

---

# The Security Risk to Germany from US-German Deployments of Mobile Long-Range Missiles on German Soil

---

Presentation for  
October 7, 2024

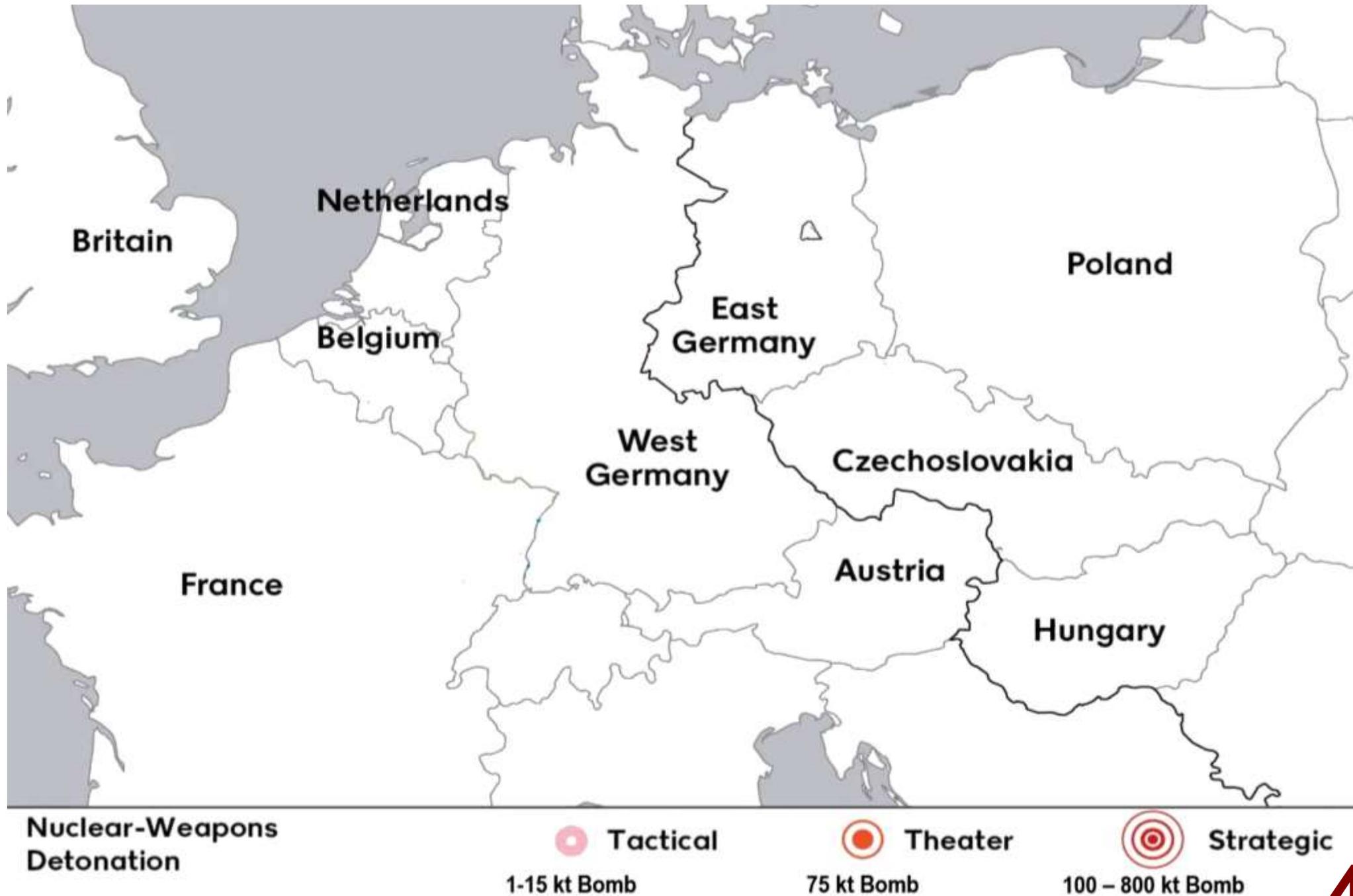
Theodore A. Postol  
Professor Emeritus of Science, Technology, and National Security Policy  
Massachusetts Institute of Technology  
postol@mit.edu; 617 543-7646

- The destructive effects of nuclear weapons are so large and extensive, that a nuclear war will effectively end modern civilization
- This is an existential fact of physical reality, not a policy “viewpoint.”
- As such, Fighting and winning a nuclear war is simply not technically possible

