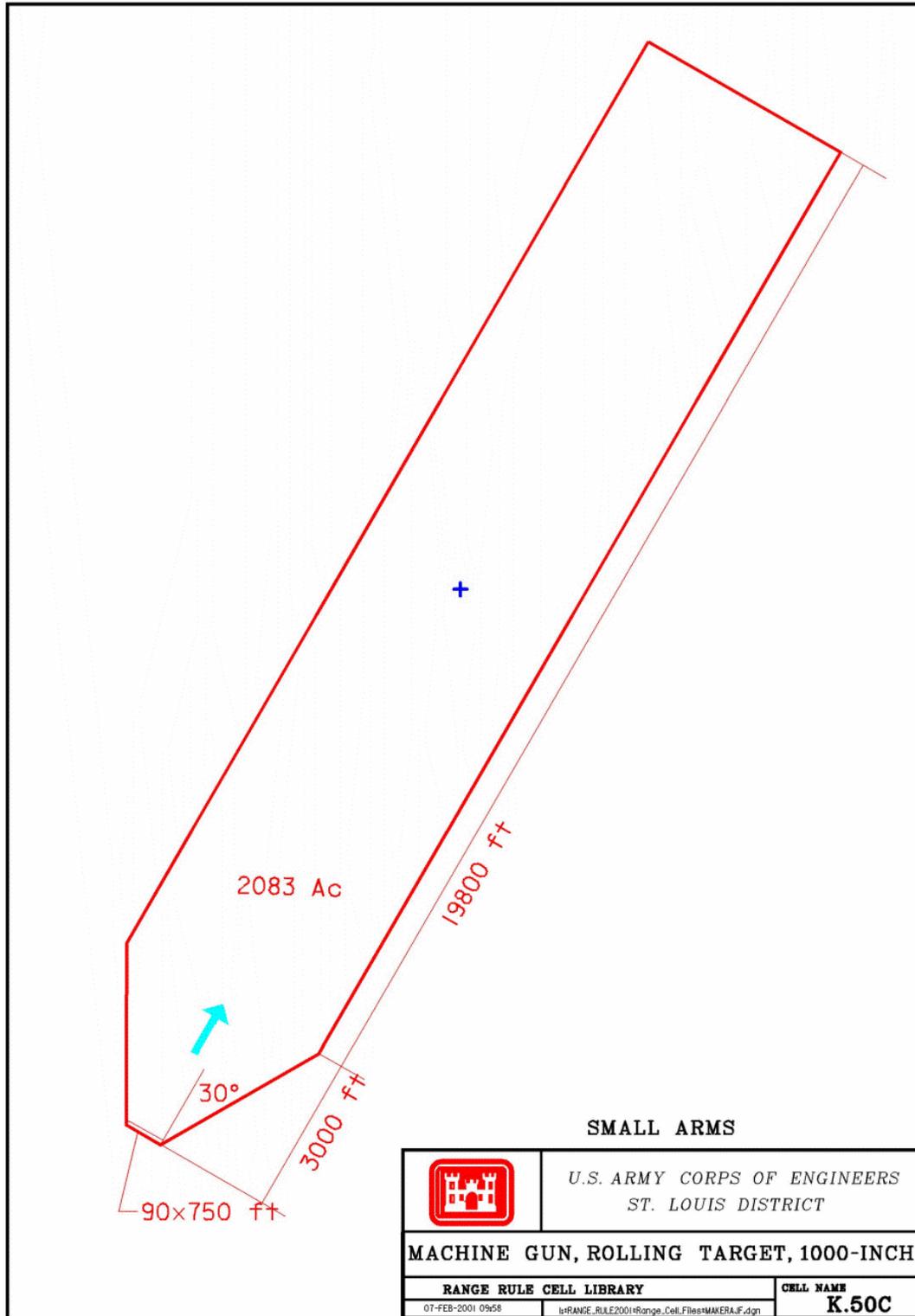
Typically, light and/or heavy machine guns may be used on this range. In order to meet requirements for an Infantry Division, the range should be approximately 250 yards wide. A salvage wall (earthen berm) would have been constructed approximately 5 feet beyond the target area; and the firing line would have been positioned 1,000 inches in front of the targets. A range this size could accommodate 45 tracks, with two targets per track. The danger area includes a 5° angle of fire plus a required safety angle. The estimated 30° safety fan originates from both ends of the firing line, extends down range a distance of 1,000 yards, at which point it extends an additional 6,600 yards (based on .50 caliber ammunition) parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber, M1	5,500	2,700
.30 caliber, M2	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



LANDSCAPE, 1,000-inch (aka: Landscape 1,000-inch; Landscape and MG; Landscape; Machine Gun; Portrait Range)

Range Type: Small Arms

Cell Name(s): LAND

Landscape targets are used for rifle practice on this 1,000-inch range. The complete target set consists of five black and white paper landscape targets mounted on individual target frames and held in place on six vertical posts. The complete set of five landscape paper targets makes a panoramic picture of a landscape. The size of this panoramic picture is such that all (or nearly all) of the salient features are recognizable at a distance of 1,000-inches.

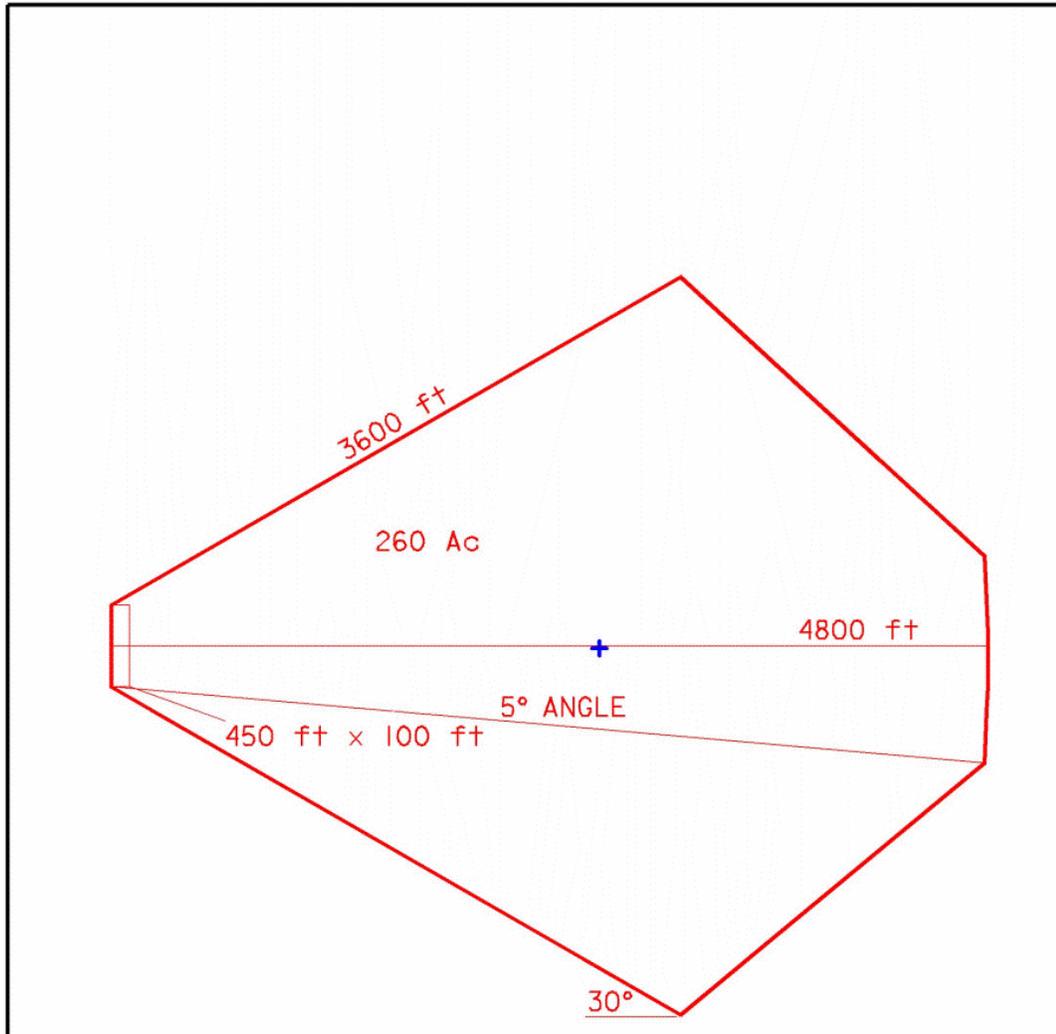
Based on the size requirements for each target unit (a complete set of landscape paper targets), it is assumed that no more than 6 units were constructed on a single range. In order to provide a safety space between adjacent targets and to allow independent operations, a distance of 50 feet separated each 25-foot wide target unit. Approximate dimensions for this range are 450-feet wide by 100-feet long. A single firing line stretched across the width of the range. Personnel fired .22-caliber weapons (preferably) at a panoramic picture of a landscape, which was positioned 1,000-inches down-range. An additional area behind the firing lines included the ready line, ammunition issue point, and administrative area. A 5° angle of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT
LANDSCAPE, 1000-INCH	
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MALFUNCTION, .50 CALIBER (aka: Small Arms Malfunction Range)

Range Type: Small Arms

Cell Name(s): MAL50C

The range area, which includes the danger area, is approximately 850 feet by 500 feet. To conform to this limit, a 16-foot earth embankment was required to be constructed to the rear of the range (approximately 500 feet to the front of the firing line) and extend to the outer limits of the safety fan. A firing line approximately 250-foot long would accommodate up to 25 machine guns.

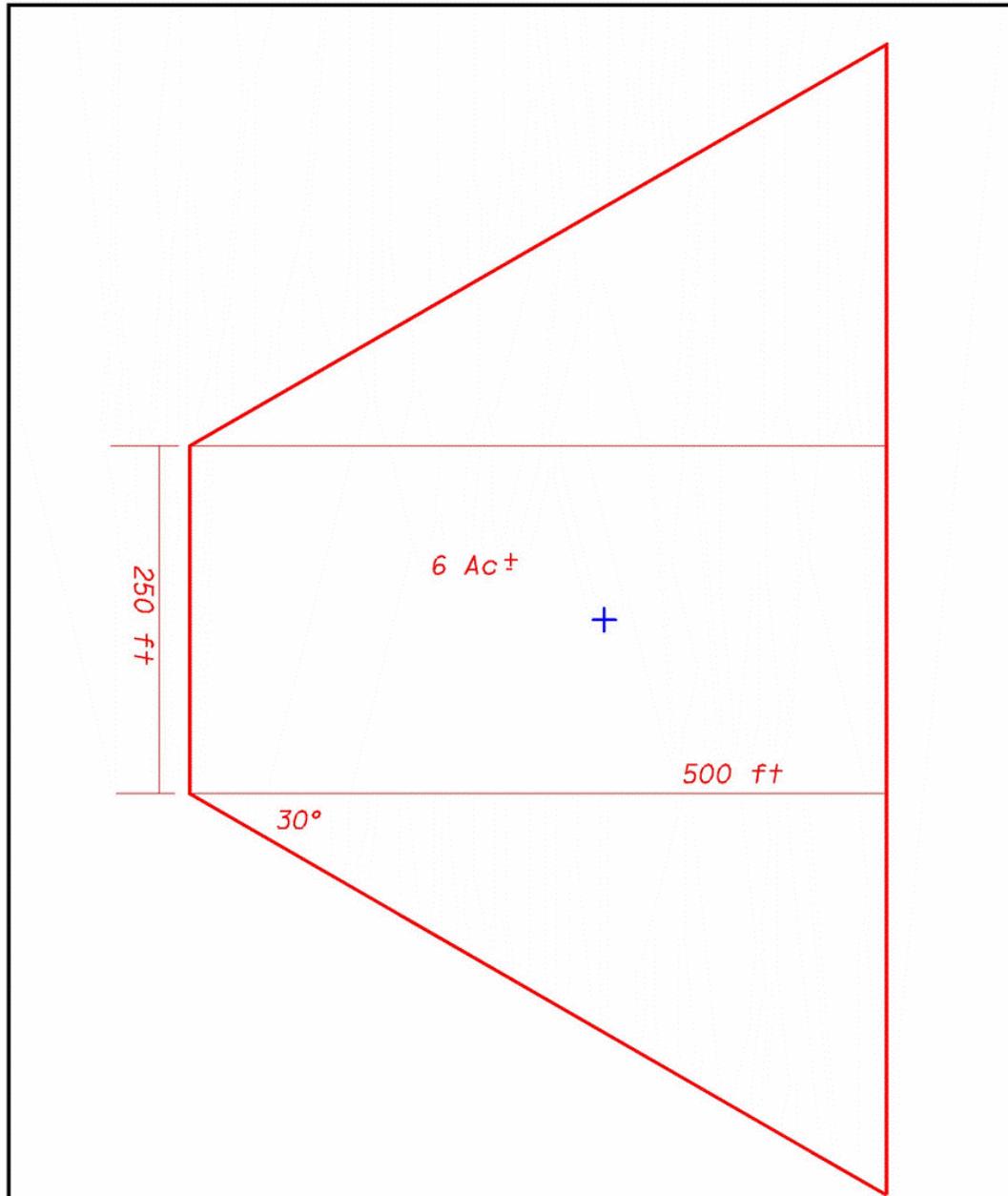
All guns would have been post mounted (fixed), thereby restricting movement in azimuth and elevation. The earth embankment plus the fixed guns allowed for the reduction in the downrange danger area typically seen on small arms ranges. The danger area includes an angle of fire plus the required safety fan, totaling 30°, which originates from each end of the firing line and extends to the earthen berm.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): 2nd Air Force Ground Gunnery Range Requirements, July 1943; *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944.



SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT
MALFUNCTION, .50 CALIBER	
RANGE RULE CELL LIBRARY	CELL NAME
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MOVING FIELD TARGET (.30 CALIBER)

Range Type: Small Arms

Cell Name(s): MFT30C

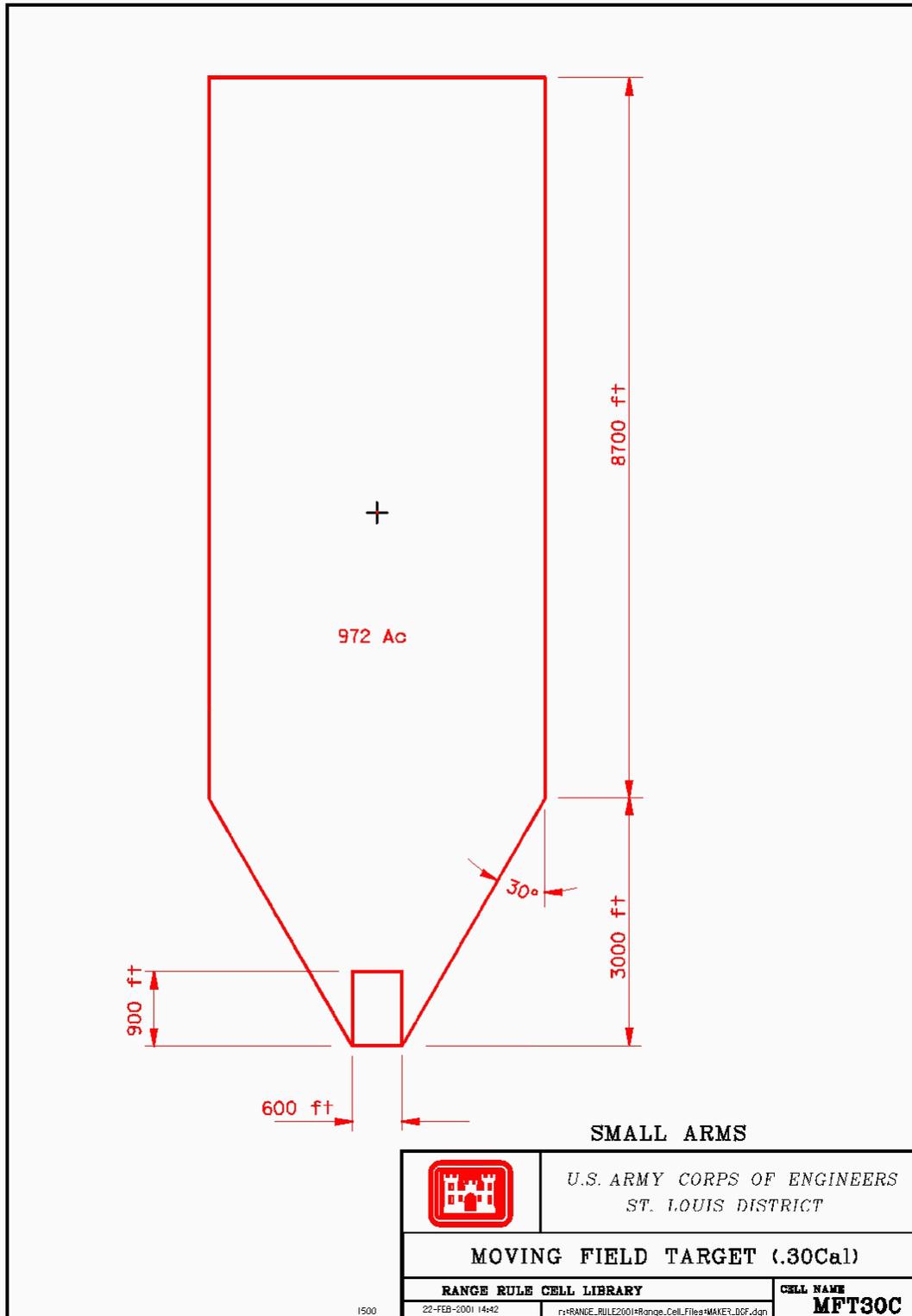
The only description available in the references is an illustration showing a target car mounted on a narrow gage track at the rear of a range. The target may have been towed using a stationary motor drum or by a vehicle. The width of the range is not described and it is unknown as to the number of firing points allowed. Therefore, the range size is estimated to be 200 yards by 300 yards. A salvage wall (earthen berm) would have been constructed directly behind the targets. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area would have included a 5° angle of fire plus a 25° safety fan. The danger area is represented as a 30° fan originating from the ends of the firing line, extending down range a distance of 1,000 yards, at which point it continues an additional 2,900 yards (8700 feet) parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MACHINE GUN, AUTOMATIC RIFLE (BAR), 1000-inch (aka: Machine Gun, Automatic Rifle, 1,000-inch; BAR, 1,000-inch; Browning Automatic Rifle, 1,000-inch)

