THE HAVOC – HISTORY IS A SYMPHONY OF DIFFERENT MELODIES . . .

FORGOTTEN HISTORY

SHE WAS CALLED ANNIE: THE HISTORY OF THE TRIPLE THREAT WEAPON

SATURDAY, 12 SEPTEMBER 2020 @ 1800-1900 CDT
VIA TWITCH.TV @HISTORYKID

PRESENTED BY: THE KID

THE ANNIE FAMILY TREE (ABRIDGED)

BL-8 Howitzer 1916 Great Britain

M1 Gun (155) 1918 United States

M114 Howitzer 1942 United States

XM123 Howitzer 1964 United States

M115 Howitzer 1919 United States

M123A1 Howitzer 1965 United States

M114A1 Howitzer 1969 United States

BL-7.2 Howitzer 1940 Great Britain

M110 Howitzer 1963 United States

M1 Gun 1939 United States

M198 Howitzer 1979 United States

T145 HARP Gun 1963 United States

71N HARP Gun 1966 United States

M1918 Howitzer 1917 United States

M1 Howitzer 1941 United States

THE BLACK DRAGON

T1 Gun 1946 United States

TR1914 Mortar 1914 France

M1914 Mortar 1914 Russia

T145 Gun 1953 United States

BABY ANNIE

T145E1 Gun 1962 United States

BABY ANNIE

M65 Heavy Gun 1952 United States

ATOMIC ANNIE

350 mm Gun 1953 United States

SUPER ANNIE

THE ANNIE FAMILY

Multi-Chamber Gun 1857 United States

LHMC Gun 1880 United States

HMCC Gun 1892 United States

V-3 1944 Germany

M28 Recoilless Gun 1956 United States

M29 Recoilless Gun 1956 United States

28 cm K 5 1938 Germany

28 cm K 5Vz 1944 Germany

31 cm K 5 Glatt 1944 Germany

ANZIO ANNIE

28 cm SK L/40 1916 Germany

38 cm SK L/45 1912 Germany

Paris Gun 1918 Germany

42 cm SK L/12 1914 Germany

Beta-M-Gerät 1916 Germany

15 cm K 5M 1934 Germany

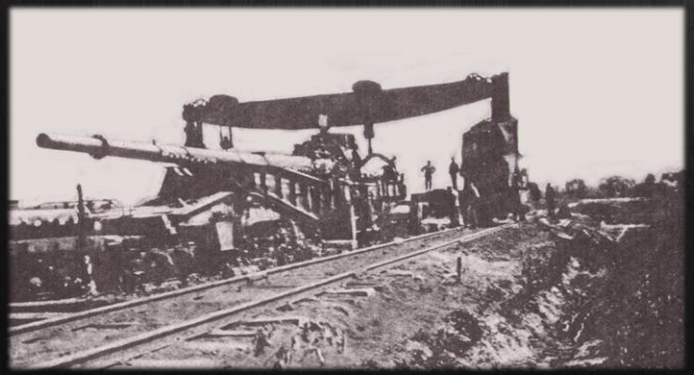
21 cm K 12 1935 Germany

TIMELINE, THE THIRTY-YEAR GENERATION

WORLD WAR II

- German revising on the Paris Gun and the *Lager Max* models results in the development of the Krupp K5.
- French TR1914 Howitzer is sold to the United States and Russia in World War I, modified to the M1 in 1941.
- Americans field the M1 *Black Dragon* in the Anzio theater to counter the German *Leopold* Gun.
- Manhattan Project successfully develops a workable atomic device at Alamogordo, New Mexico.
- The Americans successfully deploy two atomic devices against Japan in 1945, bringing the war to a close.

The advent of enhanced destruction provided by atomic devices, coupled with the ongoing research into long range artillery resulted in a great appeal to the understanding and research of long-range, high-caliber, and high-yield atomic artillery. Amidst *Operation Paperclip*, the United States procured the *Leopold gun,* not because the gun itself was superior, but because of the carriage. It was determined that the M1's carriage was it's weak point. Thus the T1 Atomic gun was born in 1946.



TIMELINE, THE THIRTY-YEAR GENERATION

PRELUDE

- The introduction of the *Fat Man* bomb allowed the Air Force to deploy an atomic bomb.
- Soviet expansion and rapid acceleration of atomic research resulted in what we now refer to as an arms race.
- *Operation Downfall* had originally introduced the notion of tactical nuclear devices, but no technology to do so.
- By 1947, U.S. military doctrine had adopted a tactical nuclear deployment for front-line use / tandem strikes.
- Increased tensions in Asia Minor, the Baltics, Germany, and Korea resulted in an immediate need for deterrence.

The post-war world unveiled a rapidly destabilizing situation between the free west and the communist east. This was only accelerated by the Soviet acquisition of an atomic bomb in 1949 after seven years of research. Rapid expansion of the Soviet bloc forced many in the west to query for a means to "contain the spread."