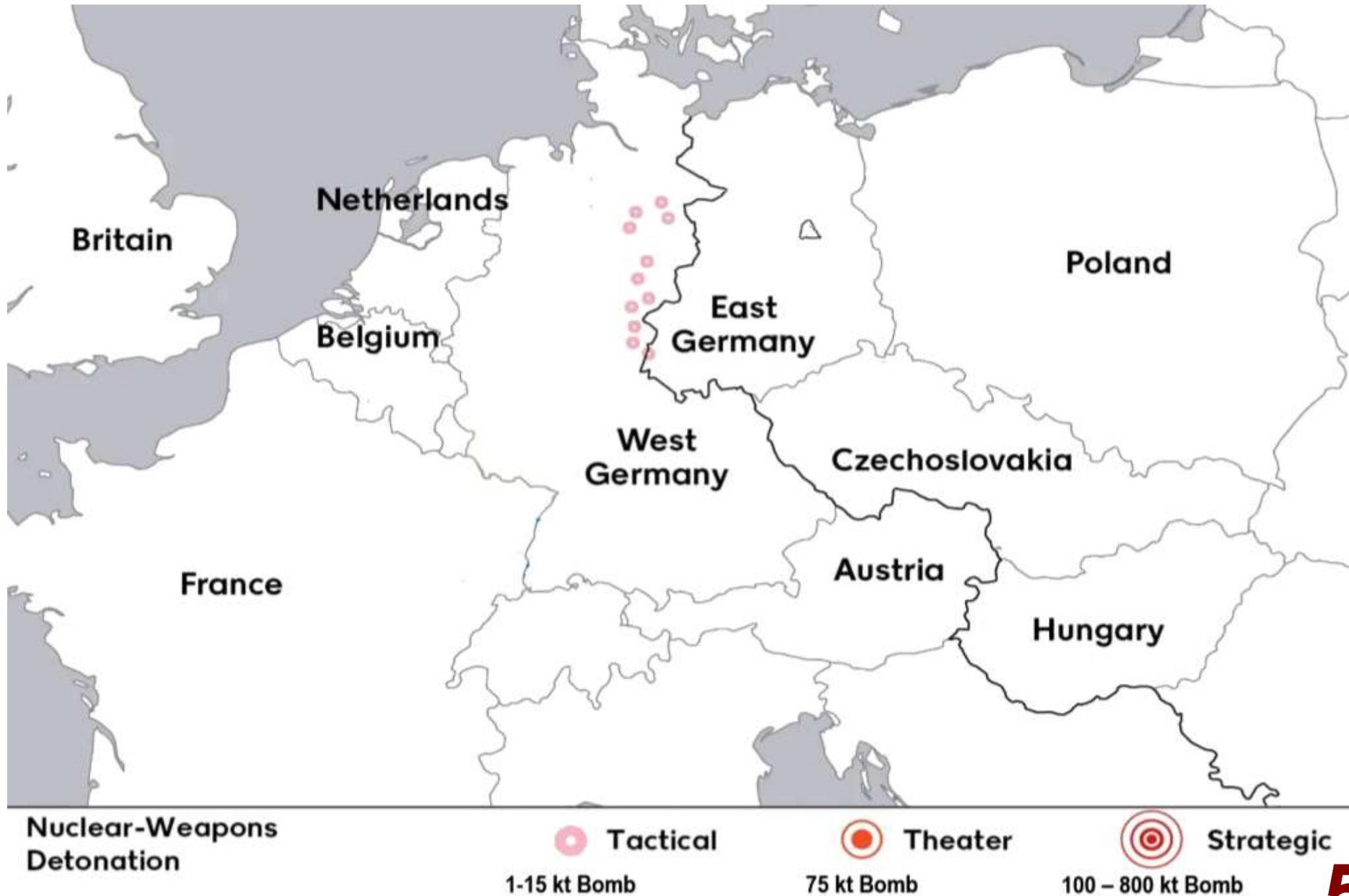
## In View of this Existential Physical Reality:

1. Deterring nuclear war can be the only sensible top policy objective for Germany and human civilization
  2. Actions that provoke potential nuclear-armed adversaries produce instability (rather than deterrence) and must be viewed as counterproductive
- Deterrence that does not provoke instabilities, requires wise and careful management of nuclear forces

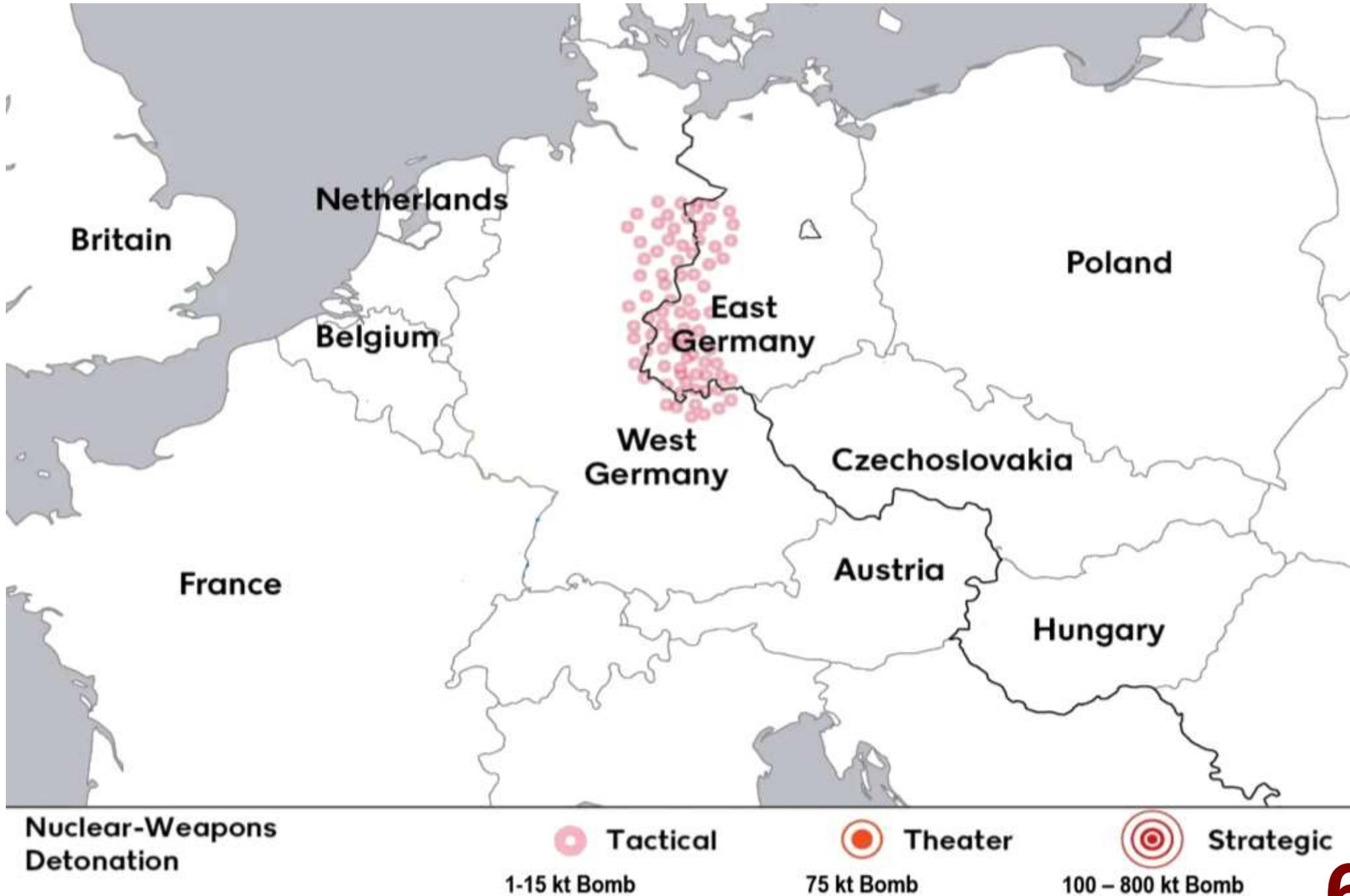
# Nuclear Attacks by Day 0 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