Range Type: Small Arms

Cell Name(s): MGARB

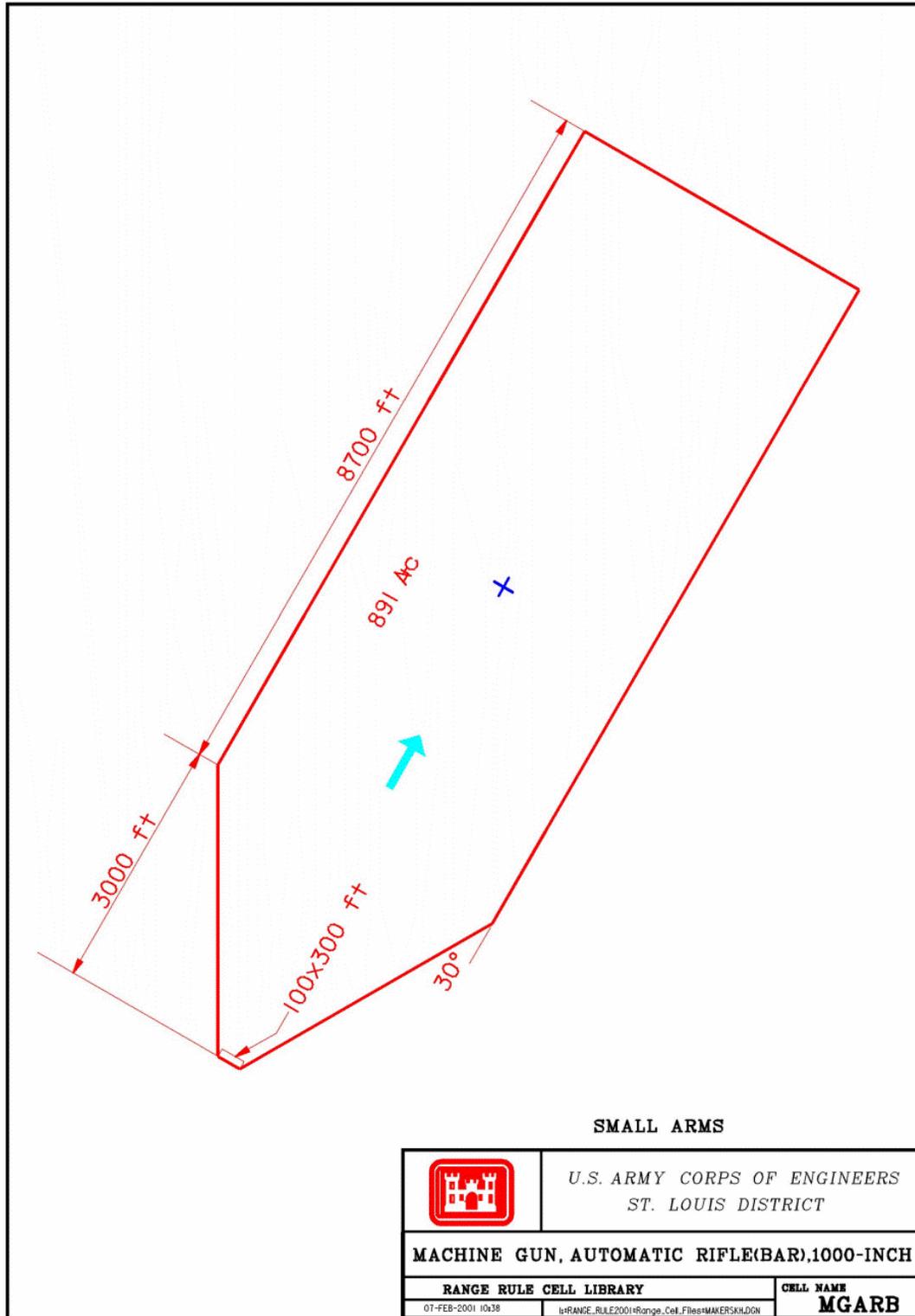
The estimated size of the range is 300 feet wide by 100 feet long. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area consisted of a 5° angle of fire and an additional 25° safety fan. The 30° fan would have originated from each end of the firing line, extended 1,000 yards down range, at which point it would have continued an additional 2,900 yards parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MOVING VEHICLE (.30 CALIBER MACHINE GUN)

Range Type: Small Arms

Cell Name(s): MOV.30

A .30 caliber machine gun moving vehicle range may be located adjacent to or within the limits of a submachine gun moving vehicle range where the size of the danger area could be reduced. Log type obstacles were desirable at locations other than where continual use by tank traffic occurred.

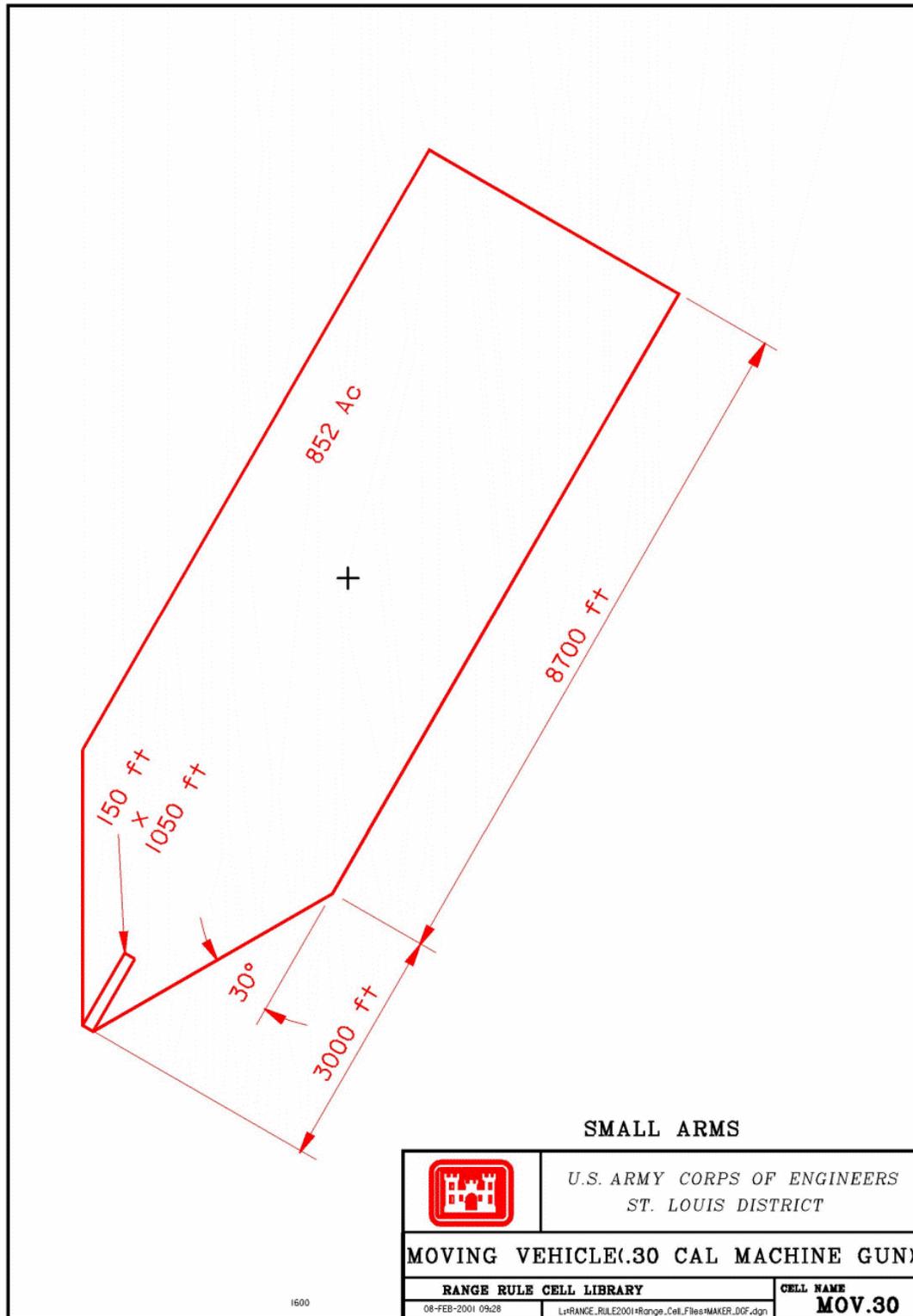
A typical firing lane consisted of a straight road, 350 yards long with targets positioned at the rear of the range. The target area would have been approximately 50 yards wide. Vehicles were required to traverse the road and obstacles while gunners engaged targets. Firing commenced at the 50-yard line and continued to the 275-yard line. The danger area would have included the angle of fire and the prescribed safety fan, which would have extended downrange 4,300 yards beyond the cease-fire line.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MOVING TARGET 1,000-inch (STRAIGHT TRACK)

Range Type: Small Arms

Cell Name(s): MT1000

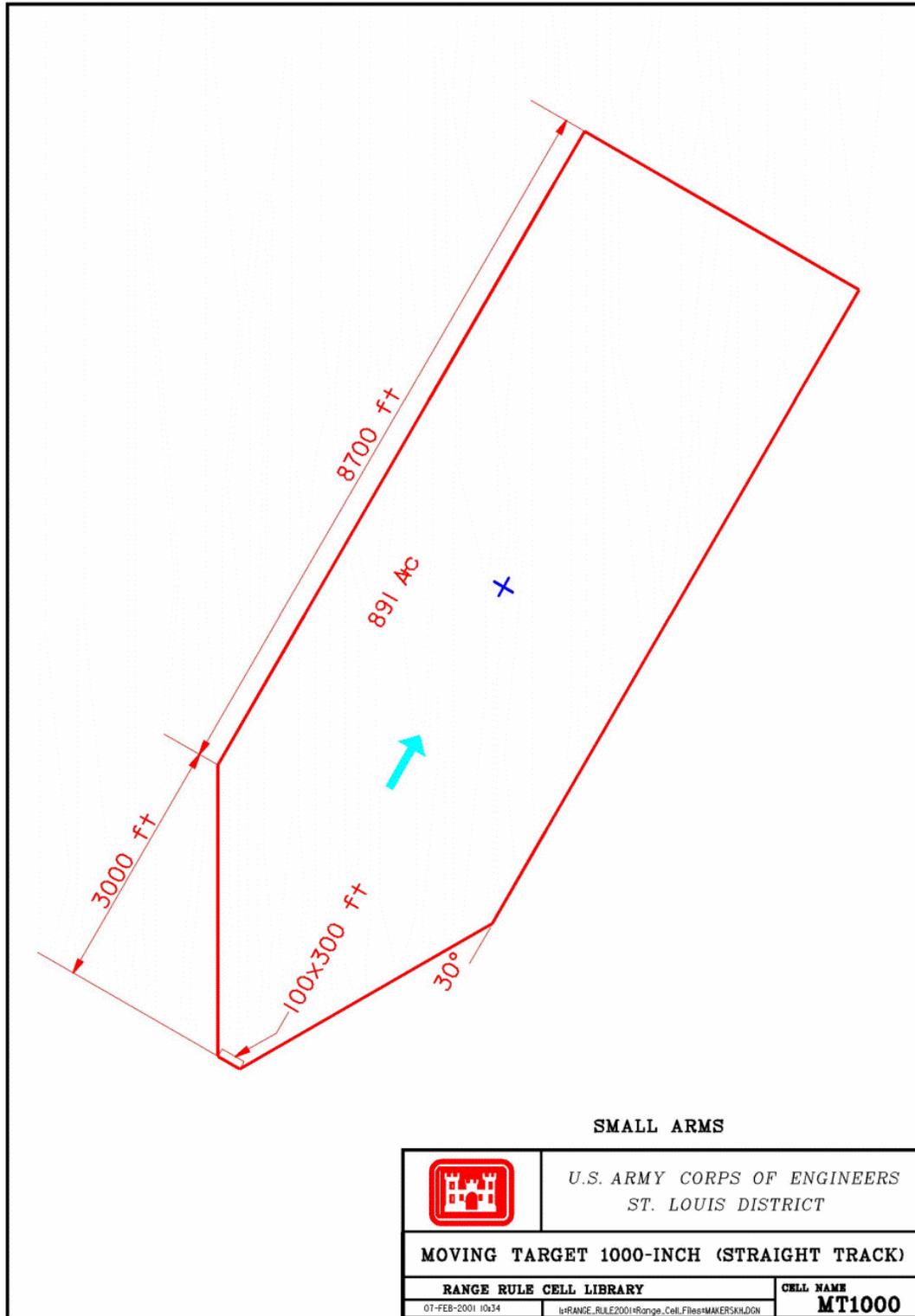
The only description available in the references is an illustration showing a target car mounted on a track at the rear of a 1,000-inch range. As illustrated, as the target car is pulled along the track, it is visible to the gunner for no more than 35 feet. The width of the range is not described and it is unknown as to the number of firing points allowed. It may be possible that a range consists of multiple tracks with multiple firing lines. Therefore, the range size is estimated to be 300-feet by 100-feet. A salvage wall (earthen berm) would have been constructed directly behind the targets. An additional area behind the firing lines would have included the ready line, ammunition issue point, and administrative area. The danger area would have included a 5° angle of fire and a 25° safety fan. The area is represented as a 30° fan that originates from the ends of the firing line, extends down range a distance of 1,000 yards, at which point it continues an additional 2,900 yards (8700 feet) parallel to the direction of fire. If .50-caliber ammunition is suspected, the safety fan should be extended to 6,600 yards in lieu of 2,900 yards (on the range cell).