TIMELINE, THE THIRTY-YEAR GENERATION

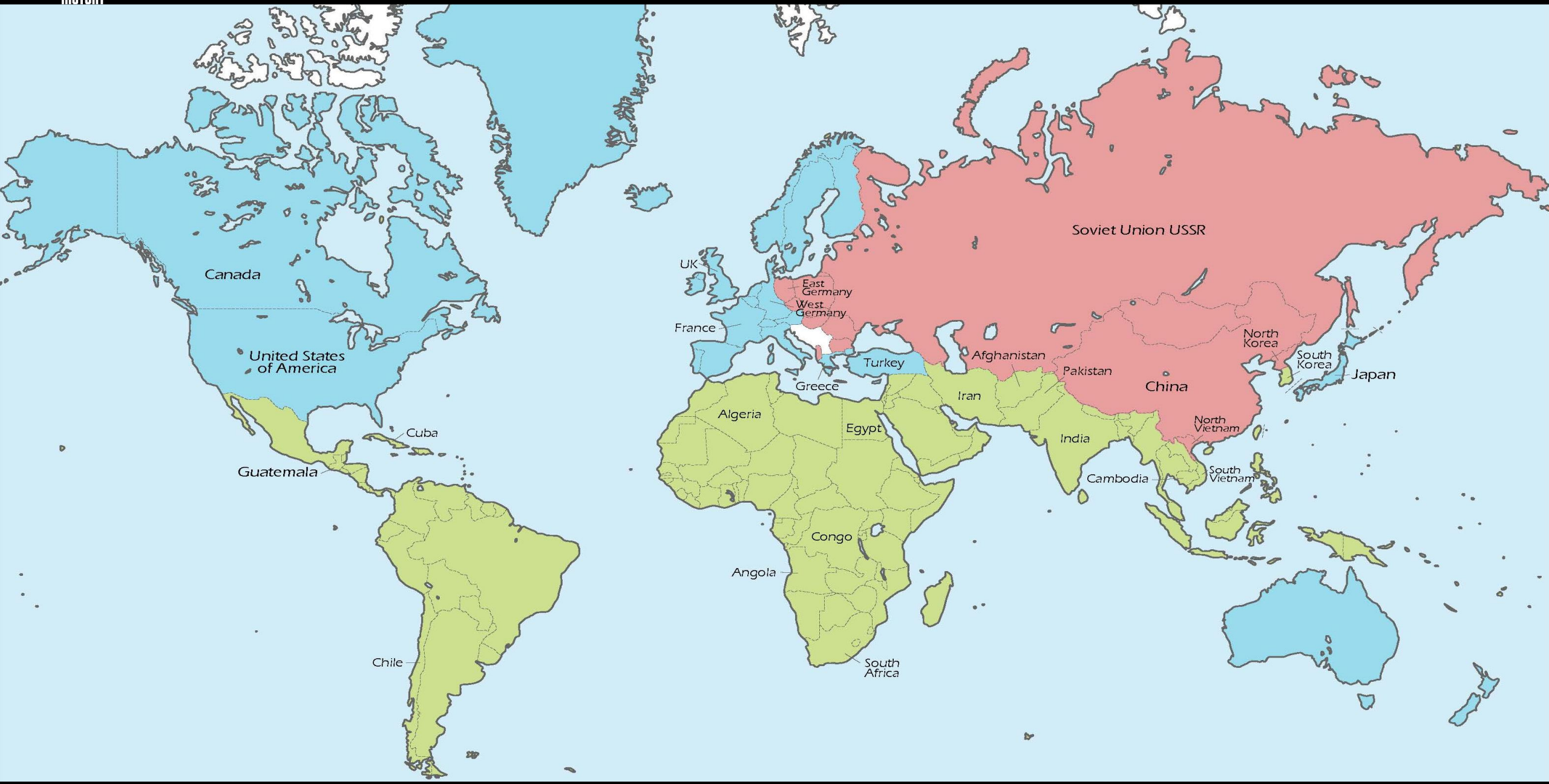
KOREAN WAR

- Communist aggression in the North spilled into South Korea in 1950 after the rise of Kim Il-Sung.
- Truman is forced to deploy U.S. military assets but is criticized for lax response to communist invasion.
- NSC-68 enacts a flexible*, all-options response to any external threats or risks of Soviet influence.

  * Not to be confused with **flexible response (1961, JFK policy)**
- Miniaturization of atomic devices progresses enough for smaller air-dropped bombs.
- Smaller devices also results in successful reduction of size to the point they can be tipped on artillery.

Annie passes her first atomic test in the Nevada desert in 1953. The gun has already completed its conventional weaponry testing routine by this time. Ongoing conflict in Korea and the potential for a stalemate results in the idea of using atomic devices to keep invasion at bay. A policy of "quarantine" is enforced after the Korean War ends in an armistice rather than a peace treaty. Focus then shifts to the contended Fulda Gap and East Germany.

THE COLD WAR SITUATION



THEATERS OF OPERATION

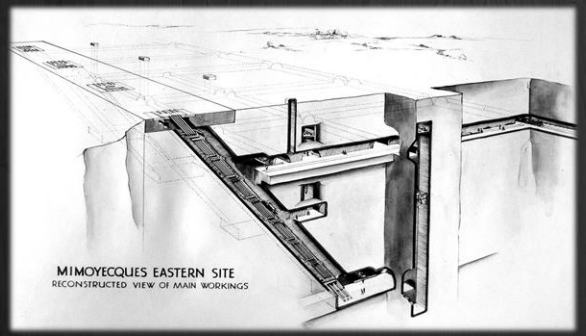
THE PRE-ATOMIC AGE

3 main weapon systems feed into this category.

The Paris Gun / Paris Kanonnen

- Shelled Paris during World War I at a range of ~75 miles.
- range of up to 81 miles with an elevation of up to 26 miles.
- smaller relatives that were often misidentified as Paris Gun.

Approximate Paris Gun shelling areas with line of fire also shown, overlaid Paris.



V-3 Cannon

- Used the principles of using explosive charges in multiple chambers to accelerate a projectile.
- used to bombard Luxembourg in 1944 at a range of 26 miles.
- Multi-battery sites were proposed but never completed.

M1 Black Dragon

- Deployed by the U.S. later in World War II to replace World War I artillery.
- Developed in coordination with the 203 mm M115 howitzer.
- Components would be used for the initial 240 mm prototype of Annie before plans adjusted the requirements to 280 mm.

KRUPP K5, *ANZIO ANNIE*

- *Wehrmacht* defines the need for rail guns by 1939.
- Design in what would become *Anzio Annie* begins in 1934.
- Testing in 1936, and production by 1940.
- Two of the guns heavily hindered American advancement in Italy – particularly the town of Anzio. (Leopold and Robert)
- Other guns were part of the Atlantic Wall.
- By late 1944, rocket-assisted projectiles were introduced as well.

ANZIO ANNIE DETAILS

- 25 guns built in total, 3 survivors.
- 283 mm caliber standard (shells weighed about 530 lbs).
- Could fire up to 40 miles away.
- Rate of fire of around 15 rounds per hour.

One of two Krupp K5's in Italy (*Leopold*) being cleaned by *Wehrmact* soldiers.

A surviving *Anzio Annie* on display at Aberdeen Proving Grounds. (*Leopold*)

HOWITZER, 240 MM, M1: *BLACK DRAGON*

- Designed to replace aging French World War I howitzers.
- Developed and deployed along with the 8-IN gun (M115, then M1).
- Used extensively in Europe against hard shell targets.
- Did not afford the same range as *Anzio Annie.*
- Saw limited deployment in the Pacific Theater.
- Self-propelled variants proposed but never completed.

A towed 240 mm Howitzer sits on display at Fort Sill, Oklahoma.

The M1 was the American counter to the K5 in Italy. Picture dated 30 JAN 1945.

BLACK DRAGON DETAILS

- About 315 total guns built before the end of the war.
- Design modified after the war, with tubes being used on Gun, T1 (*Annie Jr.*).
- Had a rate of fire 2x that of *Anzio Annie.*
- Range was less than half of the former.

THE REQUIREMENTS

The birth of the Air Force, and the transfer of B-29's to the new branch meant that the Army no longer had a means to deliver an atomic device.

- Revised military doctrine in 1949 included atomic battlefields. (FM 100-5)
- "The embracing of all available fire-support means." (FM 31-35)
- The concept of atomic battlefields required tactical atomic weapons.
- Project *Vista* was a joint effort to determine the best mode of delivery.
- "Atomic artillery" had been under development since 1944 – the T1.
- Full resources allocated in 1947 finally to the Army.
- Annie was fully acknowledged months before the Korean War in 1950.
- A follow-on atomic "howitzer" was announced in 1952.
- Thus the requirements for short-to-medium range tactical atomic weapons was defined.

Artist drawing of ground invasion atomic deployment. This was one of several scenarios anticipated.