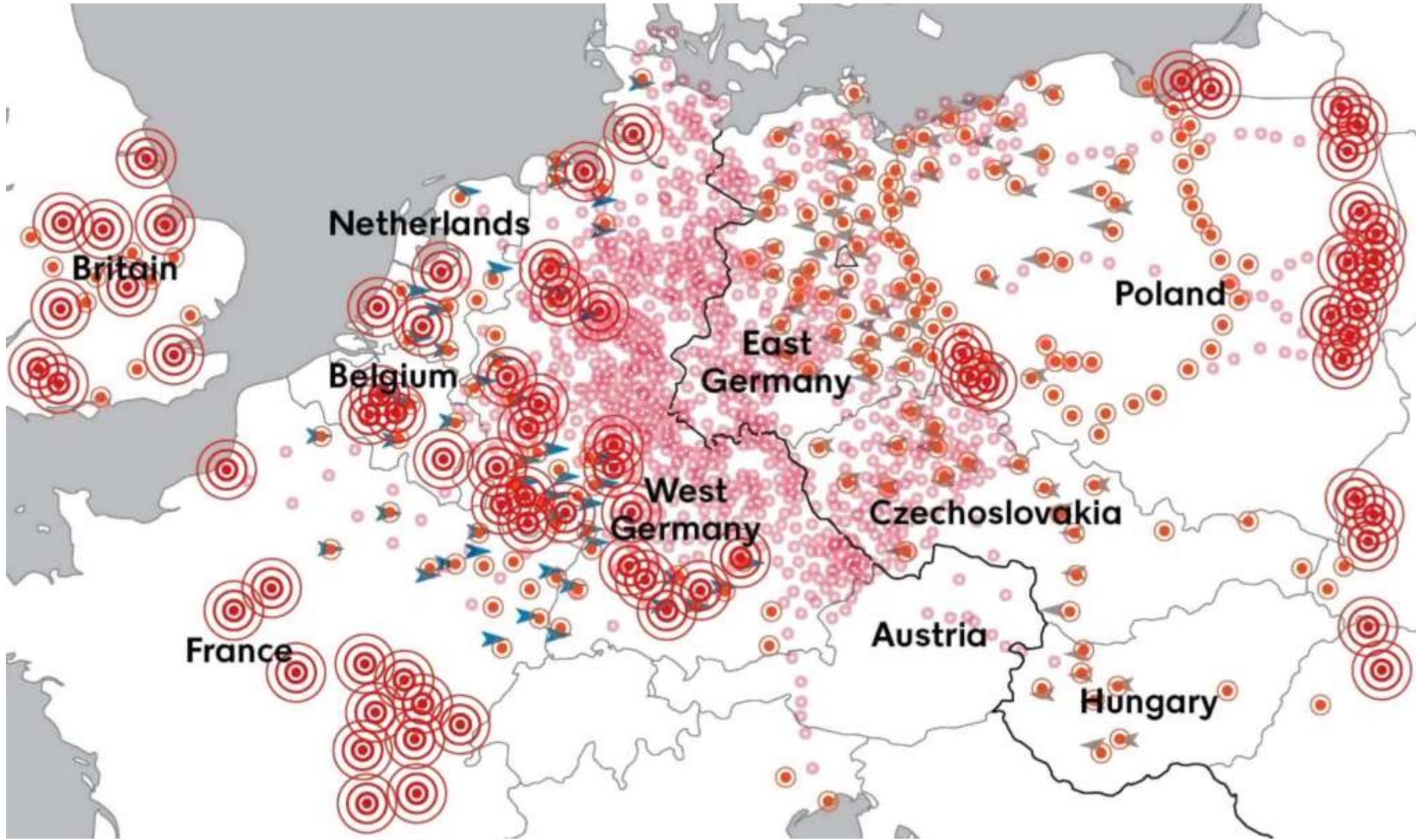
# Nuclear Attacks by Day 1 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