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MOVING TARGET (CURVED TRACK)

Range Type: Small Arms

Cell Name(s): MTCUTR

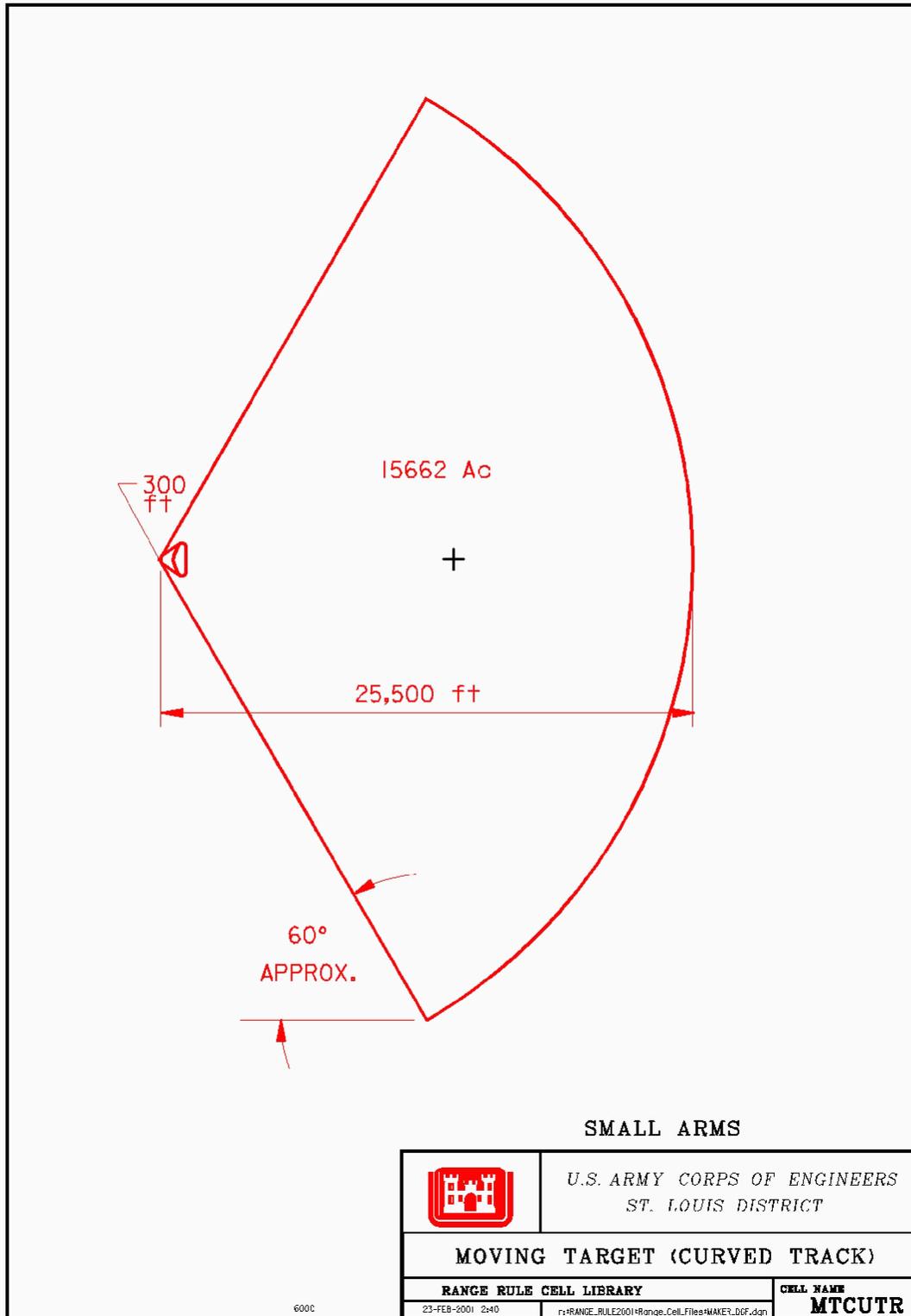
Typically, a Moving Target (curved type) is designed to provide practice for calibers .30 and .50 machineguns. However, this range also accommodated guns up to 75 mm (it is possible that 37mm subcaliber munitions were used for these guns). The target area consists of a continuous narrow gage rail (tracks) approximately 600 feet by 1,500 feet. The track layout may vary. Targets are mounted on target cars, which operate on the track. The cars and tracks are protected by earthen berms. The firing line is typically located 600 feet from the target area, and is wide enough to accommodate 24 firing positions (spaced at 12 feet apart plus room at both ends calculates to approximately 300 feet). Left and Right limits of fire are established based on the width of the target area. A danger area would include 300 mils (17°) added to the left and right limits of fire and extend down range a distance of 1,000 yards beyond the maximum range of the largest munitions used. The cell represents the size of range necessary to accommodate .50 caliber ammunition. High explosive munitions would not have been authorized for use on this type of target range.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700
37mm AP	(at elev. 15°) 4,980	data not available
75mm AP	(at elev. 15°) 7,140	2,030

Data sheet(s):

CTT01	Small arms, General
CTT13	37mm, APC, M59 75mm, AP M72

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MOVING TARGET, JEEP TYPE

Range Type: Small Arms

Cell Name(s): MVJEEP

This type of range consists of a jeep-mounted target that is driven on a track laid out in a triangular shape. Gun turrets mounted on stationary platforms were positioned along the firing line approximately 600 yards to the front of the target. Local requirements would have dictated the number of turrets. An earthen berm constructed around the target area was required to conceal and protect the vehicles and personnel.

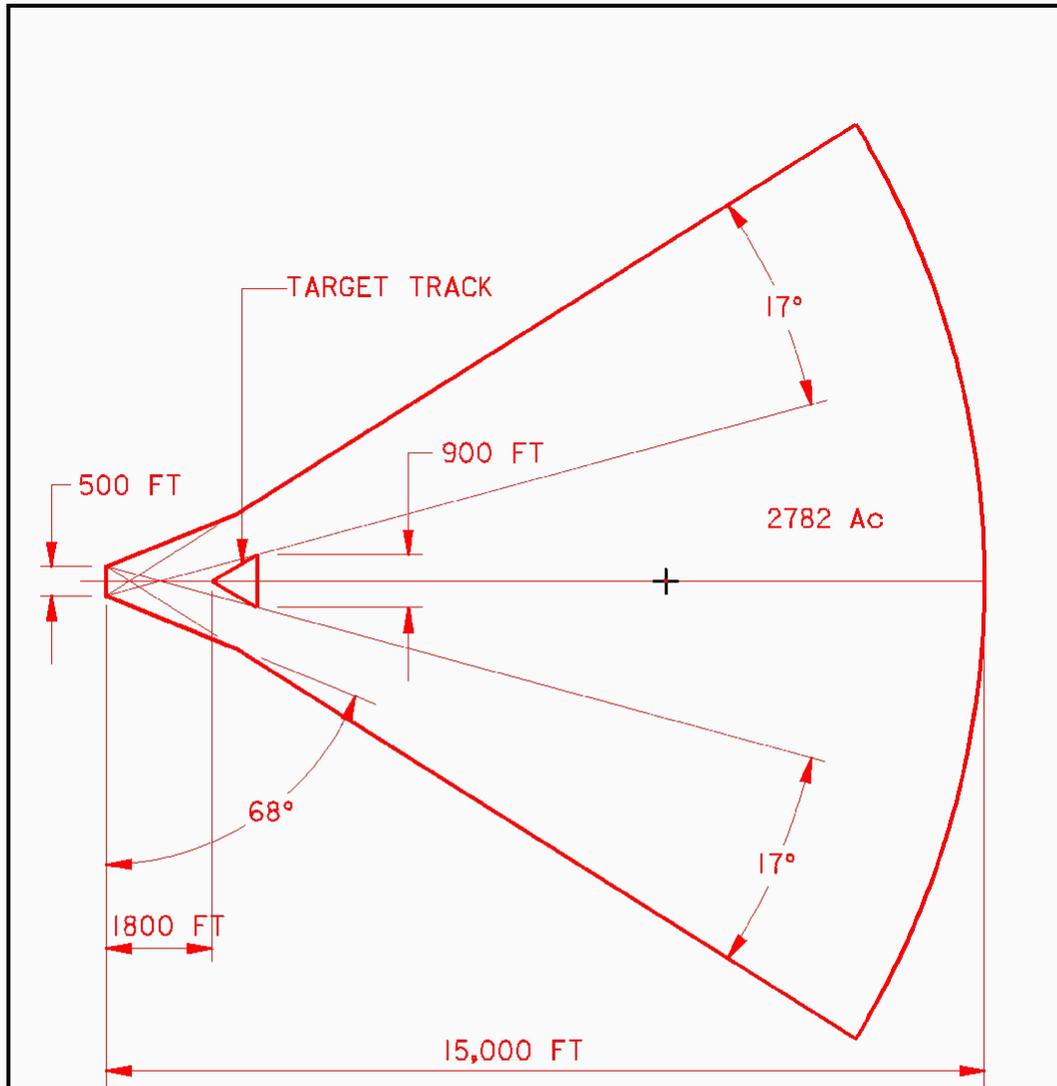
The range cell was derived using the following assumptions: a 500-foot firing line positioned 1,800 feet from the forward edge of the target; a 900-foot wide target; the down range distance (as stated in reference – from the firing line to the end of the safety fan) is 15,000 feet (5000 yards). Safety fans were calculated by adding an additional 17° safety fan to the right and left limits of the far right and far left gun positions. Right and left limits are locally established, but typically set at the ends of the target area. A set safety fan of 22° would extend from each end of the firing line and extend to intersect the right and left limit safety fan.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545

Data sheet(s):

CTT01 Small arms, General

Reference(s): *Second Air Force Ground Gunnery Range Requirements*, July 1943; *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



2500

SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	MOVING JEEP TYPE TARGET	
RANGE RULE CELL LIBRARY		CELL NAME
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MOVING VEHICLE (SUBMACHINE GUN)

Range Type: Small Arms

Cell Name(s): MVRANG

A Moving Vehicle Range for submachine guns consisted of a u-shaped vehicle track with three separate target groupings. It was typically located along a ridge or on topography that permitted a wide angle of vision. Road construction would have consisted primarily of clearing enough of an area to provide for satisfactory passage of vehicles. Its arrangement would have been subject to modifications in order to accommodate the local terrain and danger area restrictions. Gunners were tasked to engage three target groups while mounted in a moving vehicle

The area required for this range is approximately 150 yards by 225 yards, which provides enough room to construct the road, have adequate separation between the three target groups, and provide approximately 50 yards of length, which allows the vehicle to reach the required speed. The terrain for this range would have been generally flat with a good field of fire for the gunner; and the vegetation would have typically consisted of grass, weeds, and underbrush. The three separate target groups (consisting of E-type targets) would have been positioned appropriately to meet local terrain and restrictions.

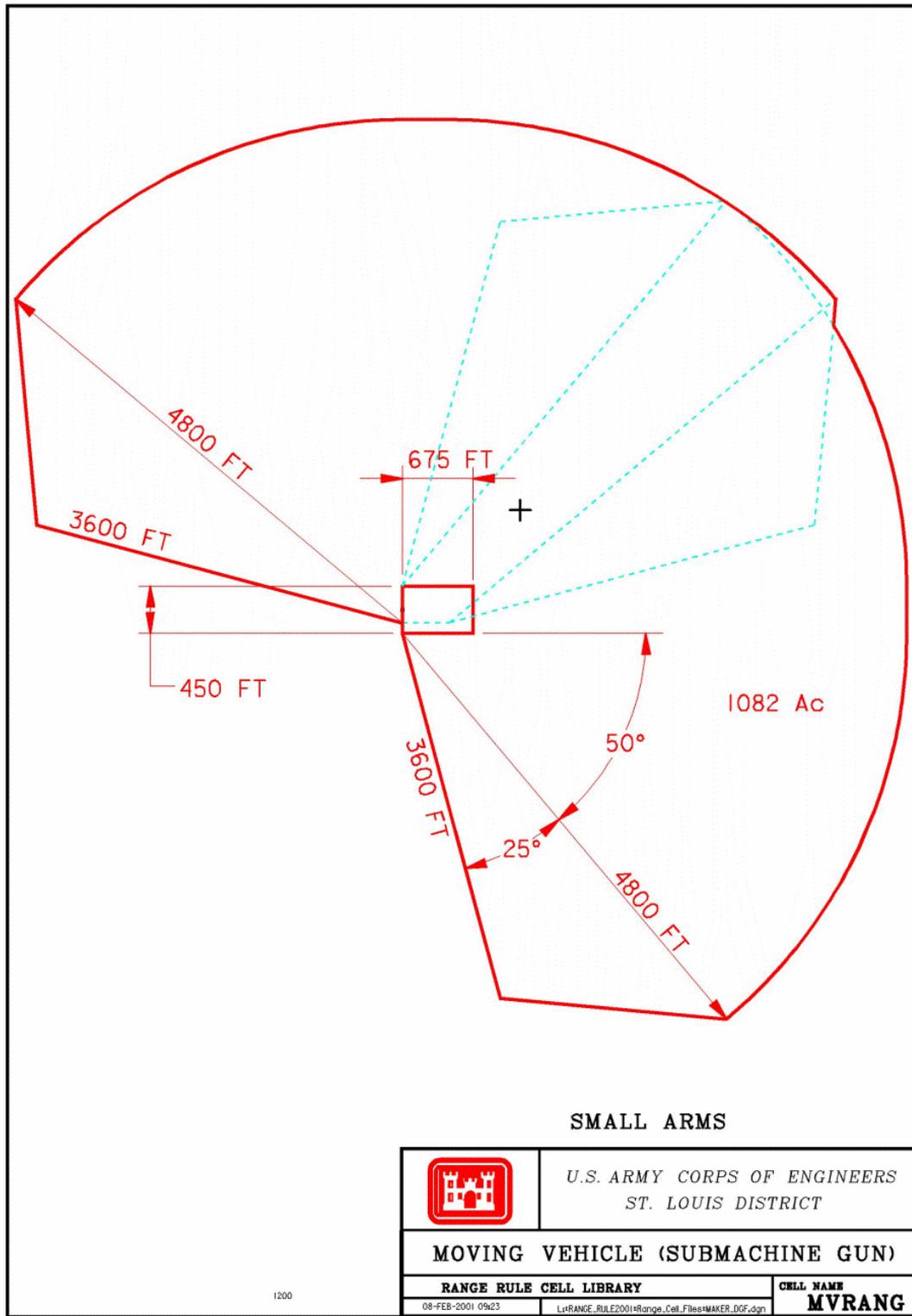
The range cell was derived using the following assumptions: 150 yard by 425 yard range area; vehicle route constructed within these limits; danger area developed using two machinegun danger areas to account for the two directions of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



MOVING BASE (SHOTGUN)

Range Type: Small Arms

Cell Name(s): MVSHOT

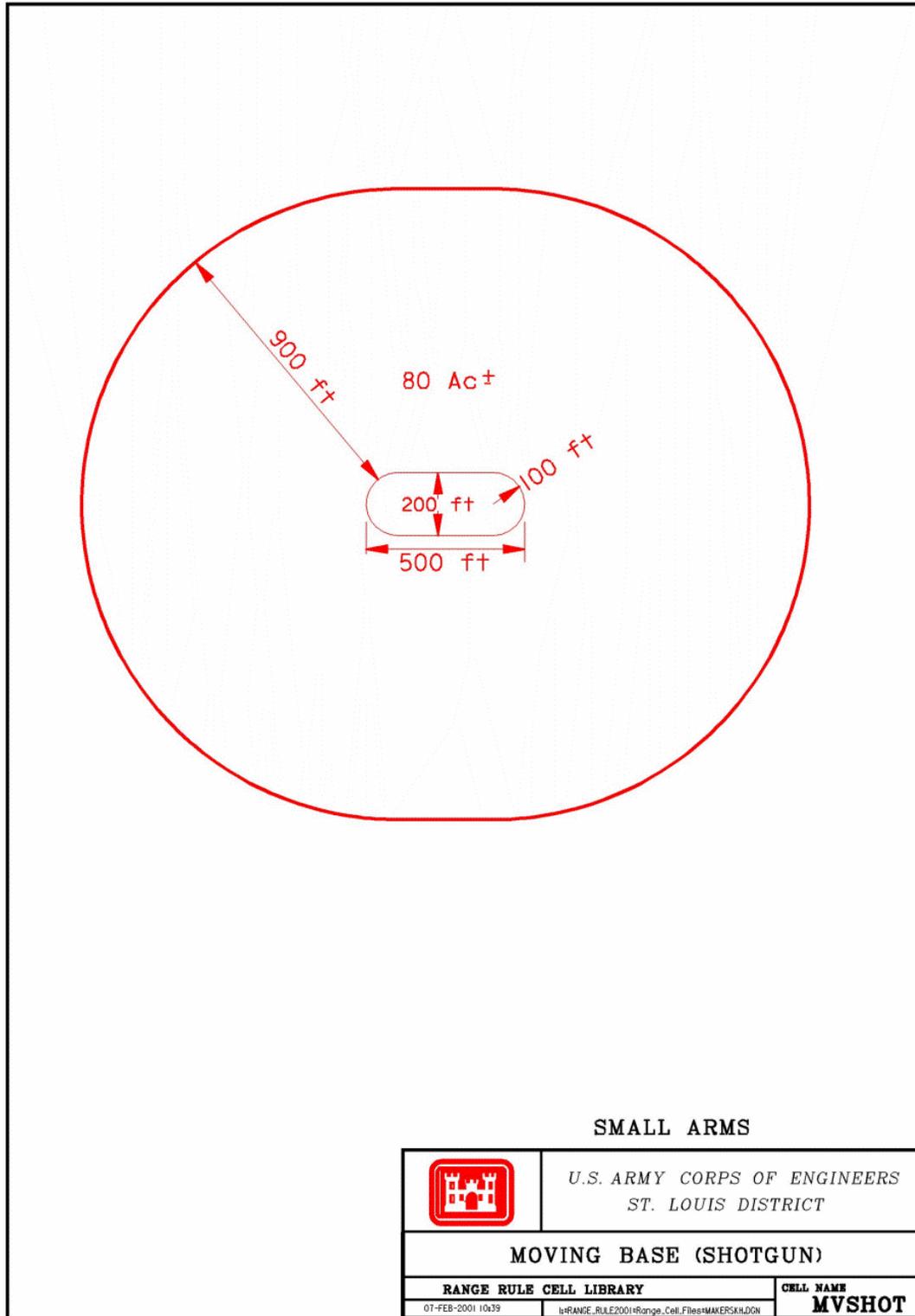
Similar to skeet and trap, this range uses clay targets (clay pigeons) thrown from trap houses. Shotguns would have been the authorized weapons. Shooters would have engaged targets from a moving vehicle traversing a set course, which was generally an oval track. No standards are known for this range. However, it is estimated that the oval track was approximately 500 feet by 200 feet and that a 900-foot safety fan extended from the oval.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
12 gage shotgun	NA	NA