The T1 240 mm prototype gun on T72 carriage, cannibalizing parts of *Anzio Annie*, the M1 Howitzer, and the M1 Gun.

ULTIMATELY, DETERRANCE COMES DOWN TO THE 3T WEAPON, AND ANNIE.

A MATTER OF SCALE

T145 A 175 mm Gun that was fielded to replace *Annie*. Much more mobile and could produce the same yield results.

T1 The 240 mm prototype *Annie* that was ultimately scrapped for the larger 280 mm production version.

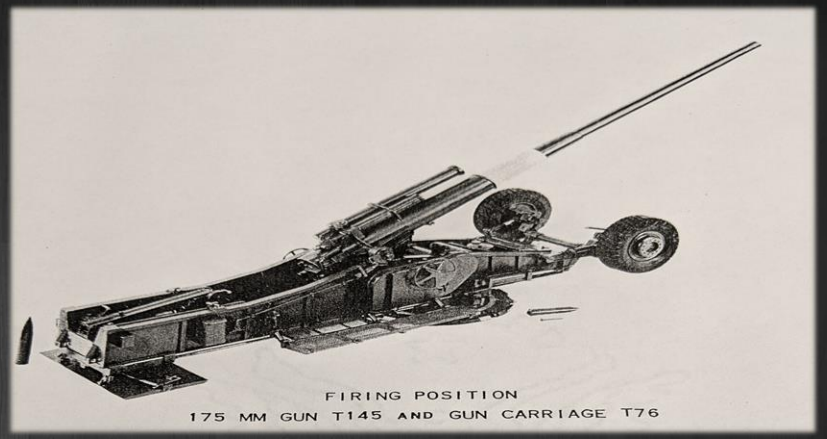
M65 The 280 mm atomic cannon that was produced and deployed in Germany and Okinawa. **THE** *Atomic Annie.*

LIMIT FOR PRODUCTION VS. DESIGN

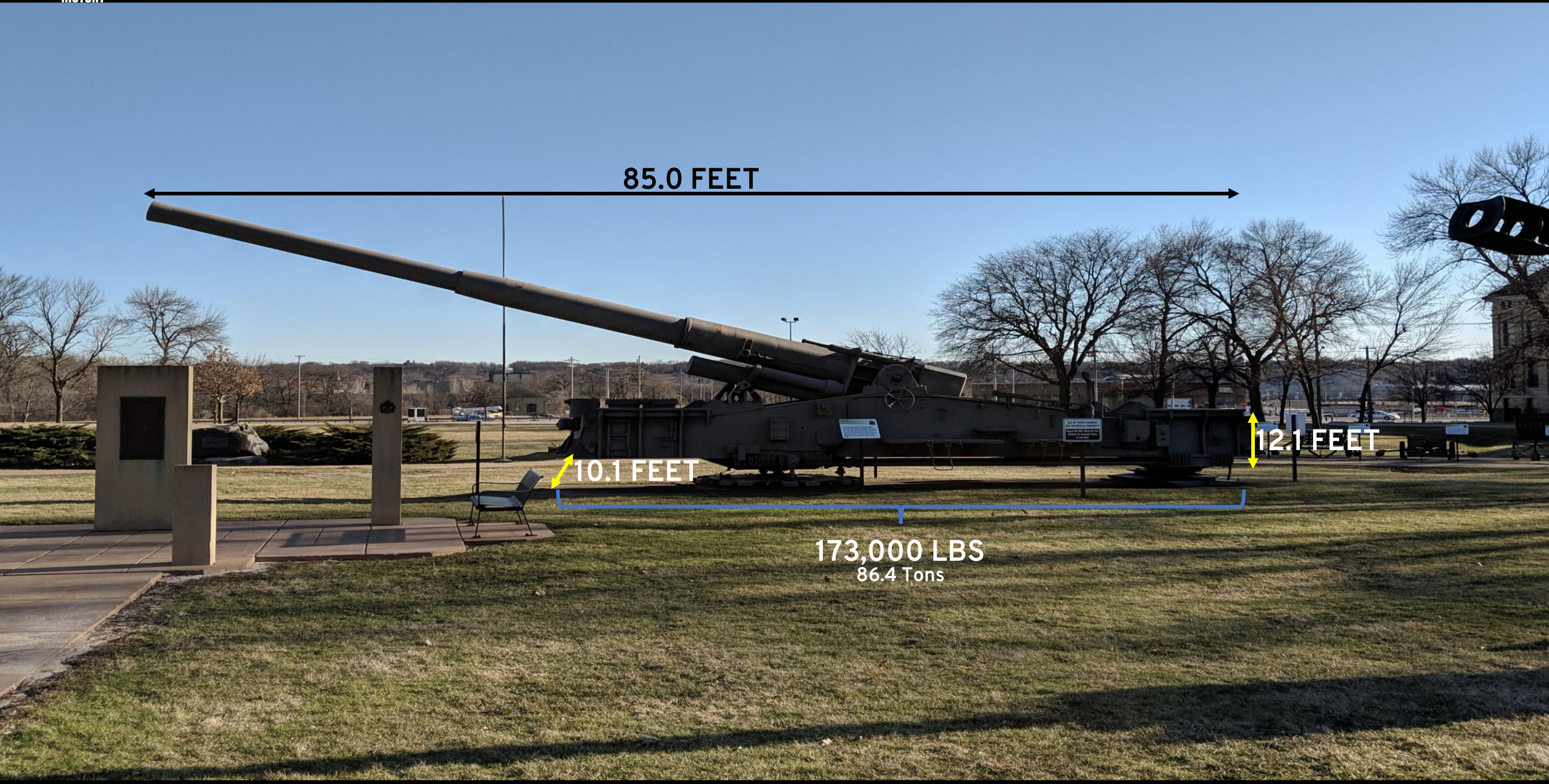
ORANGE = PRODUCTION VS. FEASIBILITY VS. DESIGN/CONCEPT
BLUE = CALIBER, SIZE, AND WEIGHT

F23 A proposed 350 mm variant of *Annie* which would be capable of larger yields and slightly greater distances.