# Nuclear Attacks by Day 2 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



# Nuclear Attacks by Day 5 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



Nuclear-Weapons  
Detonations

 Tactical

1-15 kt Bomb

 Theater

75 kt Bomb

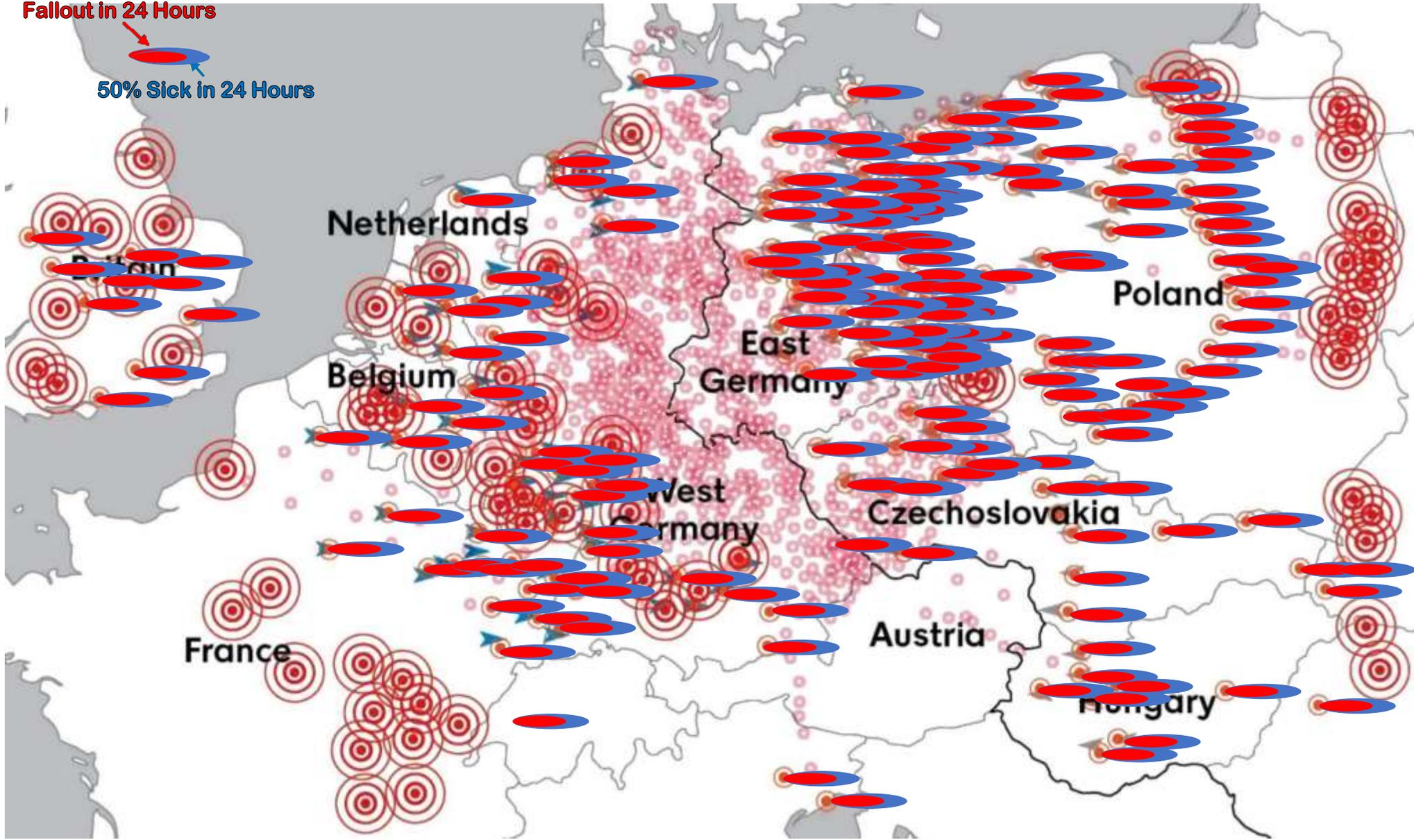
 Strategic

100 – 800 kt Bomb

# Nuclear Attacks by Day 5 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War

Lethal Dose from  