Data sheet(s):

CTT01 Small arms, General

Reference(s): No references available



PISTOL

Range Type: Small Arms

Cell Name(s): PIRAN

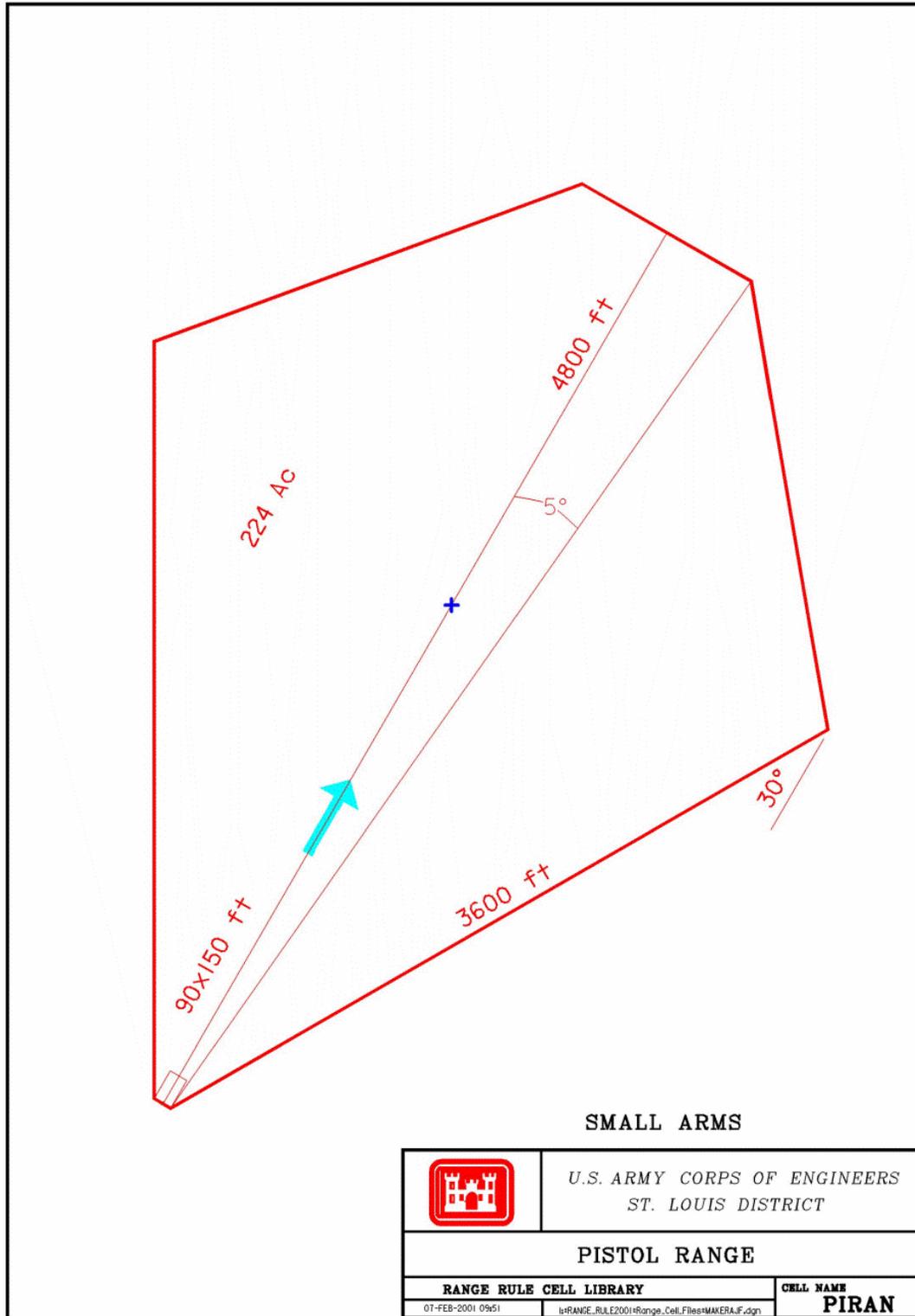
Typically, a Pistol Range accommodated 25 firing positions, and was approximately 30 yards wide by 50 yards deep. A pistol range is comprised of a salvage wall (earthen berm), the targets, the firing line(s), safety fan, and an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The salvage wall (earthen berm) would have been constructed along the backside of the range approximately 5 feet to the rear of the target line. In situations where bluffs or steep hills were present, a salvage wall may not have been required. A five-foot opening typically separated each target. Firing lines would have been positioned at 5, 10, 15, and 25 yards in front of the targets. A 5° angle of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802
.22 caliber	1,500	1,100

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



POORMAN RANGE

Range Type: Small Arms

Cell Name(s): POORMN

A machine gun range utilized to provide a ground trainer designed to simulate problems encountered in the air while firing at a fighter attacking on a pursuit curve. Along the firing line are positioned one or more Poorman Flexible Gunnery Trainers or Poorman Hand-Held Trainers. A cloth target is mounted on a target car running on a track from the firing line to a point 1000 inches (83' 4") in front and directly on the center-line of the firing turret.

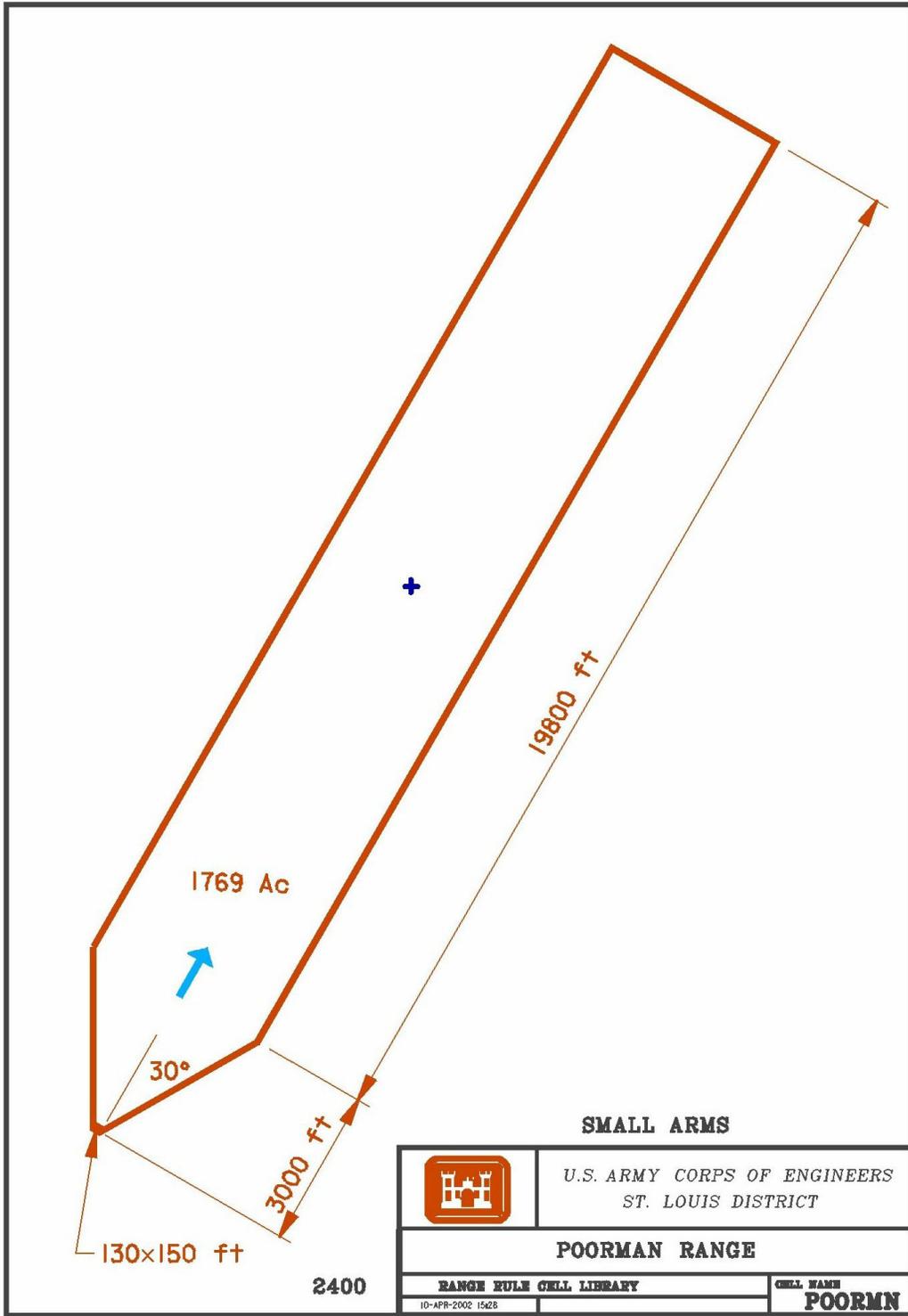
Currently, no references are currently available to provide a range layout. The trainer manual on hand gives no dimensions other than the target distance. Modification to width depends on quantity of trainers. The estimated size of the range, based on six trainers, is approximately 130 feet wide by 150 feet long. A 30° safety fan originating from both ends of the firing line would extend down range 1,000 yards, at which point it continued an additional 6600 yards parallel with the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): AF Manual No. 66, *Manual for the Instructor on the Poorman Flexible Gunnery Trainer*; AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



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RIFLE, KNOWN DISTANCE (aka: KD Range, Known Distance Range, Qualification Range, Rifle Range, Musketry Range)

Range Type: Small Arms

Cell Name(s): KD500, KD300, RIFLE

A known distance (KD) rifle range was utilized for weapons familiarization and qualifications. KD ranges may be designated 200-yard, 300-yard, or 500-yard. Based on the designation, firing lines were positioned at 100 yd and 200 yd, 100 yd, 200 yd, and 300 yd, and 100 yd, 200 yd, 300 yd, and 500 yd, respectively. An additional 1,000-yard firing line may have been present; although, these firing lines typically consisted of a small number of firing points.

The width of the range would have been determined based on terrain and installation requirements. A range constructed to accommodate 50 men was approximately 400 yards wide. A range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The 30° safety fan originates from the ends of each firing line, extends down range 1,000 yards, at which point it continues an additional 2,900 yards parallel to the direction of fire.

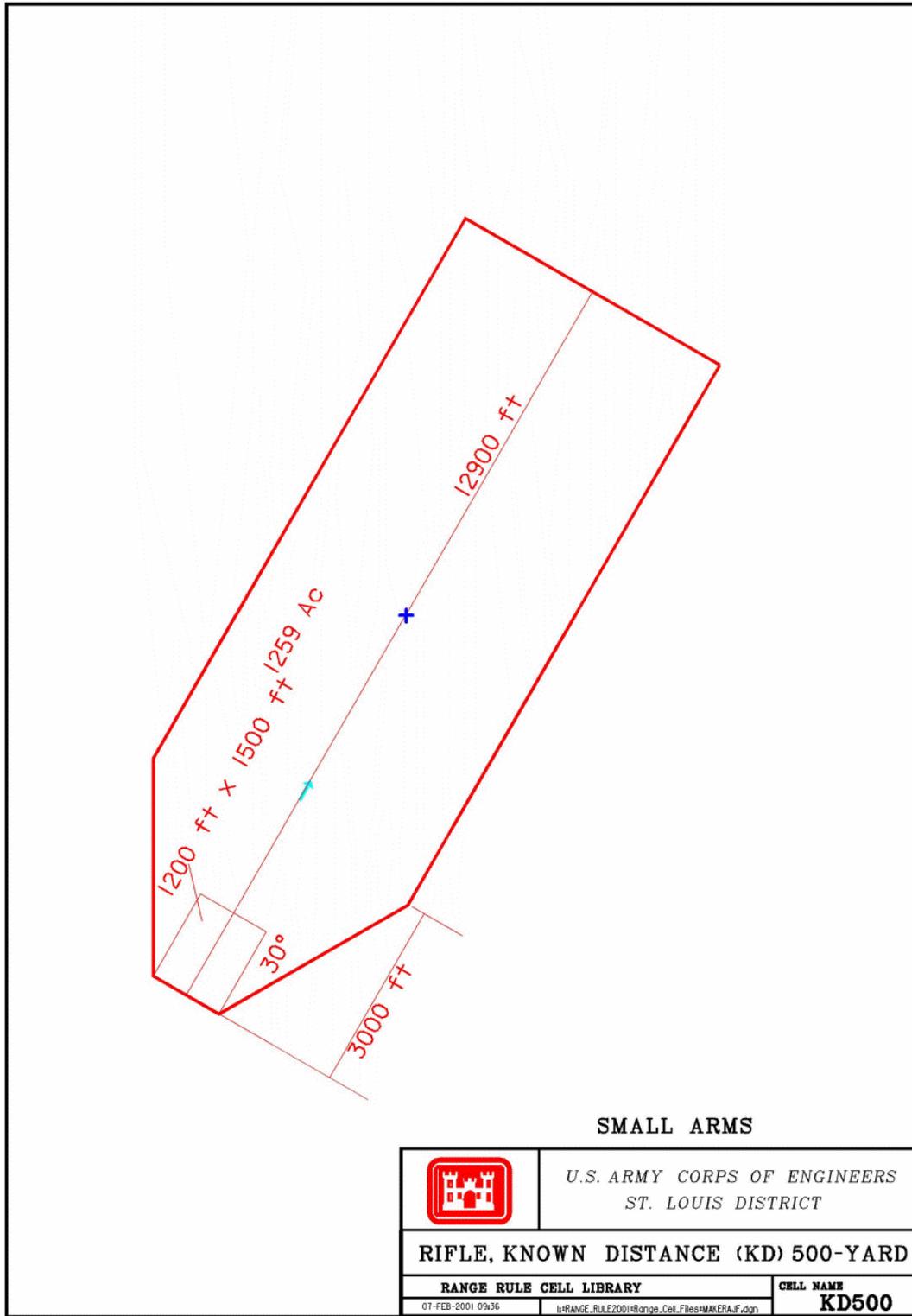
Note: Since the downrange distance is calculated from each firing line, the difference in the down range distance between a 200-yard range (12,000-foot down range distance) and a 500-yard range (12,900-foot down range distance) is 300 yards (900 feet).