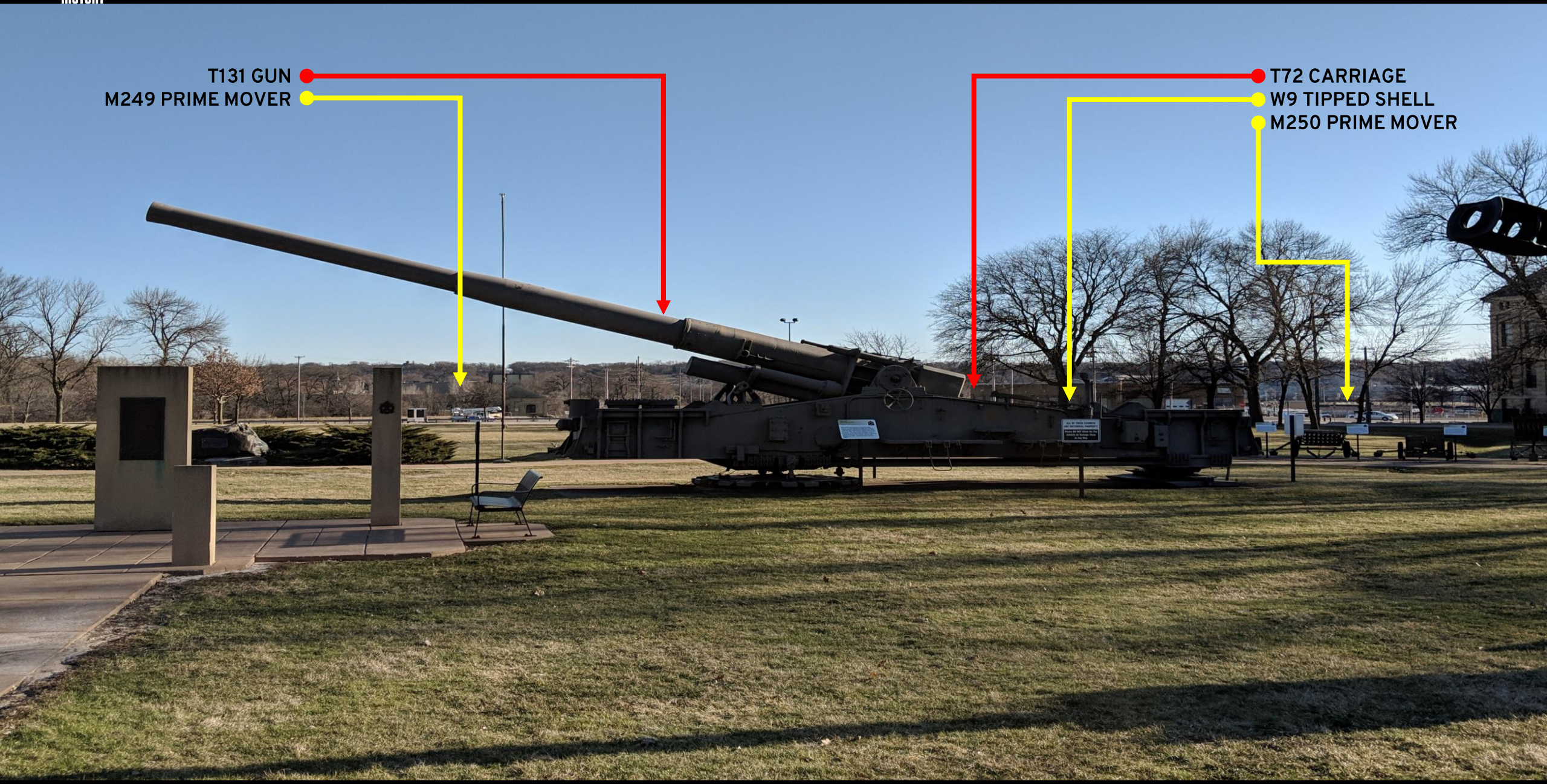
F232 A theorized 420 mm variant, which is only ever eluded to in writing. Likely more closely related to HARP.



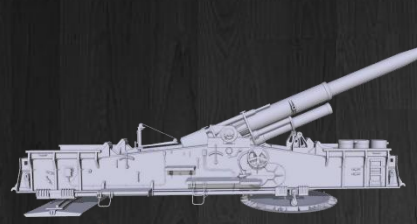
THE M65 280 MM HEAVY MOTORIZED GUN: ATOMIC ANNIE (STANDARD DIMENSIONS)



THE M65 280 MM HEAVY MOTORIZED GUN: ATOMIC ANNIE (BASIC ANATOMY)



THE M65 280 MM HEAVY MOTORIZED GUN: ATOMIC ANNIE (SPECIFICATIONS)



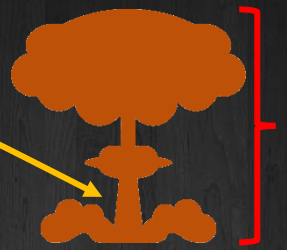
7 TO 20 MILES RANGE

5 TO 7 CREW

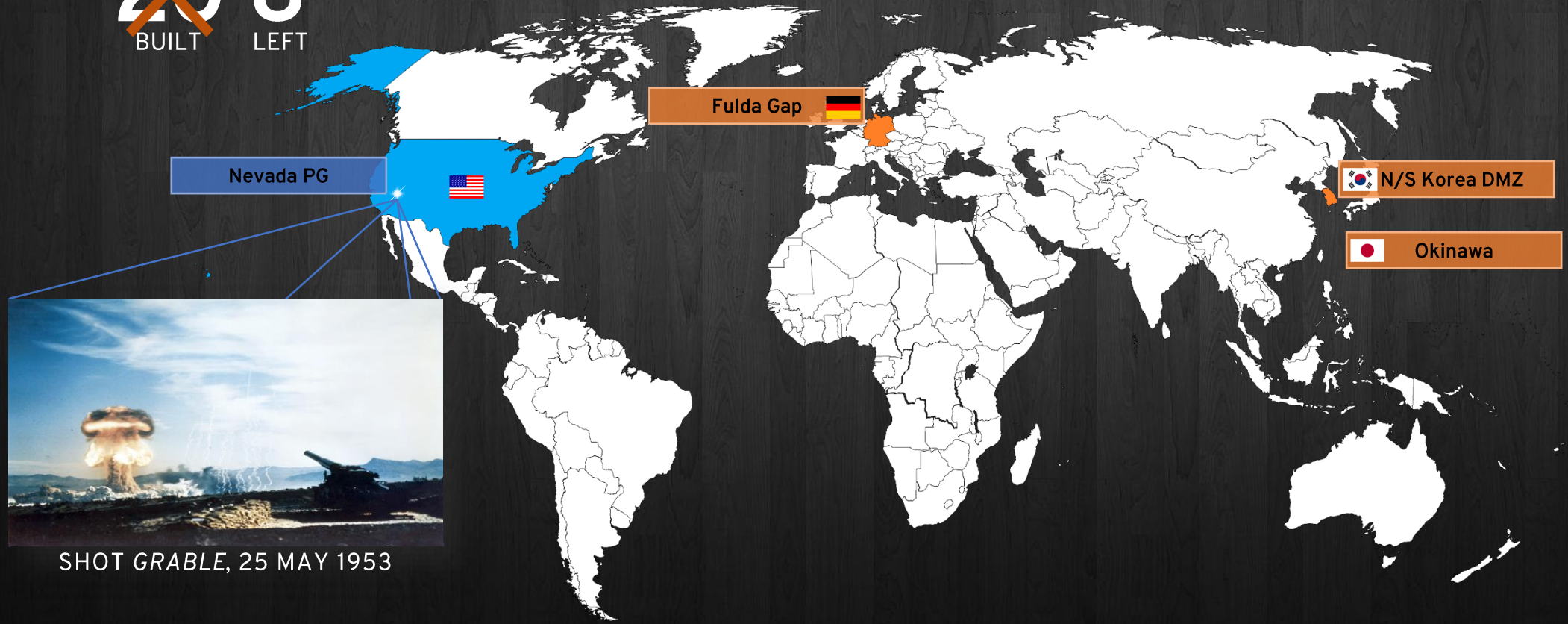
~~20~~ 8

BUILT LEFT

~56 MI BLAST
~1.2 MI FIREBALL
~ ½ MI CRATER
25K FT HEIGHTS



15-20 KILOTONS



SHOT *GRABLE*, 25 MAY 1953

EUROPEAN THEATER

THE TWO-PRONGED THREAT

- The primary threat in Europe was staged in Germany.
- Fulda Gap proved to be an especially delicate region.
- This region saw the highest concentration of tactical atomic weapon systems deployment.
- NATO forces were convinced this would be where an invasion would occur – if at all.