Fallout in 24 Hours

50% Sick in 24 Hours



Nuclear-Weapons  
Detonations

Tactical

1-15 kt Bomb

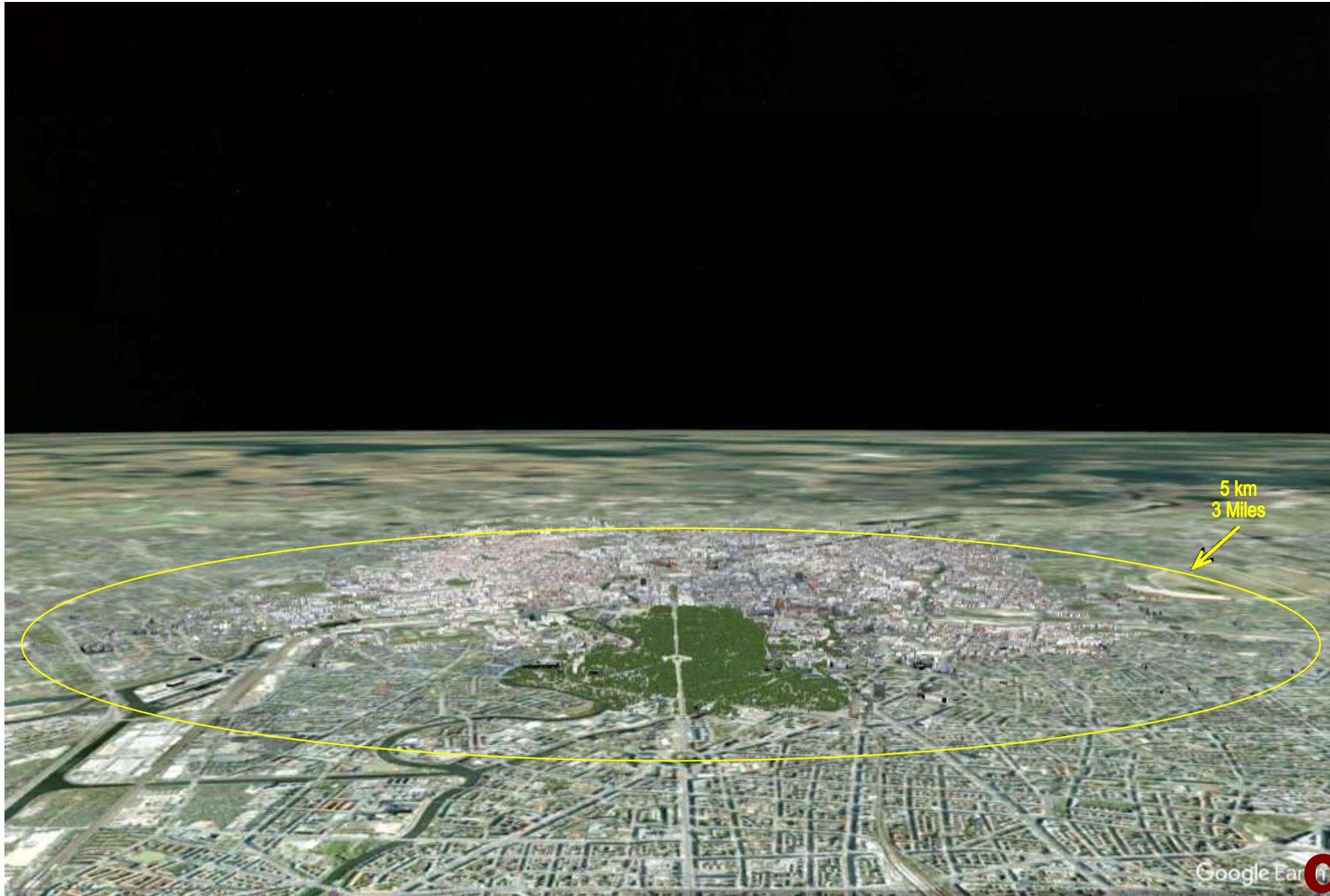
Theater

75 kt Bomb

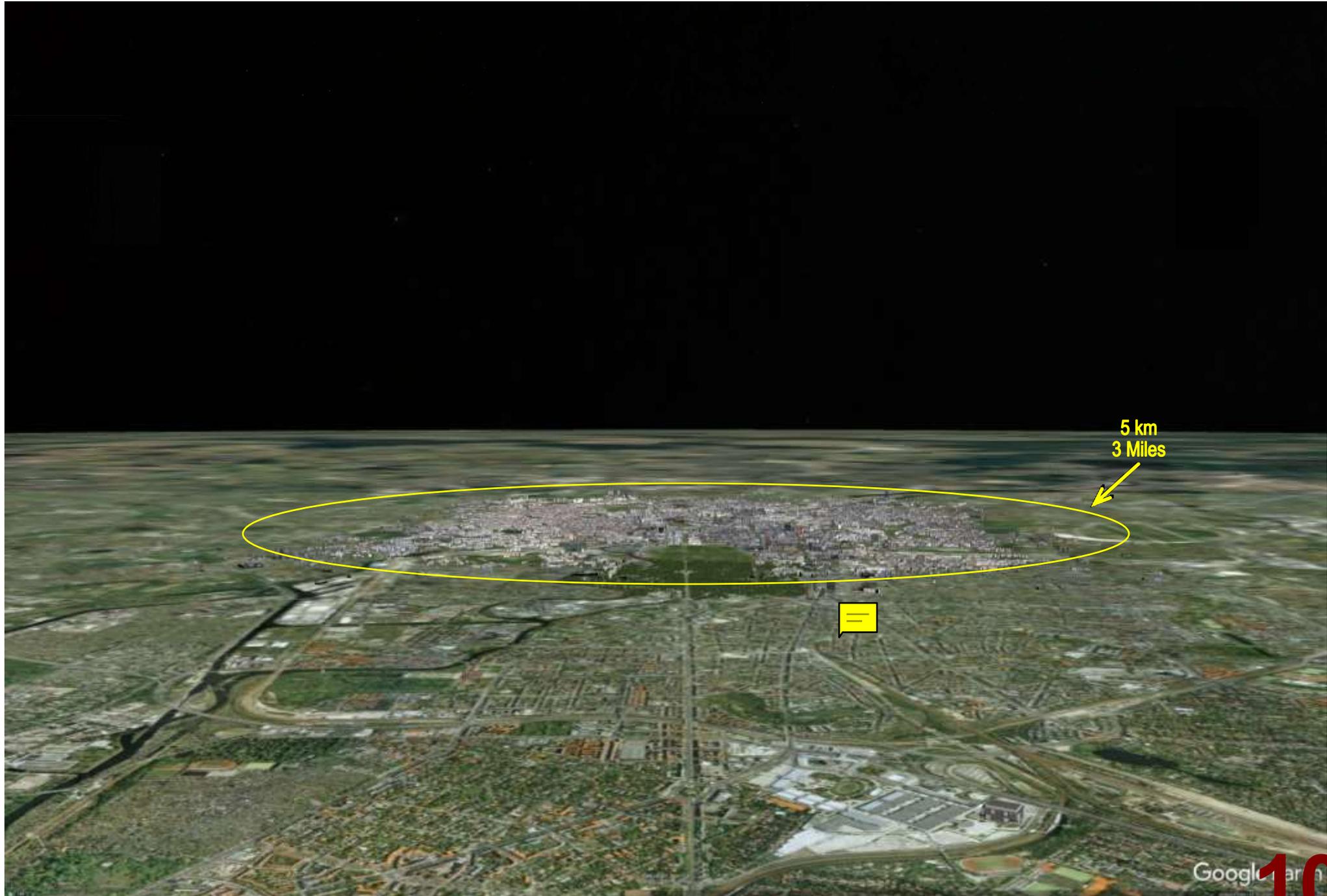
Strategic

100 - 800 kt Bomb

# Satellite Image of Berlin, Germany (and Surrounding Areas)

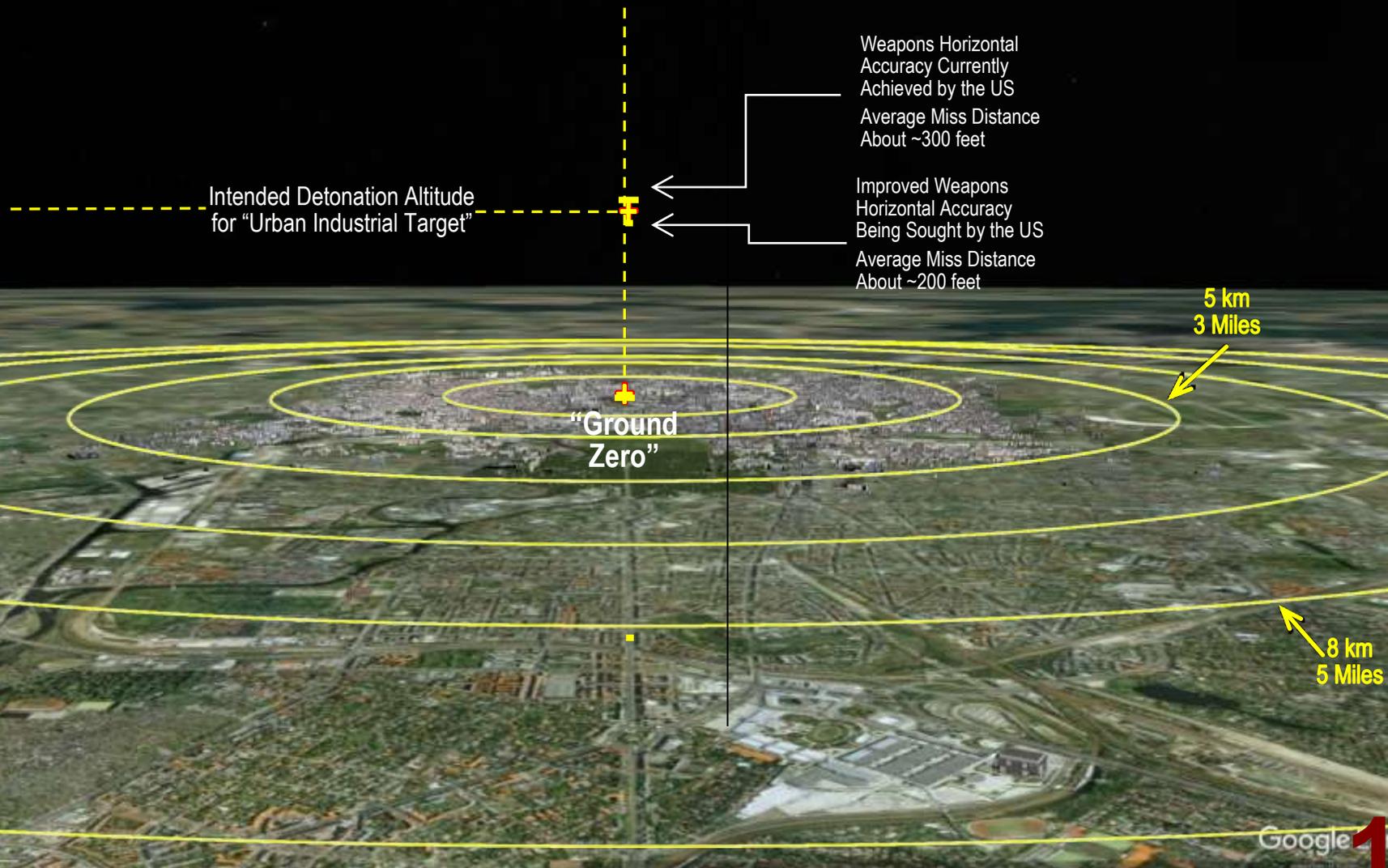


# Satellite Image of Berlin, Germany (and Surrounding Areas)



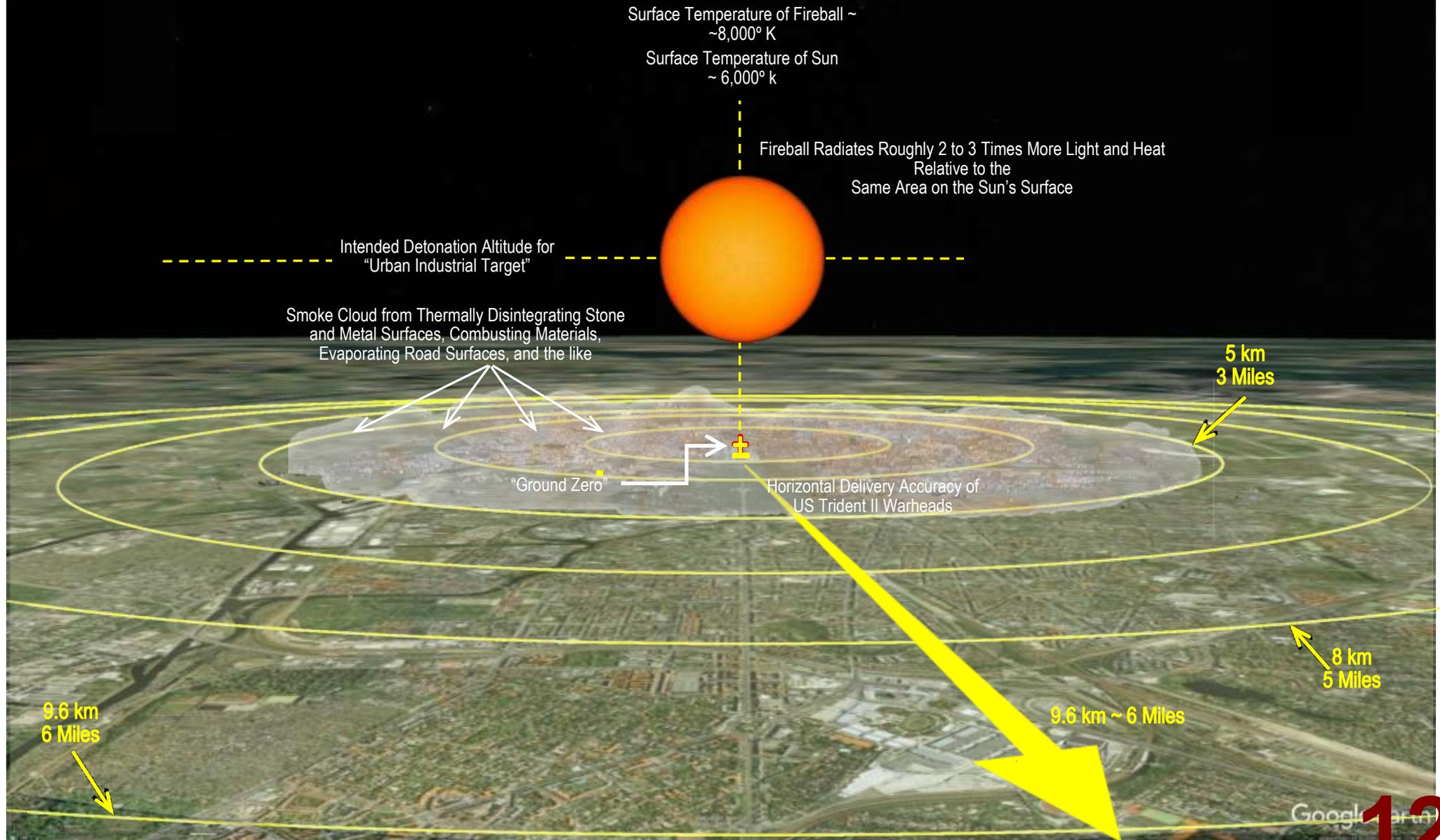
# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 1 of 8)

## The Miss Distances of Modern Ballistic Missile Warheads Are Infinitesimal Compared with the Lethal Distances Achieved by Modern Nuclear Weapons



# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 2 of 8)

**~One Second  
After the Detonation of an  
800 kt Nuclear Weapon**



# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 3 of 8)