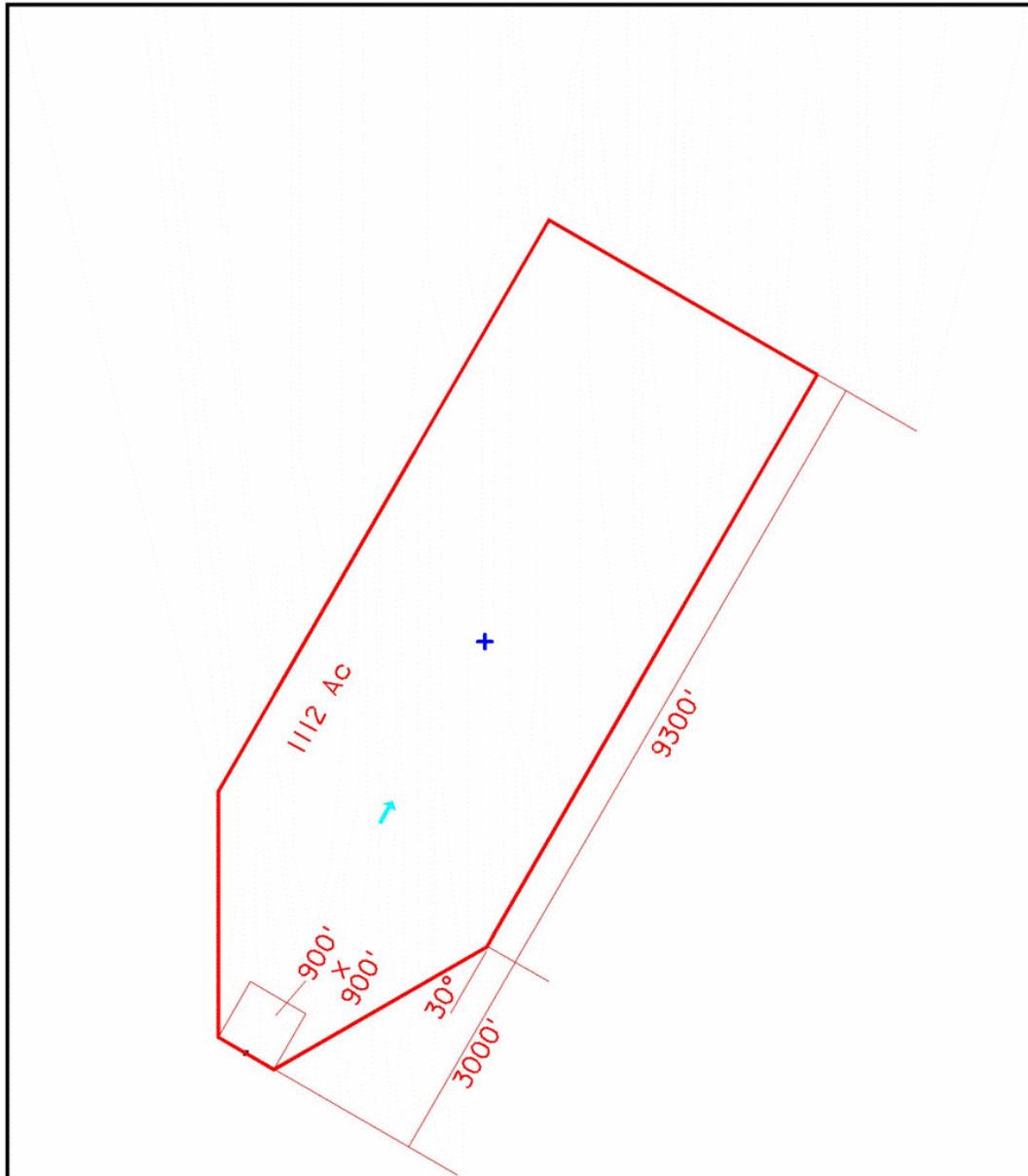
<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700
.22 caliber	1,500	1,100
.45 caliber	1,600	800

Data sheet(s):

CTT01 Small arms, General

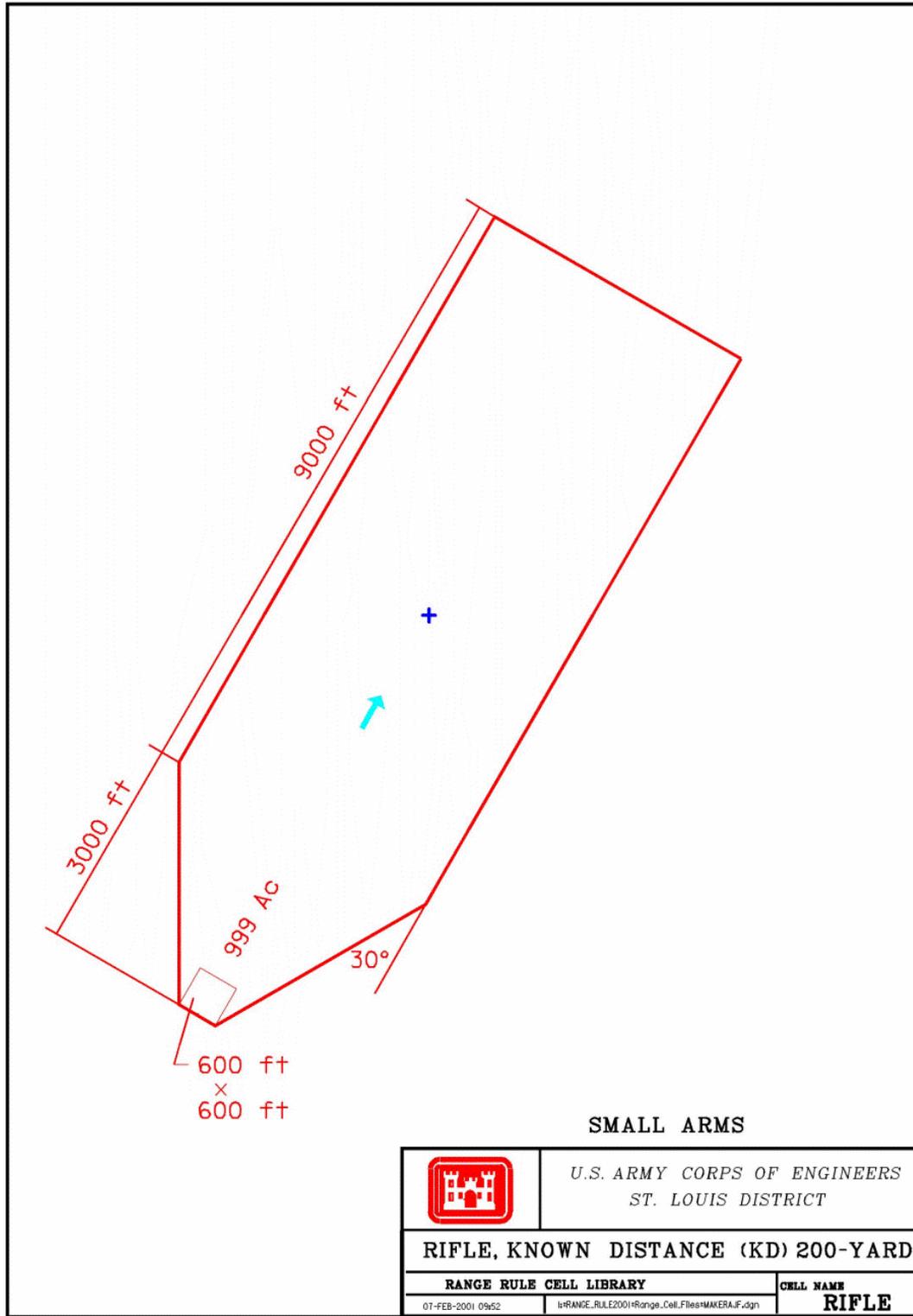
Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951





SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT
RIFLE, KNOWN DISTANCE (KD) 300-YARD	
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KD300	



SKEET & TRAP (aka: Skeet Range, Shotgun Range)

Range Type: Small Arms

Cell Name(s): SKEET, DSKEET, TSKEET

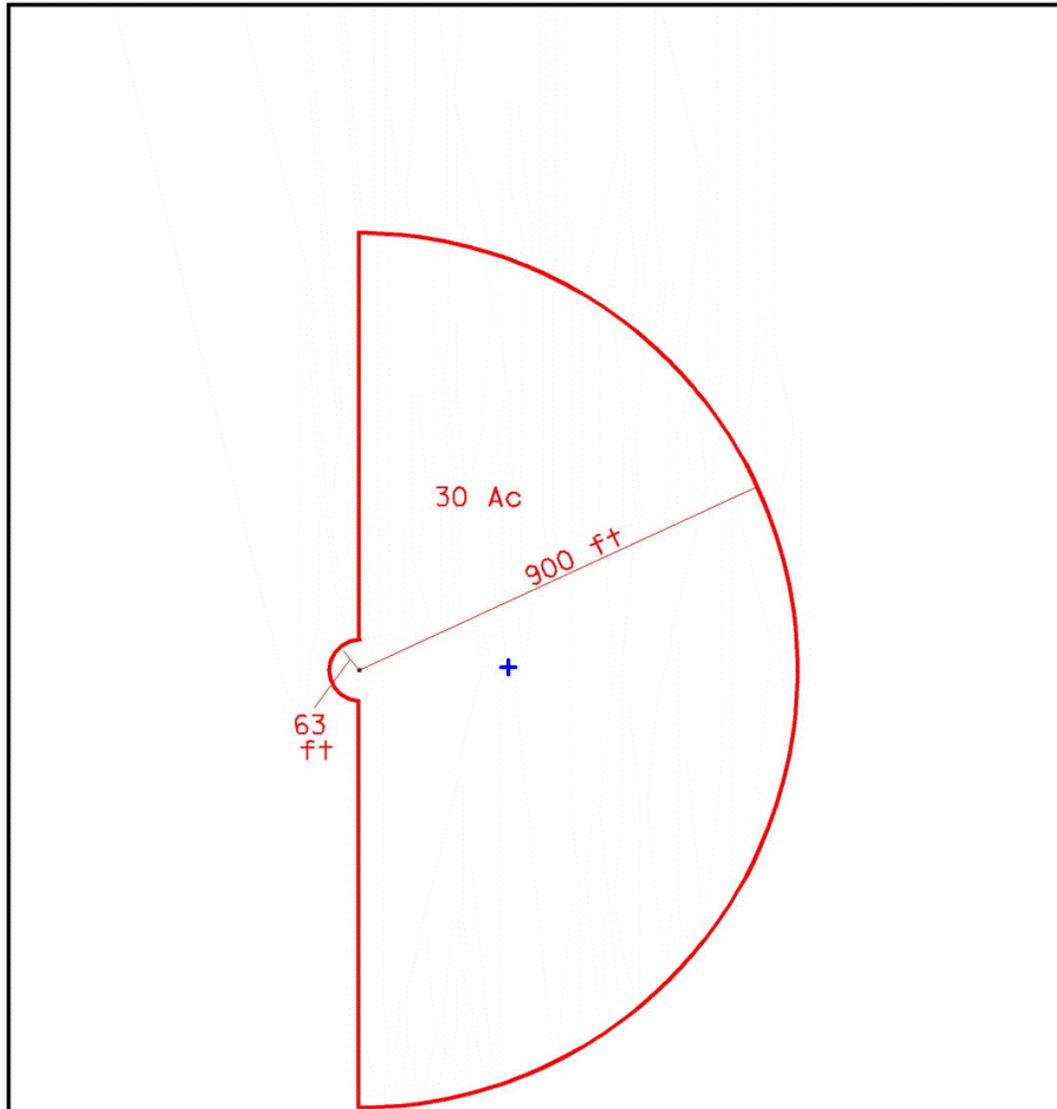
Typically, skeet ranges should be located in open country. A range facility may consist of one or several shooting fields, which are normally positioned side by side. A shooting field is laid out in a semi-circle with a 63-foot radius. Many ranges utilized concrete walkways. The safety fan consists of a semi-circle with a 900-foot radius that utilizes the same apex as the shooting field. Trap houses may have been constructed of wood, concrete, or brick.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
12 gage shotgun	NA	NA