There were two routes for invasion in the Fulda Gap region, the north went through Alsfeld, the south was near Fulda.

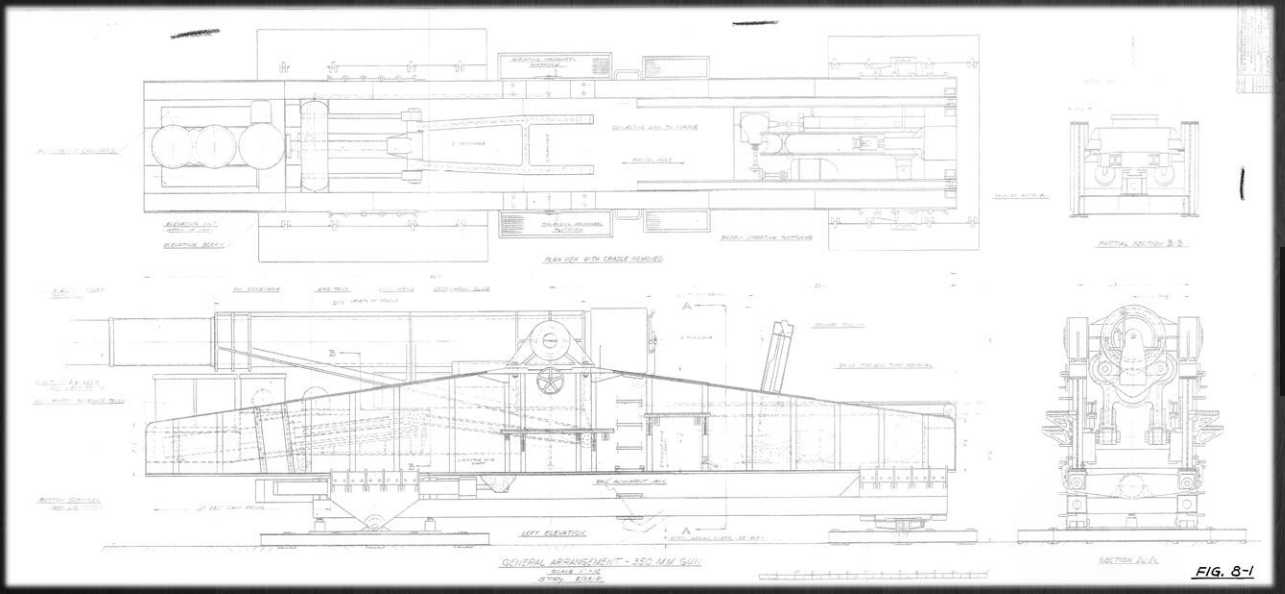
A terrain view of the relatively docile landscape near Fulda looking east towards the town.

- Three routes in a suspected Soviet Invasion:
  1. Via the North German Plain
  2. Via Fulda (two routes) (the gap)
  3. The Danube River Valley
- The exit of the gap allowed for a blitz to the Rhine via Frankfurt.
- Forces that successfully made it to the west of the gap would have a high chance of overrunning Frankfurt am Main.
- This was the west's financial hub and PoE for U.S. forces.

THE EMPHASIS WAS ON MOBILITY

ENGINEERING STUDY LEADING TO THE DESIGN & DEVELOPMENT OF A 350 MM MOBILE GUN
PREPARED UNDER CONTRACT DA-36-034-ORD-77
FOR THE PHILADELPHIA ORDNANCE DISTRICT, OFFICE CHIEF OF ORDNANCE
MARCH 31, 1951

The purpose of the project was to perform research and development to determine the basic engineering factors for the design and development of a mobile weapon of approximately 350mm caliber.



- As a result of weight, and emplacement time – plus an ever-growing need for mobility, both *Annie* (280), *Super Annie* (350), and the proposed *Annie Max* (420) were scrapped for the 3T design.
- *Annie Max* was revisited by Dr. Richard Bull subsequently for Project HARP in the late 1960s and early 1970s.
- The *Annie Max* design went on to be the 16-Inch HARP Gun.

SUPER ANNIE WAS DOOMED

AS WAS ANNIE MAX

- As for Annie, she was just a steppingstone in both directions.
- The gun carriage used for the Proof of Concept was the T72
- As with Annie, the T72 required two prime movers or a semi.
- Emplacement took a considerable amount of time as well.

The emplacement time should not exceed 4 hr. The rate of fire should be one round within every four minutes. [...] Recent discussions with Ordnance engineers have revealed that the design specification of 3,000 fps may not be required and that the important factor is a range of some 40,000 yds.

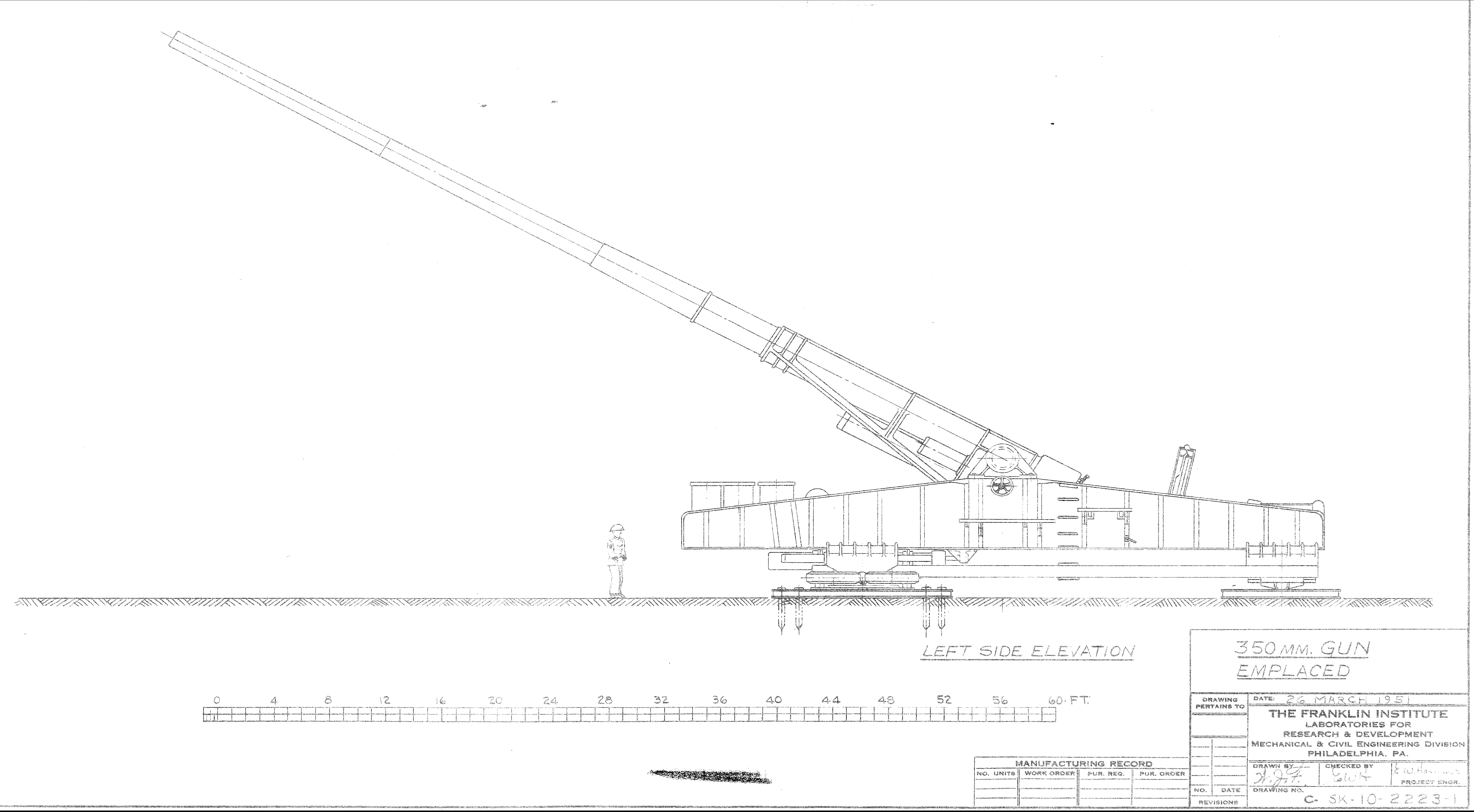
Table 15-1. Weight of Emplaced Weapon

Part		
Primary Recoiling Parts		
Gun Tube	85,500 lb	
Breech Ring and Block	14,500 lb	100,000 lb
Secondary Recoiling Parts		
Cradle	24,500 lb	
Primary Recoil and Recuperator Cylinder	11,000 lb	
Top Carriage	36,300 lb	
Equilibrating and Elevating System	15,200 lb	
Rammer	3,500 lb	90,500 lb
Bottom Carriage		30,600 lb
Total		221,100 lb

Table 15-2. Design Data for Proposed 350MM Gun

Type of Weapon		Double Recoil System
Emplaced Weight		221,100 lb
Rate of Fire		1 round/4 min
Time of Emplacement –	Bottom Carriage	30 min
	Top Carriage	1 hr 15 min
	Gun Tube & Breech	2 hr 15 min
	Total	4 hr
Muzzle Velocity		3,000 fps
Estimated Range		55,000 yds
Weight of Powder Charge (normal)		631 lb
Max. Rated Powder Pressure		42,000 psi
Density of Loading		0.58
Traverse		360°
Elevation, maximum		55°
minimum		30°
Gun – Type		2-Jacketed
Length		63.25 cal
Breech		Screw Type
Equilibration System		Hydraulic
Elevation System		Screw and Nut
Cross Leveling		None
Cradle		Concentric Recoil
Transport		3 loads
Maximum Single Transport Load		100,000 lb

350 MM GUN EMPLACED, LEFT SIDE ELEVATION



16-INCH HARP GUN (ANNIE MAX) AT YUMA PROVING GROUND

IT WAS NEVER JUST ONE...

THE 175 MM GUN, THE 8 IN. HOWITZER AND THE 240 MM HOWITZER ON A SINGLE CARRIAGE
PREPARED FOR WATERTOWN ARSENAL
BY THE FRANKLIN INSTITUE LABORATORIES FOR RESEARCH AND DEVELOPMENT
CONTRACT NO. DAI-36-034-505-ORD-(P)-4
JUNE 15, 1955

Modern field artillery practice demands highly mobile, easily maneuverable and readily operated weapons. Recently, the newest heavy artillery weapon, the 175mm Gun, with a range of 35,000 yards, was successfully proof tested in the first phases of engineering tests at [APG]. This new weapon can be emplaced and be firing in 10 minutes; it can be made ready for transport in 10 minutes; it has 360-degree traverse, power elevation and power ramming. In all respects it meets the present requirements for mobility and operation.

In line with these concepts, it is desired to make the 8" Howitzer M2 [...] and the 240mm Howitzer M1 [...] equally as mobile, maneuverable and easily operated as the 175mm Gun. To accomplish this, it is proposed to mount the 175mm Gun, the 8" Howitzer, and the 240mm Howitzer on a carriage similar to the 175mm Gun Carriage, T76E1. In this way the Field Artillery will have its most mobile weapon equally effective at long and short ranges plus the ability to fire heavy ammunition - a triple threat weapon.

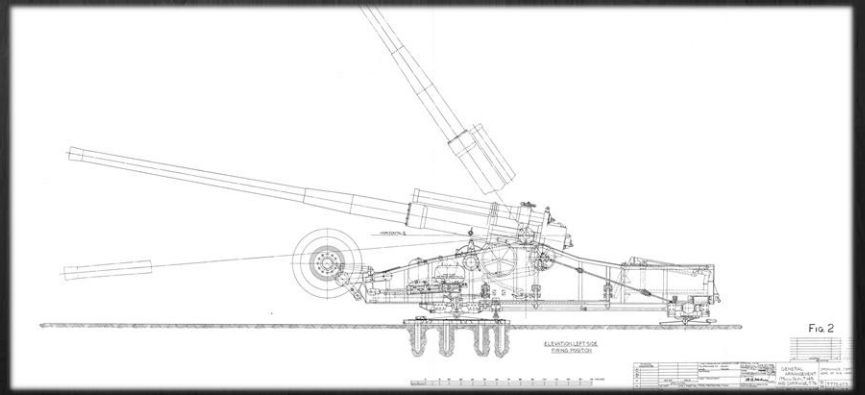
NOTES ON DEVELOPMENT TYPE MATERIEL 175MM GUN CARRIAGE, T76
PREPARED FOR WATERTOWN ARSENAL UNDER THE DIRECTION OF THE CHIEF OF ORDNANCE
BY THE FRANKLIN INSTITUE LABORATORIES FOR RESEARCH AND DEVELOPMENT
FEBRUARY 15, 1953

The 175mm Gun Carriage T76 and Gun T145 is a mobile field artillery weapon. It has been designed with two recoil motions--the cannon recoils inside the cradle, and the top carriage recoils on the bottom carriage--in order to have only a relatively small horizontal ground reaction. Such a small reaction eliminates any need of digging for emplacement, allowing the weapon to be placed in the firing position very rapidly (15 minutes) from the transport position.