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SMALL ARMS



U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

SINGLE SKEET & TRAP RANGE

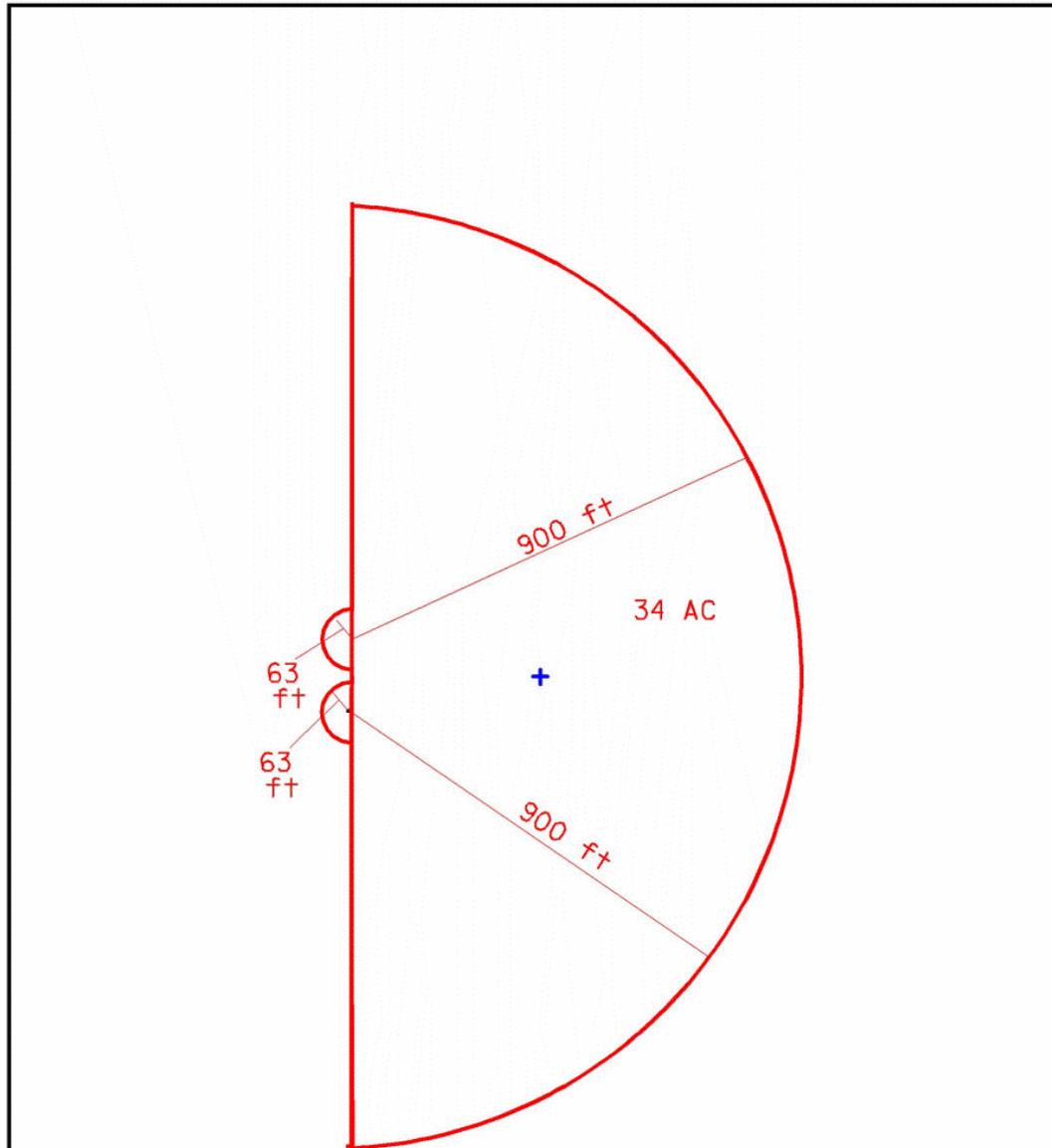
RANGE RULE CELL LIBRARY

CELL NAME

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SKEET



SMALL ARMS



U.S. ARMY CORPS OF ENGINEERS
ST. LOUIS DISTRICT

DOUBLE SKEET AND TRAP RANGE

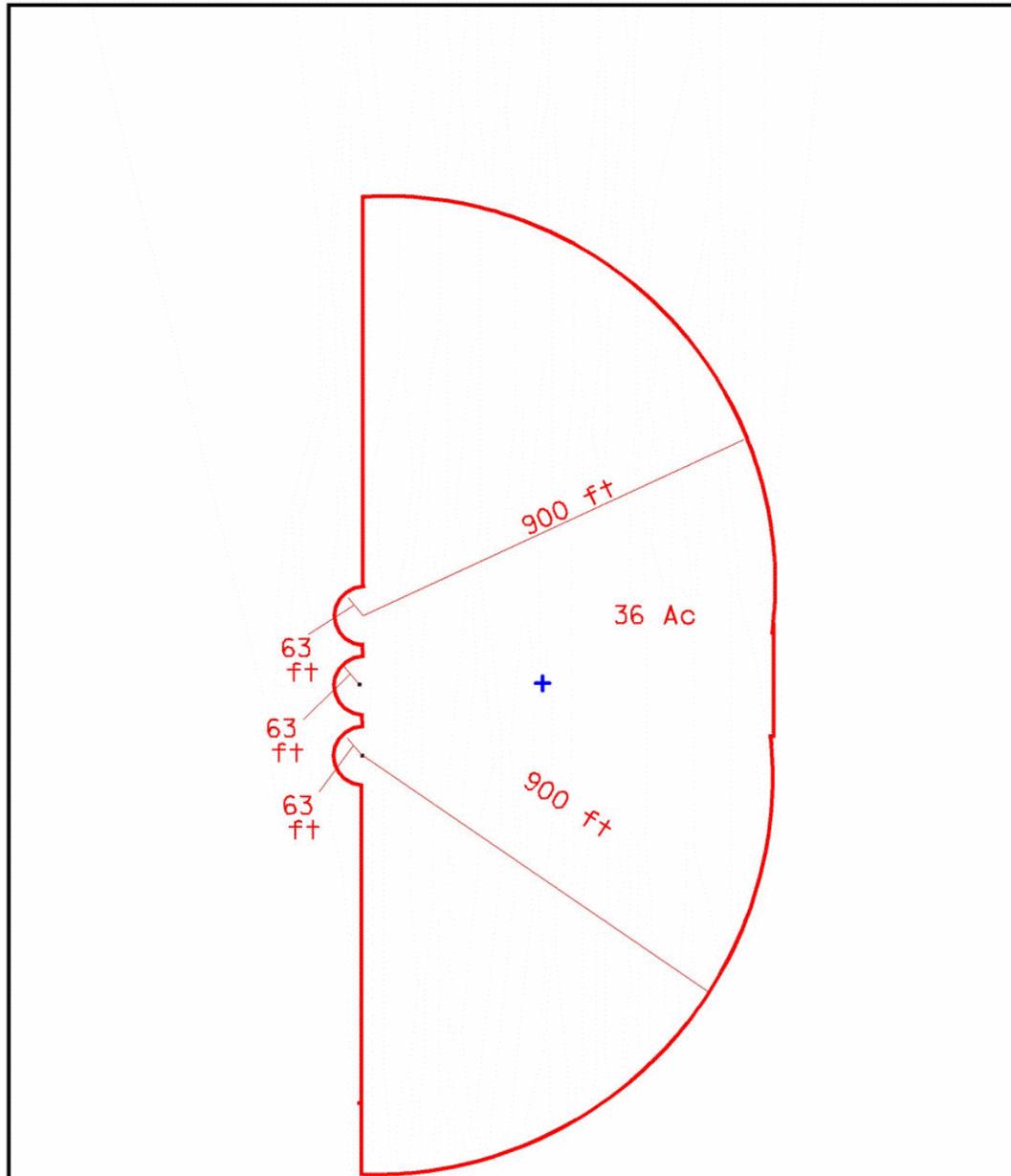
RANGE RULE CELL LIBRARY

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DSKEET



SMALL ARMS

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT
TRIPLE SKEET RANGE AND TRAP RANGE	
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TSKEET	

SUBMACHINE GUN MOVING TARGET (aka: Tommy Gun Moving Target)

Range Type: Small Arms

Cell Name(s): SUBGMV

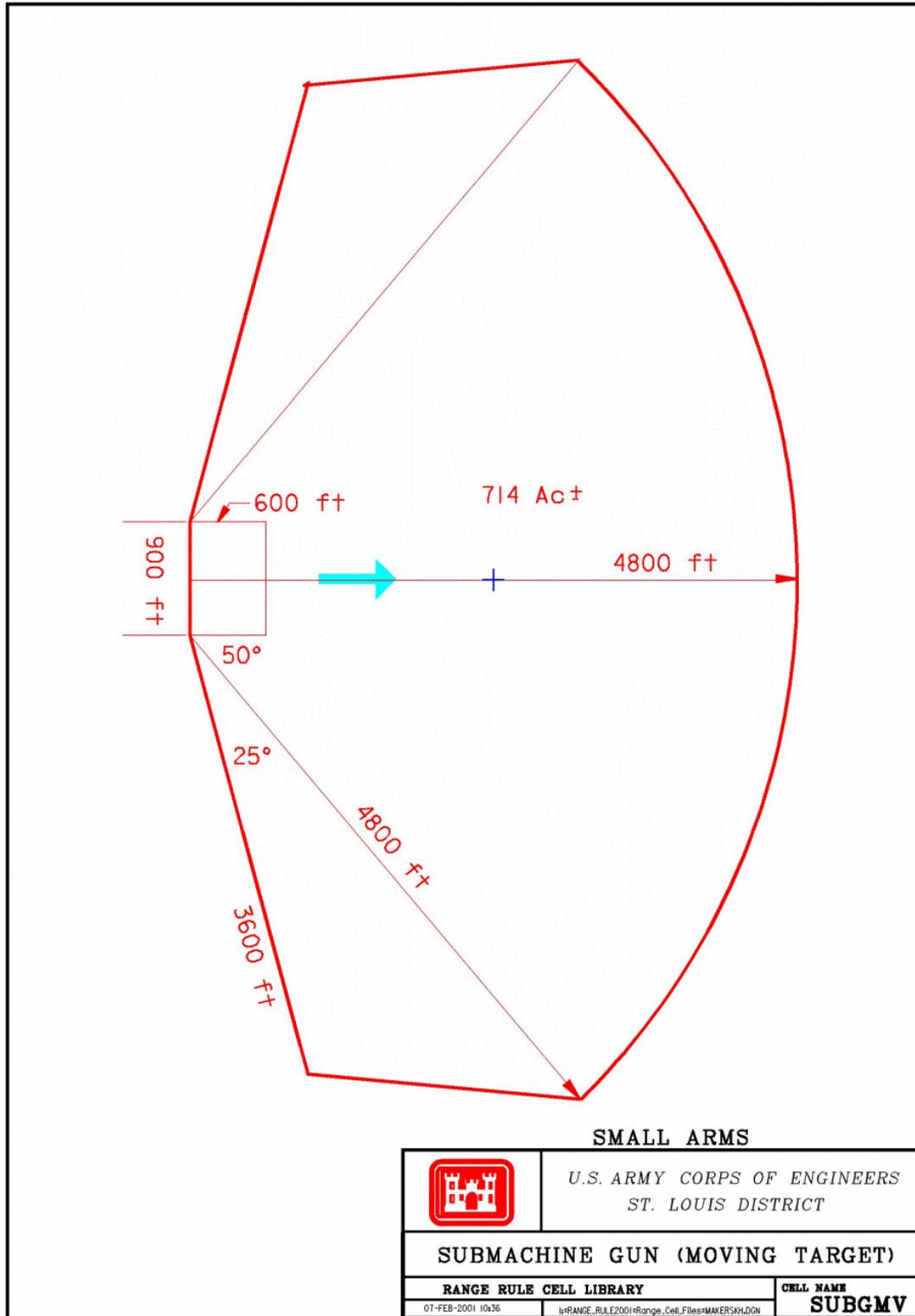
The area required for this range is approximately 300 yards wide by 200 yards deep. A straight length of narrow gage track would have been set up at the rear of the range. A target car carrying a 5-ft by 8-ft target would have run along this track. A towed target sled may have been used in situations where materials were unavailable. Gunners engaged targets from moving vehicles. The vehicles required a smooth level road surface. A danger area included a 50° fan extending 1,600 yards down range from each end of the range, and an additional 25° fan, originating from the same point, extending down range a distance of 1,200 yards.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951



SUBMACHINE GUN (aka: Tommy Gun Range)

Range Type: Small Arms

Cell Name(s): SUBMGT

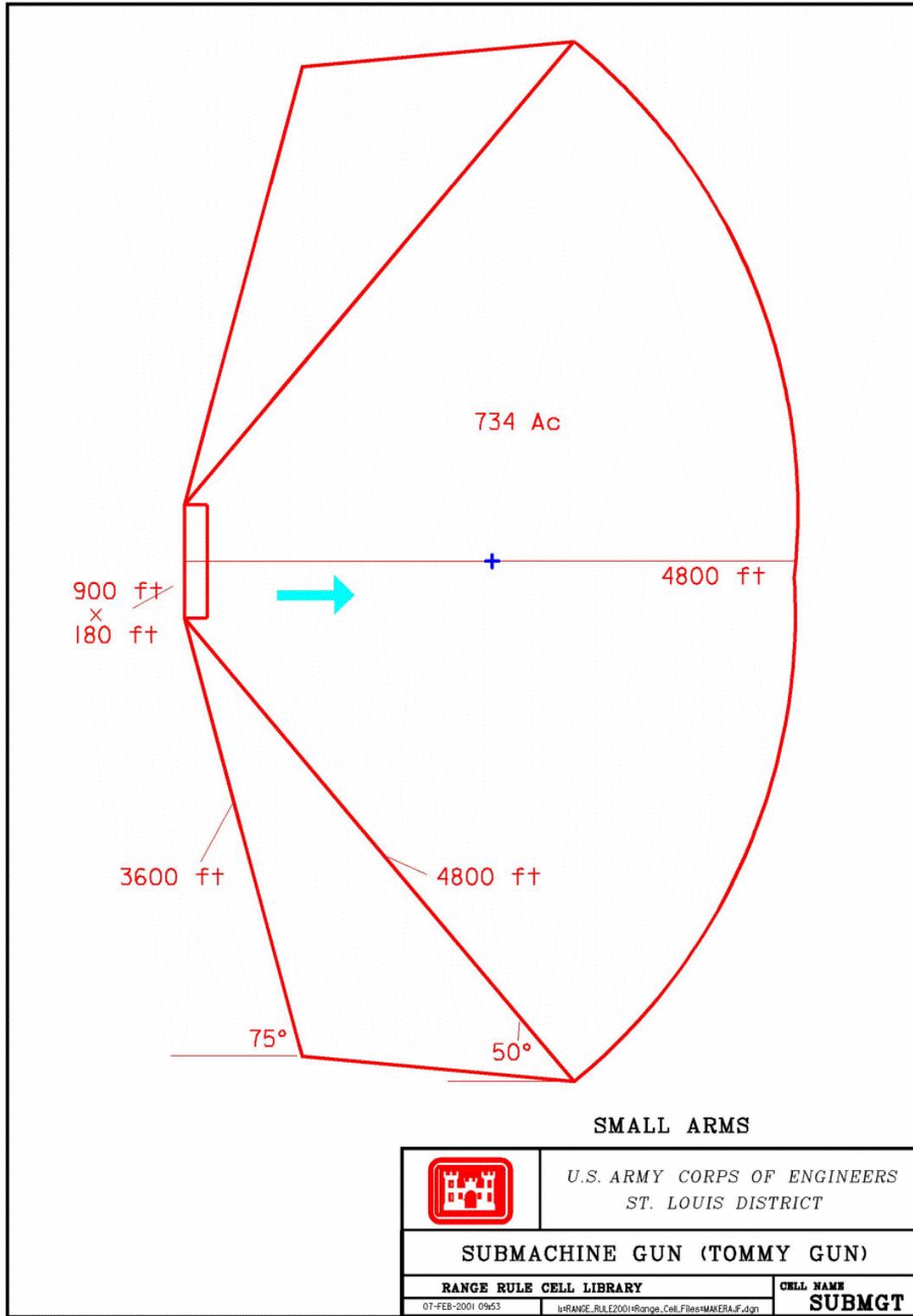
A Sub-machine Gun Range (.45 caliber), which was approximately 300 yards wide by 60 yards long, was laid out with 10 targets per firing position. Six firing points (allocation for one Infantry Div) may be laid out to allow for independent or non-independent operation. The difference between independent and non-independent is the minimum separation between firing positions. Non-independent firing requires a 160-foot separation, whereas independent firing requires a 350-foot separation. Therefore, 6 firing positions would require 800 feet and 1,750 feet of separation, respectively. Because of the lateral distance involved, it is assumed unlikely that a single range accommodated 6 firing positions with independent operations. Therefore, the range is estimated to be no more than 300 yards (900 feet) wide. The danger area consists of a 50° fan, which extends 1,600 yards downrange from each end of the range, and a 25° fan, originating from the same point, which extends 1,200 yards downrange.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.



TRANSITION (AUTOMATIC RIFLE)

Range Type: Small Arms

Cell Name(s): TRANAR

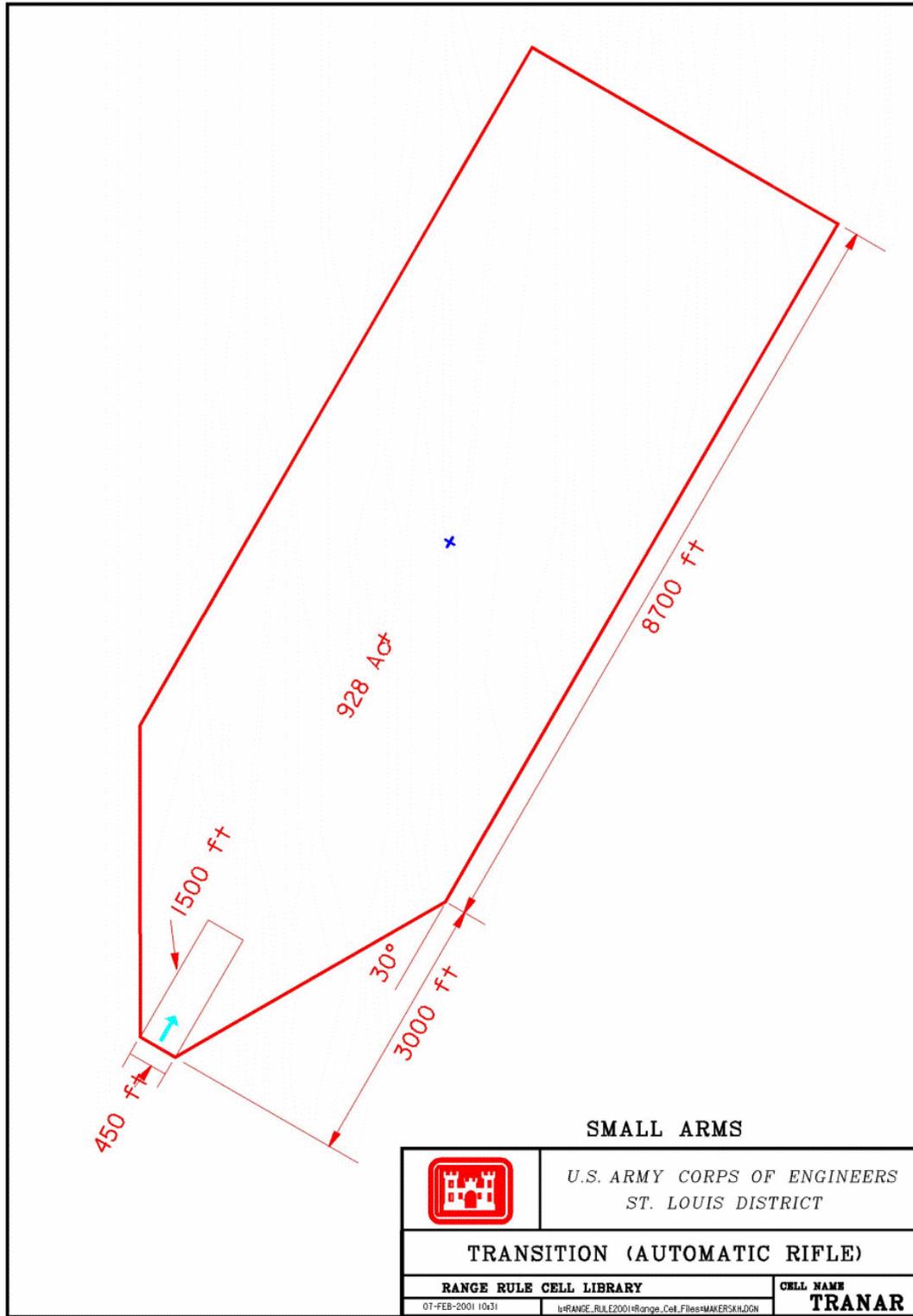
The Automatic Rifle Transition Range is similar to the rifle transition range. This type of range consists of individual firing lanes approximately 150 yards wide by 500 yards long. Each lane uses unique firing positions (fox hole, window, and prone). Each soldier transitions along the firing line engaging targets from each position. Targets were positioned at various distances ranging from 150 to 500 yards. The danger area includes an angle of fire and a prescribed safety fan. A 30° fan originates from each end of the firing line, extends 1,000 yards downrange, at which point it continues an additional 2,900 yards parallel to the direction of fire.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700

Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.