WHAT MADE IT A "TRIPLE THREAT?"

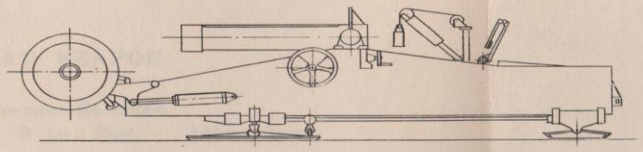
AS AMAZING AS ANNIE WAS, SHE WAS TOO BIG

- The T145 gun was the first to use the carriage specimen.
- The lethality of the gun came from its rapid deployment that was enjoyed by the design of the **T76 carriage**.
- The M2 Howitzer utilized the same gun tube as the **M1/115**.
- The 240mm Howitzer had been a testbed for the **280mm gun**.
- The **T76E1** was a modified and more mobile version of the **T72**.



THE TRIPLE THREAT WEAPON WAS NOT THE GUN, BUT THE CARRIAGE

"WAR IS NOT ALWAYS DECIDED BY THE WEAPONS, BUT THE EXECUTION, SKILL, AND RESILIENCE OF A FORCE."



TRIPLE PURPOSE CARRIAGE

CONFIDENTIAL

PRIMARY RECOIL MECHANISM (240 MM. HOW.)

CRADLE BORE ADAPTERS

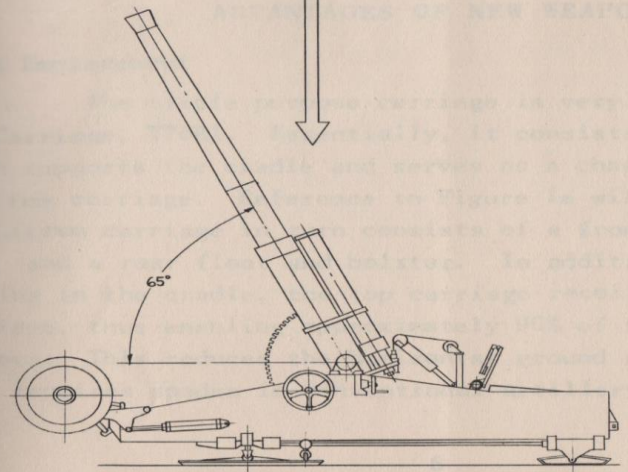
240MM. HOWITZER

PRIMARY RECOIL MECHANISM (8 IN. HOW.)

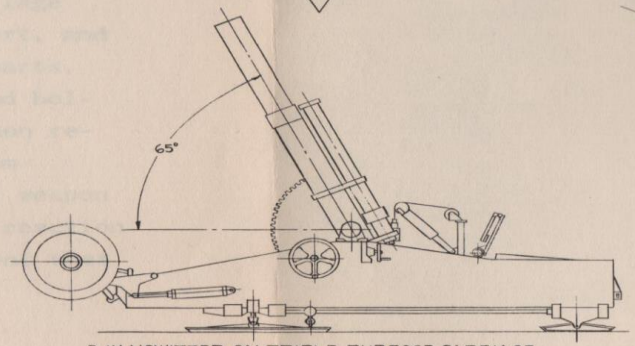
8 IN. HOWITZER

PRIMARY RECOIL MECHANISM (175MM. GUN)