**TRANSITION, RIFLE; TRANSITION, RIFLE (WITH LIMIT OF ADVANCE);
TRANSITION, RIFLE (TYPES I AND II)**

Range Type: Small Arms

Cell Name(s): TRARIF, TRANSR, TRARLA

Note: Although there is a difference of 6-years between the two referenced regulations, each of the four transition rifle ranges described were used during the WWII era.

TRANSITION, RIFLE (TYPES I AND II) – A 1944 range regulation describes transition ranges as Type I and Type II.

- Type I has an undetermined number of firing lanes, which have a single firing point and pop-up targets set at 200, 300, and 500 yards. Each firing lane is approximately 60 yards wide. The regulation states that a number of these firing lanes together constitute a Transition Firing Course Range, Type I.
- Type II has an undetermined number of firing lanes, which have a single firing point and 6 stationary targets placed at random distances ranging from 200 to 500 yards. Each firing lane is approximately 50 yards wide. The regulation states that a number of these firing points together constitute a Transition Firing Course Range, Type II.

An additional area to the front of the firing line included the ready line, ammunition issue point, and administrative area. The estimated width of both ranges is 400 yards. Each would utilize a typical danger area for small arms ammunition. A 30° safety fan originated from the ends of each firing line, extended 1,000 yards down range, at which point the fan continued an additional 2,900 yards parallel to the direction of fire.

TRANSITION, RIFLE (with and without a limit of advance) – A 1951 range regulation describes rifle-type transition ranges with and without a limit of advance.

- Transition, Rifle (w/o a limit of advance) – This type consisted of up to ten firing lanes where each offered a unique firing position (i.e., fox hole, rooftop, logs, window, etc.). Personnel transitioned along the firing line shooting from various positions. Targets were placed at random distances out to 500 yards. Assuming that each lane requires a width of 20 yards, the width of the range may be up to 200 yards. The danger area included an angle of fire and a prescribed safety fan. A 30° fan originated from each end of the firing line, extended 1,000 yards downrange, at which point it continued an additional 2,900 yards parallel with the direction of fire.
- Transition, Rifle (with a limit of advance) – This type of transition range utilized firing lanes in which personnel transitioned down-range while engaging pop-up targets. Each lane was approximately 25 yards wide and 130 yards long. An earthen berm may have been constructed between firing lanes. Targets were

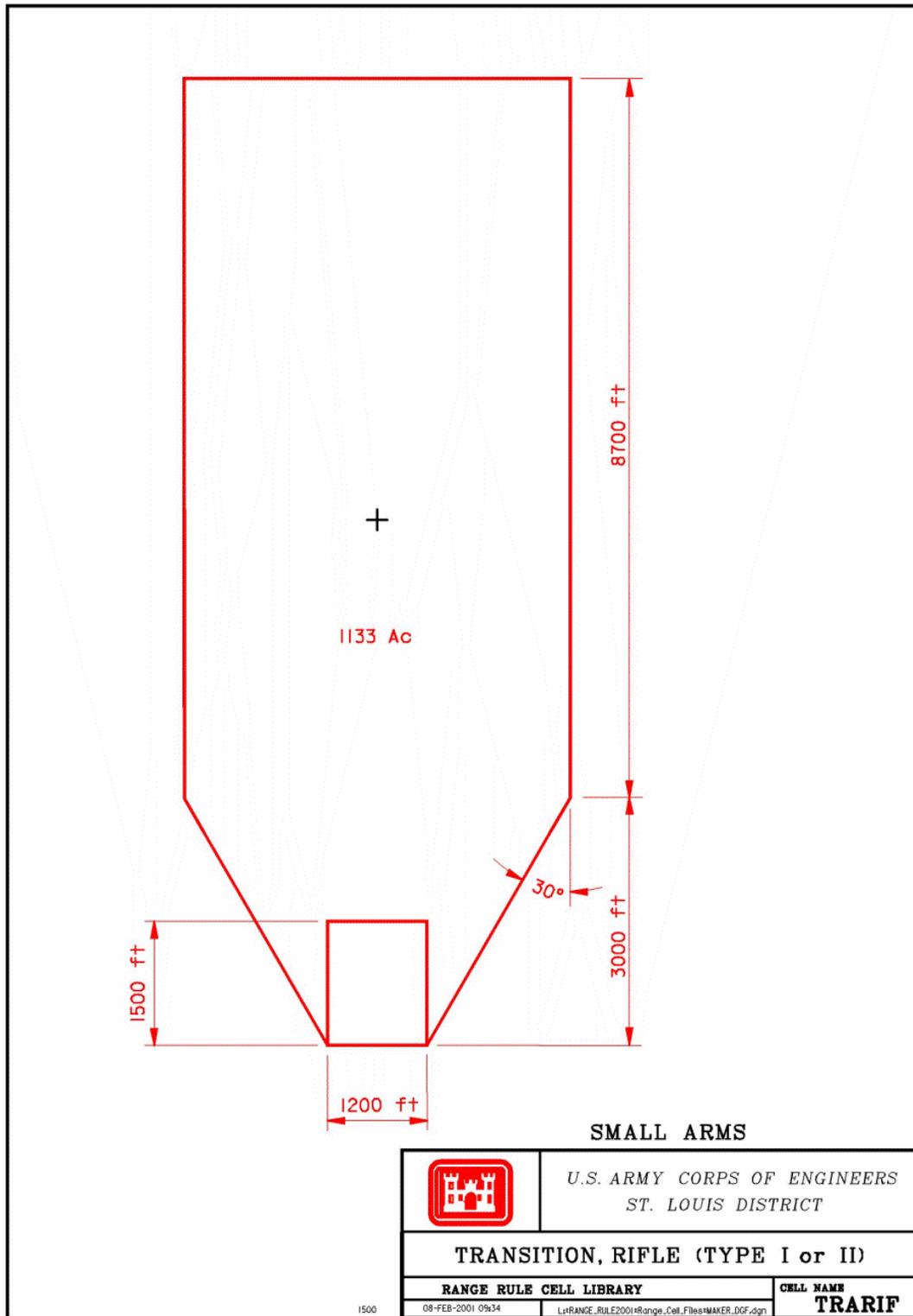
positioned at various locations between 40 and 130 yards down range. A limit of advance would have been established no farther than 90 yards down range. The number of firing lanes was determined by local terrain and safety conditions. A range with 6 firing lanes is estimated to have been 200 yards wide and 130 yards long. The danger area includes an angle of fire and a prescribed safety fan. A 30° fan originated from each end of the firing line, extended 1,000 yards downrange, at which point it continued and additional 2,900 yards parallel to the direction of fire.

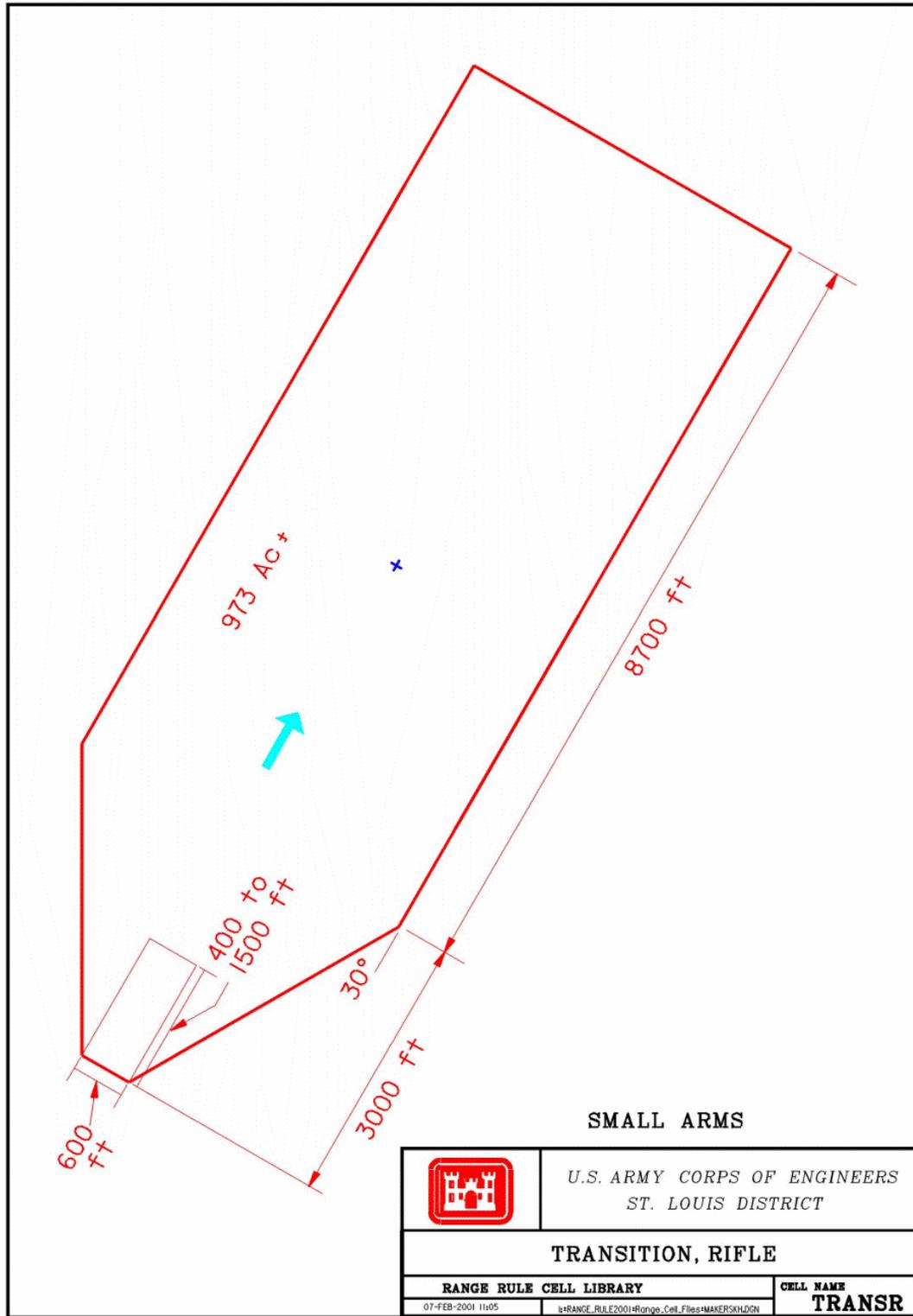
<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.30 caliber	3,450	2,700

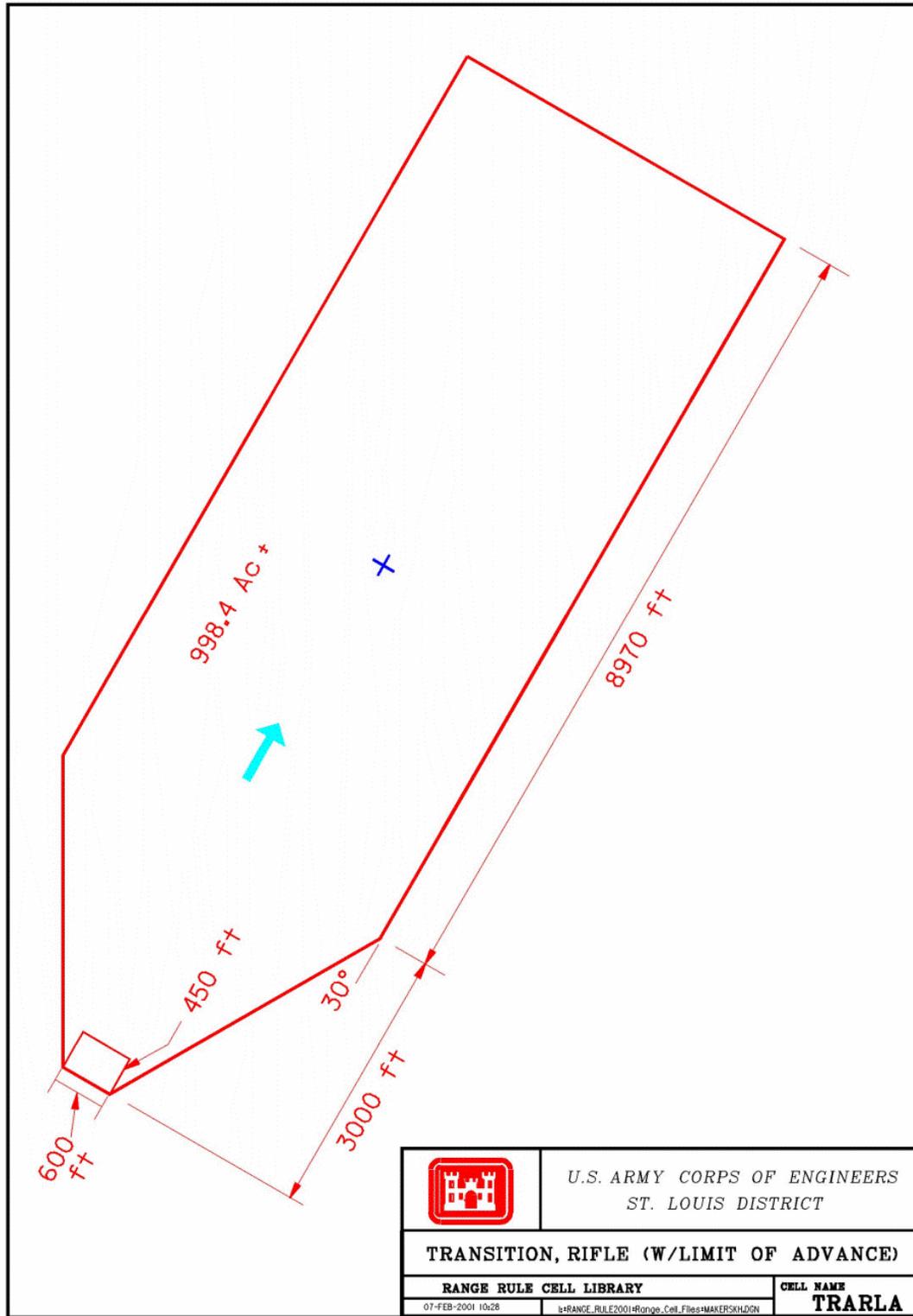
Data sheet(s):

CTT01 Small arms, General

Reference(s): *AR 750-10, Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; *TM 9-855, Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.







RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Chemical Demonstration Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 1

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance?

Documents refer to this area as a chemical demonstration area. Chemical Identification (detonation) Sets are suspected to have been used. Components of these kits included blasting caps.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

No evidence

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

No evidence

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

No evidence

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15

Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	20

What evidence do you have regarding chemical/radiological OEW?

Documents refer to this area as a chemical demonstration area. Chemical Identification Sets are suspected to have been used.

Total Hazard Severity value: 26

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	2

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. Components, if any remaining on or near this site would likely have been intentionally buried. Again, there is no evidence of such material, it is only speculation.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track, within this area, has been developed into a residential sub division.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

The site has recently been developed into a residential sub division.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the area adjacent to the site has, and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

A January 1946 document refers to the relocation of a set of bleachers. The significance of these bleachers is, they were to be placed at the chemical demonstration area. Their position would be on a 90° bearing, 410 feet from the north end of the jeep track range and placed so the occupants face to the south. In addition, a switch control house would be moved to the Orlando demonstration range and placed at a point 20 feet west of the of the bleachers. All wires for static detonations or demolitions were to be brought into this building. Chemical warfare offensive demonstration equipment, including targets, loud speakers and switch boxes, was to be moved to the area directly east of the north end of the jeep track. All control wires to be terminated in the building.

No information is available to determine the training activity that took place on the range. An area just south of the bleachers was selected as the center of the range. An arbitrary boundary was developed consisting of 5 acres and represented as a circle with a radius of 264 feet. Aerial photography, dated May 1948, shows there had been activity in this area. However, the type is unidentifiable.

Documents refer to this area as a chemical demonstration area. Chemical Identification (detonation) Sets are suspected to have been used. Components of these kits included blasting caps.

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Air-to-Ground Rocket Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include Small Arms; 5-inch Aircraft Rockets; 100-lb Cluster Bomb Practice M48; 100-lb Practice Bombs; 60-lb British Training Bombs; in addition, incendiary bombs.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include 100-lb Skymarker Bombs T-8; 500-lb Incendiary Bombs, M76.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
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Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include Small Arms; 5-inch Aircraft Rockets; 100-lb Cluster Bomb Practice M48; 100-lb Practice Bombs; 60-lb British Training Bombs; in addition, incendiary bombs.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	2

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. Directly west, approximately 1-mile is a subdivision. 2002 aerial photography shows that half of the jeep track, to the northwest of the target has also been developed. This area is approximately 1.1 mile away.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 25

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

The range is characterized as an Air-to-Ground Rocket Range based on information described in historical documents. The designated target is described as a simulated enemy airstrip, which has been identified as a strip of ground running approximately 2,000 feet on a bearing of 43°. A site near the northern portion of the strip has also been designated as a bombing target and listed with the Demonstration Range Complex. Acreage and munitions included in that bombing complex is excluded from the total acreage of this so as not to duplicate the acreage.

As described in historical documents the site was used as a strafing target with small arms and aircraft rockets. Documented demonstrations included the use of small arms ammunition and aircraft rockets to include 5-inch High Velocity Aircraft Rockets (HVAR). Reports describe demonstrations using 5-inch HVAR and also 5-inch HVAR with Inert Heads. It is not known if High Explosive filled Rockets were used, but assumptions is that they were, based on a document dated 8 July 1944. The document discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

The exact location of all targets is unknown. It is suspected that additional targets were fired upon with small arms and aircraft rockets.

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include Small Arms; 5-inch Aircraft Rockets; 100-lb Cluster Bomb Practice M48; 100-lb Practice Bombs; 60-lb British Training Bombs; in addition, incendiary bombs.

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Range Complex No. 1
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

A sub division with an undetermined number of private residences is located directly west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Undetermined number of private residences

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
None Anticipated	0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

Total Hazard Probability value: 30

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

The Small Arms Complex consists of six small arms ranges located along the western boundary of the Pinecastle range. Ranges include a Turret Gunnery Range, a CQ Range, two rifle ranges, a pistol range, and what appears to be a multi purpose small arms range. Each range includes an administrative area, ammunition issue point, ready lines, firing lines, target area, target butts, and a danger/safety fan. All but the safety fan was based on historical maps and aerial photos.

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Turret Gunnery Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use from small arms.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

As of the ASR, dated 1997, residential property was greater than 1250 feet. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area,	5

not the installation boundary (Largest single value)

Narrative

Undetermined number of private residences. Sub-divisions continue to encroach on the site.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Undetermined number of private residences. Sub-divisions continue to encroach on the site.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

Total Hazard Probability value: 30

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: CQ-3 Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5

Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value) 0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

As of the ASR, dated 1997, residential property was greater than 1250 feet. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences. Sub-divisions continue to encroach on the site.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Undetermined number of private residences. Sub-divisions continue to encroach on the site.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
None Anticipated	0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Rifle Range No. 1
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
 -Conventional Ordnance and Ammunition (Largest single value)	 0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use from small arms.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

A sub division with an undetermined number of private residences is located directly west of the range

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

private residences

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
None Anticipated	0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 0

Describe the site dynamics

Most of the site has been zoned for either institutional use or to be reserved for conservation and wetland areas.

Total Hazard Probability value: 22

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Rifle Range No. 2
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

A sub division with an undetermined number of private residences is located directly west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

A sub division with an undetermined number of private residences is located directly west of the range

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected 5
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 0

Describe the site dynamics

Most of the site has been zoned for either institutional use or to be reserved for conservation and wetland areas.

Total Hazard Probability value: 22

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Small Arms Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

A sub division with an undetermined number of private residences is located directly west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

A sub division with an undetermined number of private residences is located directly west of the range.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
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None Anticipated

0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) **0**

Describe the site dynamics

Most of the site has been zoned for either institutional use or to be reserved for conservation and wetland areas.

Total Hazard Probability value: 22

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Pistol Range
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 5

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	0

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK;	10

Phosgene, CG) Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 0

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

A sub division with an undetermined number of private residences is located directly west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

A sub division with an undetermined number of private residences is located directly west of the range.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

The site is inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
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None Anticipated

0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) **0**

Describe the site dynamics

Most of the site has been zoned for either institutional use or to be reserved for conservation and wetland areas.

Total Hazard Probability value: 22

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Range Complex No.2
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 1

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. Historical documents identify bombing and strafing at various targets scattered throughout the complex, Ammunition identified includes: Small arms .50 caliber; Bombs-high explosive, frag (clusters), incendiary (clusters), fire bombs, and practice; Aircraft Rockets-11.75' rocket (inert head), and 5" HVAR.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. Historical documents identify bombing and strafing at various targets scattered throughout the complex, Ammunition identified includes incendiary bomb (clusters) and fire bombs.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
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Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

No evidence

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	2

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

Subdivision located along western portion of complex

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Large subdivision, with an undetermined number of homes, but well over 26

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Residential area

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	3
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	2
Security Guard, but no barrier	0
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	5
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has and is still being developed.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
None Anticipated	0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

The Demonstration Range consisted of a series of at least ten targets scattered throughout the Pinecastle Range. Demonstrations were conducted for students of the Army Air Force School and special groups. These demonstrations covered all phases of chemical attack and defense as well as demonstration of the various types of ordnance equipment used by, and in support of, the Air Force. Demonstrations were arranged to give the students a practical visual illustration of some of the equipment and tactics discussed in classroom lectures. The students, from a protected ground shelter, could observe the tactics employed by the various types of aircraft and witness the type and amount of damage caused by each weapon. These regular monthly demonstrations were timed to coincide with the final week of the senior Officers Course. The majority of records indicate that mostly practice and inert filled munitions were used. However, a letter dated July 1944, is requesting construction of a bomb-proof shelter stating, the current shelter provides inadequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. A letter dated January 1946 identifies the relocation of a number of targets specifying the approximate new location. However, except for the tanks that were moved the previous locations were not addressed. Four possible target locations (not identified in documents) were identified from ground scaring and craters observed on historical aerial photography.

The complex consists of ten individual bombing targets depicted with a 3000-foot radius danger area.

No documented incidents of ammunition were found during research. Historical documents identify bombing and strafing at various targets scattered throughout the complex, Ammunition identified includes: Small arms .50 caliber; Bombs-high explosive, frag (clusters), incendiary (clusters), fire bombs, practice; Aircraft Rockets-11.75' rocket (inert head), and 5" HVAR.

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Ship Target
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15

Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 6

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	2

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is within 1500 feet of the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	3
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	2
Security Guard, but no barrier	0
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	5
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Convoy Target
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15

Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 6

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is within 1500 feet of the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	3
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has and is still being developed.

Total Hazard Probability value: 27

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
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* Apply Hazard Probability Level to Table 3.		

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Table 3					
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CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Tanks (new)
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 1

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges, 5-inch HVARs, 11.75-inch Rocket with INERT head being dropped or fired on these target.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402)	15

697-2555)
 Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG) 10
 Riot Control Agents (vomiting, tear) 5
 Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value) 0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 10

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges, 5-inch HVARs, 11.75-inch Rocket with INERT head being dropped or fired on these target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is approximately 3000 feet from the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Tanks (old)
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 1

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges, 5-inch HVARs, 11.75-inch Rocket with INERT head being dropped or fired on these target.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402)	15

697-2555)
 Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG) 10
 Riot Control Agents (vomiting, tear) 5
 Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value) 0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 10

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges, 5-inch HVARs, 11.75-inch Rocket with INERT head being dropped or fired on these target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is approximately 3000 feet from the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Circular Target
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 1

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of extensive use. Numerous craters are visible on these photos. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. Historical documents identify this target as a bulls-eye target, for CWS use. Several documents indicate Incendiary type munitions were commonly used on pinecastle Range. No toxic chemical munitions are suspected on this target.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. Historical documents identify this target as a bulls-eye target, for CWS use. Several documents indicate Incendiary type munitions were commonly used on pinecastle Range. No toxic chemical munitions are suspected on this target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	4

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is approximately 2,500 feet from the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Target No.1
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of extensive use. Numerous craters are visible on these photos. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. Several documents indicate Incendiary type munitions were commonly used on pinecastle Range. No toxic chemical munitions are suspected on this target.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of extensive use. Numerous craters are visible on these photos. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	3

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is approximately 4,300 feet from the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
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16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility
(Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 26

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Target No.2
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 3

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. This range is suspected to be the former location of the truck convoy. Documented use on the convoy indicates the use of 100-lb practice bombs with spotting charges.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402)	15

697-2555)
 Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG) 10
 Riot Control Agents (vomiting, tear) 5
 Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value) 0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 6

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. This range is suspected to be the former location of the truck convoy. Documented use on the convoy indicates the use of 100-lb practice bombs with spotting charges.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	3

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is approximately 5,100 feet from the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected	5
None Anticipated	0
Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value)	5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 26

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Target No.3
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of extensive use. Numerous craters are visible on these photos. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. In addition, numerous documents refer to the use of Incendiary munitions. This site has a significant potential for such use.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	2

What are the nearest inhabited structures/buildings?

Sub divisions are located approximately 1.75 miles to the west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	3
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that to the west of the site has, and is still being developed.

Total Hazard Probability value: 25

TABLE 2		
HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Target No.4
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 4

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of extensive use. Numerous craters are visible on these photos. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. In addition, numerous documents refer to the use of Incendiary munitions. This site has a significant potential for such use.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. A document dated 8 July 1944 discusses the need for a new bomb-proof observation shelter. The then present log structure was considered unsafe and did not provide adequate protection for observing personnel against high explosive, fragmentation bombs, and strafing. Not specifically identifying targets using high explosive filled munitions, but suggesting that sites did exist. This site has a significant potential for such use.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	1

What are the nearest inhabited structures/buildings?

Sub divisions are located just beyond 2 miles, to the west of the range.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 0

Narrative

Sub divisions are located just beyond 2 miles, to the west of the range.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	0

Describe the types of buildings

Sub divisions are located just beyond 2 miles, to the west of the range.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
 None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that to the west of the site has, and is still being developed.

Total Hazard Probability value: 14

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Warehouse Target
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	6

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	0

What evidence do you have regarding pyrotechnics?

None

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15

Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 6

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	2

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. However, historical aerial photography shows evidence of use. In addition, historical documents identify 100-lb practice bombs with spotting charges being dropped on this target.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	5

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. The sub division is within 1500 feet of the center of this target.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value) 5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	5

Describe the site accessibility

As of the ASR, dated 1997, residential property was greater than 1250 feet. However, 2002 aerial photography shows that the northern half of the jeep track has been developed and appears now to be part of a sub-division. This subdivision is within the 3000 foot danger area.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has and is still being developed.

Total Hazard Probability value: 27

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASSIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative

RISK ASSESSMENT PROCEDURES FOR
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name: PINECASTLE JEEP RNG Raters Name: CEMVS-ED-P
Range Name: Simulated Enemy Airstrip
Property Location: PINECASTLE, FL Phone: 314-331-8036
DERP Project #: I04FL040501 Organization: CEMVS-ED-P
Property Type: FUDS Date Completed: May 01, 2003
Score: 2

RISK ASSESSMENT

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL STD 882C and AR 385 10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)

A. -Conventional Ordnance and Ammunition

Explosive Projectiles (20 millimeter and larger)	10
Other explosive item not previously stated	10
Grenades, hand or rifle, explosive	10
Landmine, explosive	10
Bombs, explosive	10
Rockets, guided missile, explosive	10
Detonators, blasting caps, fuzes, boosters, bursters	6
Bombs, practice (w/spotting charges)	6
Practice ordnance (w/spotting charges)	4
Small arms (ball only or blank), complete round (.50 cal or less)	1
Small arms (ball only or blank), expended (.50 cal or less)	0
Practice ordnance (w/o spotting charges)	0
-Conventional Ordnance and Ammunition (Largest single value)	10

What evidence do you have regarding conventional unexploded ordnance?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include Small Arms; 5-inch Aircraft Rockets; 100-lb Cluster Bomb Practice M48; 100-lb Practice Bombs; 60-lb British Training Bombs; in addition, incendiary bombs.

B. Pyrotechnics

Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10
Containers containing WP or other pyrophoric material or flame or incendiary material	6
Flares, signals, simulators, screening/burning smokes (other than WP)	4
Pyrotechnics (Largest single value)	10

What evidence do you have regarding pyrotechnics?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include 100-lb Skymarker Bombs T-8; 500-lb Incendiary Bombs, M76.

C. Bulk High Explosives

Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Secondary Explosives (Demolition Charges, PETN, Compositions A, B, C, Teteryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3
Bulk High Explosives (Largest single value)	0

What evidence do you have regarding bulk explosives?

None

D. Bulk Propellants

Solid or Liquid Propellants	6
Bulk Propellants (Largest single value)	0

What evidence do you have regarding bulk propellants?

None

E. Chemical Warfare Material (CWM) and Radiological Weapons

Toxic Chemical Agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25
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Chemical Agent Identification Sets	20
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10
Riot Control Agents (vomiting, tear)	5
Chemical Warfare Material (CWM) and Radiological Weapons (Largest single value)	0

What evidence do you have regarding chemical/radiological OEW?

None

Total Hazard Severity value: 20

Hazard Severity

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 OR GREATER
CRITICAL	II	10 TO 20
MARGINAL	III	5 TO 9
NEGLIGIBLE	IV	1 TO 4
*** NONE	V	0

* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM.

Proceed to Part III and use a RAC score of 5 to determine your appropriate action.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD

(Check all that apply)

A. The Location of OEW Hazards

On the surface	5
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
The Location of OEW Hazards (Largest single value)	5

What evidence do you have regarding location of OE?

No documented incidents of ammunition were found during research. Aerial photography shows evidence of use. In addition, historical documents describe the type of munitions used on this target. These include Small Arms; 5-inch Aircraft Rockets; 100-lb Cluster Bomb Practice M48; 100-lb Practice Bombs; 60-lb British Training Bombs; in addition, incendiary bombs.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard

Less than 1,250 feet	5
1,250 feet to 0.5 mile	4
0.5 mile to 1.0 mile	3
1.0 mile to 2.0 Miles	2
Over 2 miles	1
Distance to nearest inhabited location/structure likely to be at risk from OE hazard (Largest single value)	2

What are the nearest inhabited structures/buildings?

In 1997, the date in which the Draft ASR was completed, the site was inside a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. Directly west, approximately 1-mile is a subdiviison. 2002 aerial photography shows that half of the jeep track, to the northwest of the target has also been developed. This area is approximately 1.1 mile away.

C. Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2

1 to 5	1
0	0
Number of buildings within a 2 mile radius measured from the OE hazard area, not the installation boundary (Largest single value)	5

Narrative

Undetermined number of private residences.

D. Types of Buildings

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5
Industrial, warehouse, etc.	4
Agricultural, forestry, etc.	3
Detention, correctional	2
No buildings	0
Types of Buildings (Largest single value)	5

Describe the types of buildings

Private residences.

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance

No barrier nor security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site).	4
Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security Guard, but no barrier	2
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the ar	0
Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance (Largest single value)	3

Describe the site accessibility

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain.

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams,

increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility

Expected **5**
None Anticipated 0

Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility (Largest single value) 5

Describe the site dynamics

In 1997, the date in which the Draft ASR was completed, the majority of the site was within a fenced off cattle grazing area and separated from inhabited areas by swampy-type terrain. However, 1999 and 2002 aerial photography shows that the northwest portion of the complex has, and is still being developed.

Total Hazard Probability value: 25

TABLE 2 HAZARD PROBABILITY		
Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 TO 20
REMOTE	D	8 to 14
IMPROBABLE	E	Less than 8
* Apply Hazard Probability Level to Table 3.		

Part III - Risk Assessment. The risk assessment value for this site is determined using the following table.					
Table 3					
PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASSIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	2	3	4	4
MARGINABLE III	2	3	4	4	4
NEGLIGIBLE IV	3	4	4	4	4
NONE (V) = RAC 5					

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMR Projects and the process to be followed for project execution.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

No Narrative