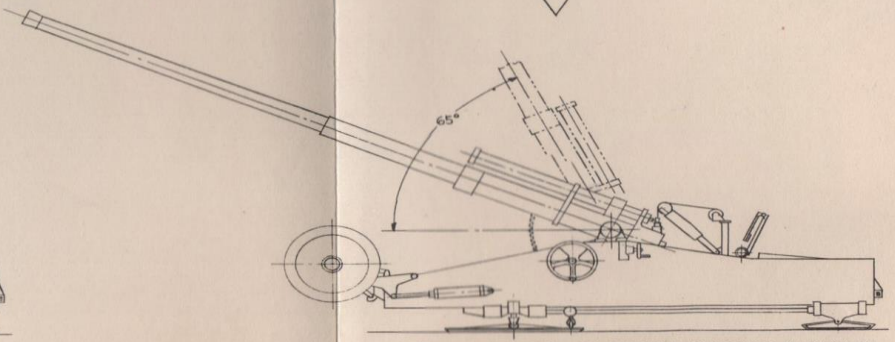
175 MM. GUN, T145



240MM. HOWITZER, ON TRIPLE PURPOSE CARRIAGE



8 IN. HOWITZER, ON TRIPLE PURPOSE CARRIAGE

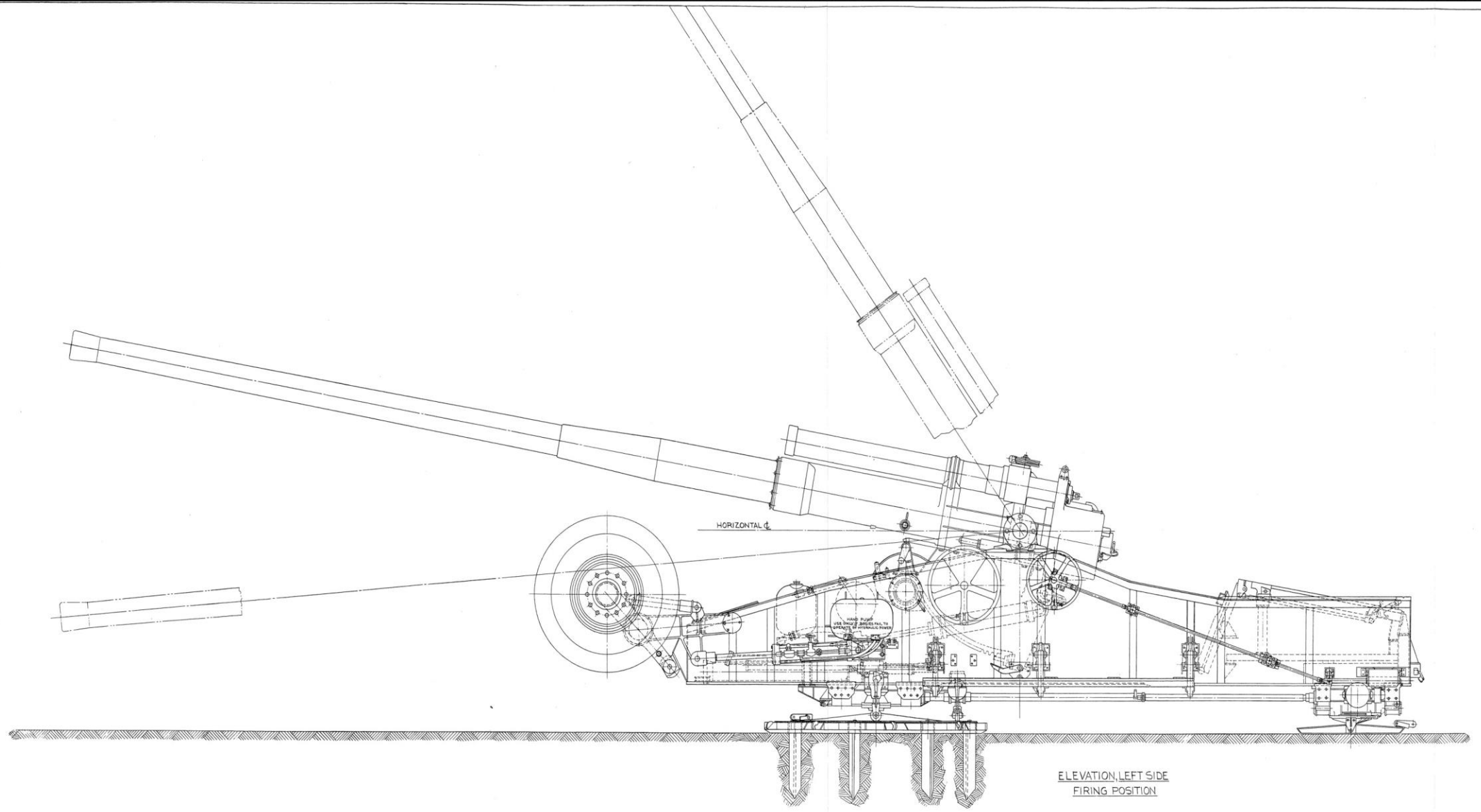


175MM. GUN, T145, ON TRIPLE PURPOSE CARRIAGE

CONFIDENTIAL

TRIPLE THREAT WEAPON

SCHEMATIC DRAWING OF PROCEDURE

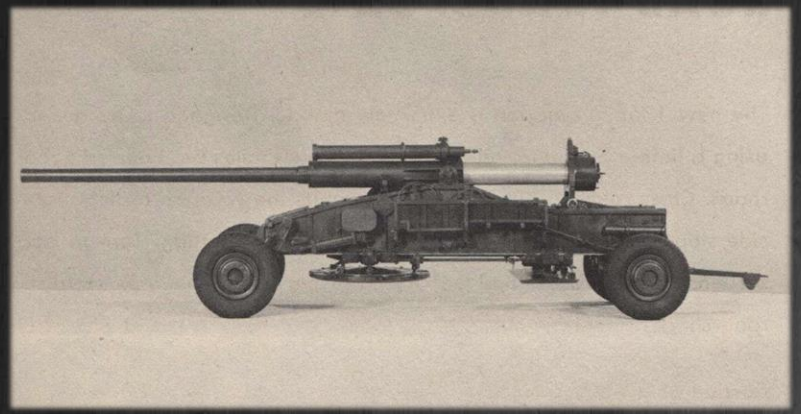


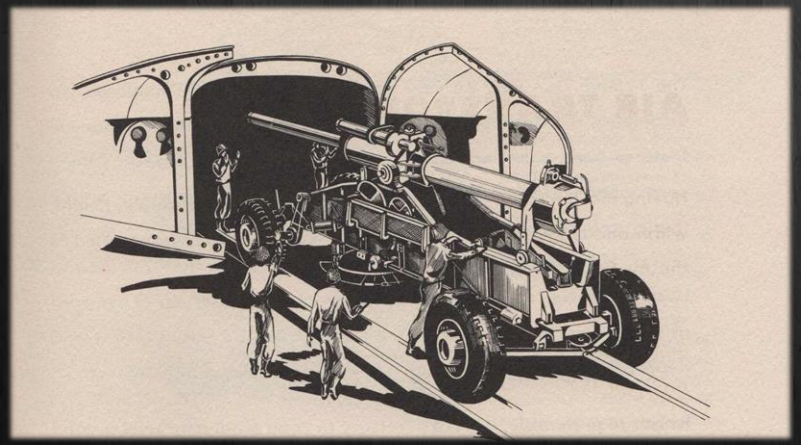
ELEVATION, LEFT SIDE
FIRING POSITION

FIG. 2

GUN, HEAVY, 175 MM, T145 – *BABY ANNIE*

THE NEED NEVER DIED, IT JUST EVOLVED





- Carried a smaller tactical atomic device (5-15 KT).
- Had up to a 60-rph firing rate juxtaposed to the 15-rph of *Annie.*
- Highly mobile, easy to conceal, and emplace.
- Considerably lighter weight at under 50,000 lbs.
- Remained in service well into the 1960s and replaced the larger *Annie* units in Germany.
- Was adopted into the HARP program in the 1960s as the 7-Inch gun.
- No actual photos in it's 3T configuration are known to exist.
- Parts of the gun can be found, but complete and assembled specimens are not known to exist.
- Images shown are all of models or drawings.

THE NEW-AGE ANNIE FAMILY (1971-1992)

THE TRIPLE THREAT IS REPLACED WITH A SINGLE SYSTEM

M198 155 MM HOWITZER

- Replaced the M114 howitzer in 1978.
- Requirements included an atomic mission. (72T)
- Remains operational today (atomic mission ended in 1992).
- Will be replaced by the M777.

M115 203 MM HOWITZER

- Remained viable as an atomic sheller until 1978.
- Took over atomic role from *Annie* with 3T.
- Size and weight made it more manageable.
- Atomic mission was replaced by the M198.

DOCILE *ANNIE*, HIGH-ALTITUDE RESEARCH & ICBM INTERCEPTION

- The children of the *Annie* family trace to the M777, a conventional howitzer and the XM35 SP howitzer.
- New emerging demands for High-Altitude Research hints at some kind of restoration of *Annie Max* or a similar system. (Caliber will depend on research requirement.)
- High-velocity projectile research has been considered for ICBM defenses in numerous nations (up to or exceeding the 3,000 FPS threshold).
- The *Annie* family is still alive and well today...

M777 cycling fire in Afghanistan during *Operation Enduring Freedom* in 2009. This system will eventually replace the Cold-War Era M198's in the 155 mm howitzer class.

The remnants of the HARP Barbados site (highlighted in red), the gun has been completely overtaken by nature today.

Artistic concept of the XM35 howitzer, these howitzers are currently under construction from design schematics originally from the 1990s. The project has since been revived and is now underway.

THE HAVOC – HISTORY IS A SYMPHONY OF DIFFERENT MELODIES . . .

FORGOTTEN HISTORY

SHE WAS CALLED ANNIE: THE HISTORY OF THE TRIPLE THREAT WEAPON

THANK YOU FOR JOINING US...
REMEMBER TO "LIKE" & "FOLLOW" FOR MORE UPDATES!

PRESENTED BY: THE KID