**~One Second  
After the Detonation of an  
800 kt Nuclear Weapon**

**Compressed Shell of Air  
Produced by the  
Rapidly Expanding Fireball**

Surface Temperature of Fireball ~  
~8,000° K

Surface Temperature of Sun  
~ 6,000° k

Fireball Radiates Roughly 2 to 3 Times More Light and Heat  
Relative to the  
Same Area on the Sun's Surface

Intended Detonation Altitude for  
"Urban Industrial Target"

Smoke Cloud from Thermally Disintegrating Stone  
and Metal Surfaces, Combusting Materials,  
Evaporating Road Surfaces, and the like

"Ground Zero"

Horizontal Delivery Accuracy of  
US Trident II Warheads

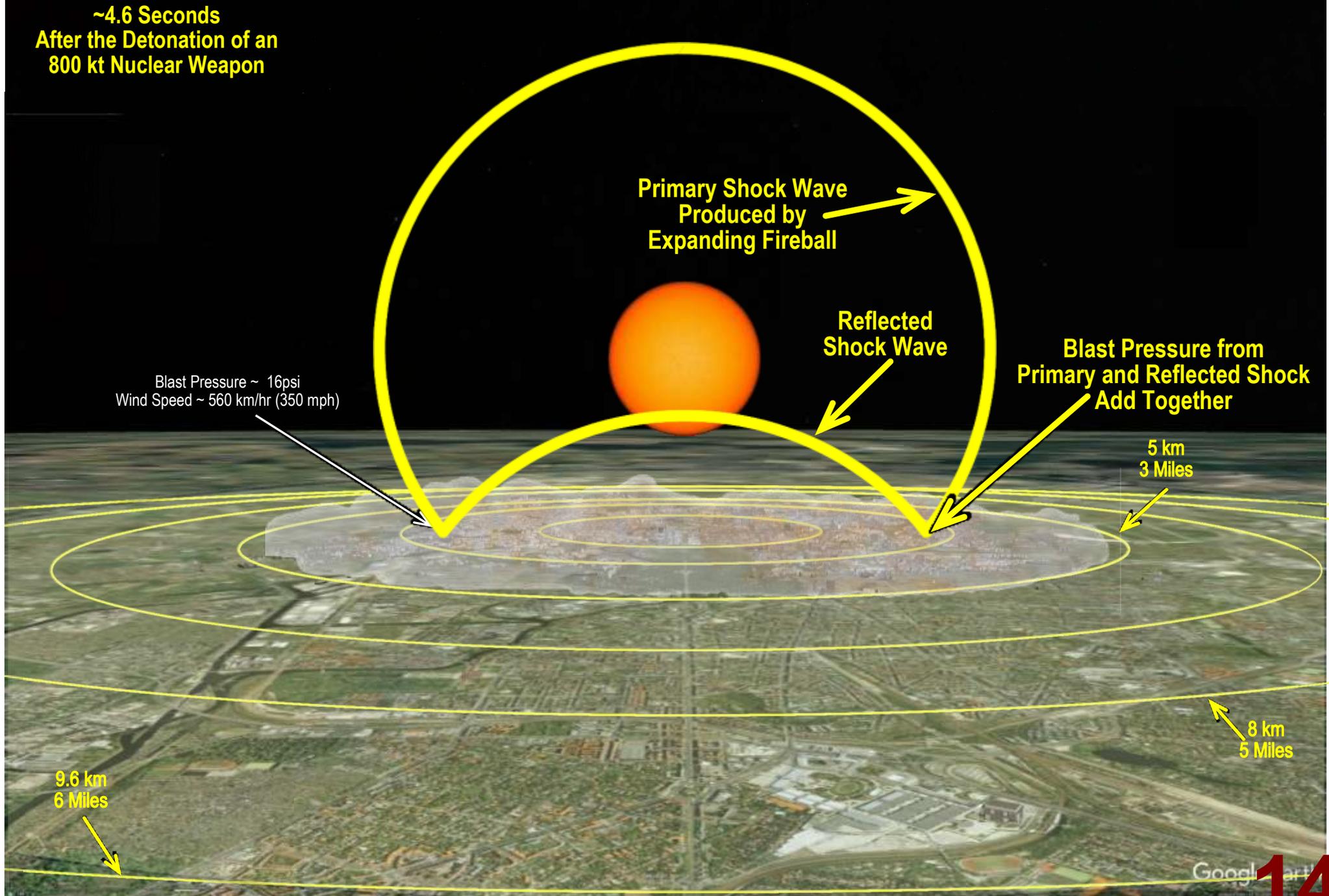
5 km  
3 Miles

8 km  
5 Miles

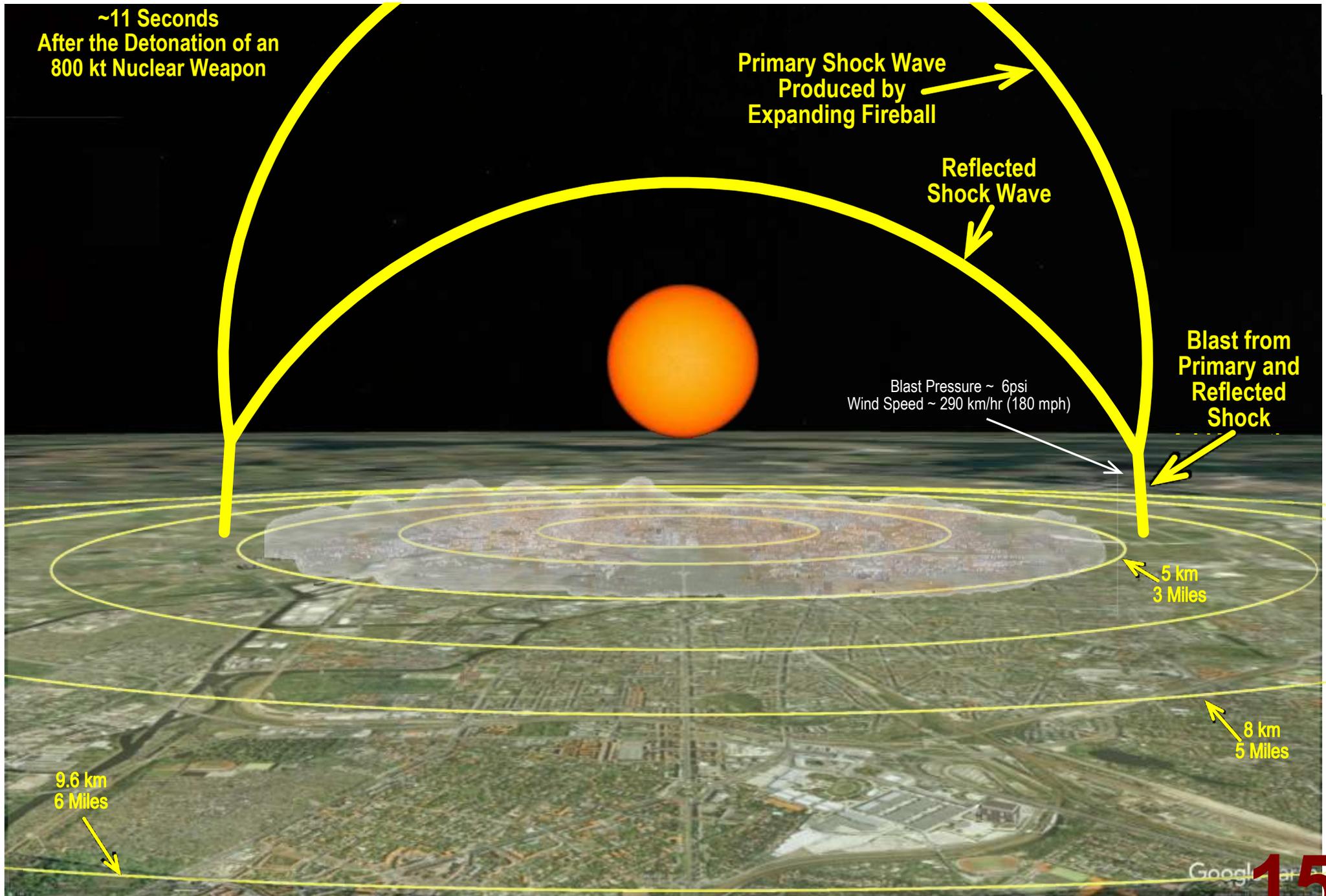
9.6 km  
6 Miles

# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 4 of 8)

**~4.6 Seconds  
After the Detonation of an  
800 kt Nuclear Weapon**

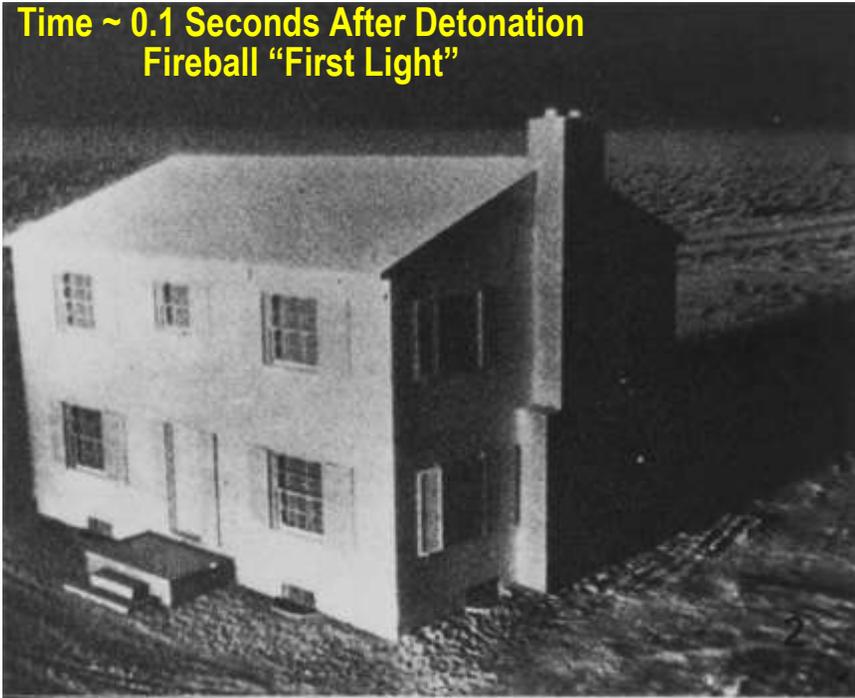


# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 4 of 8)

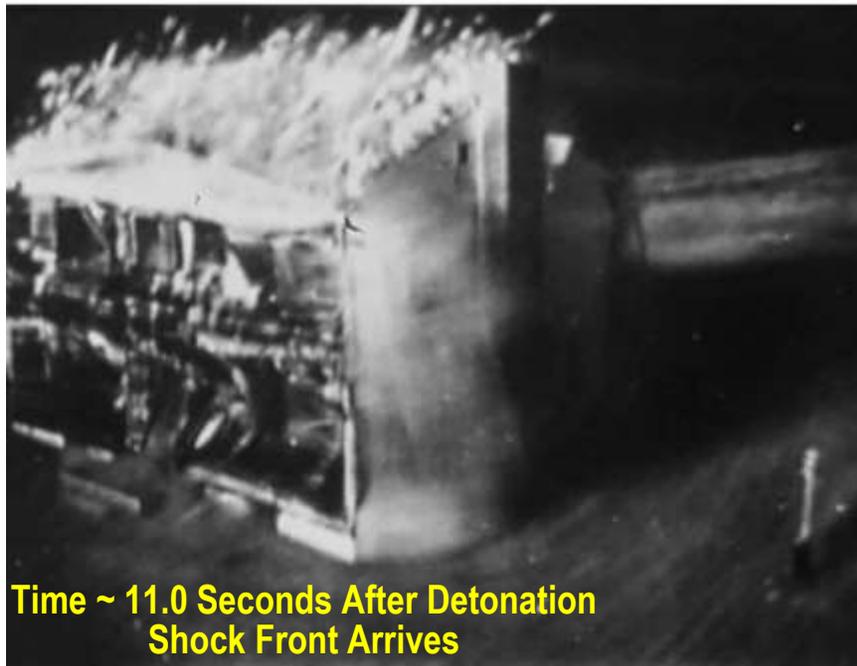
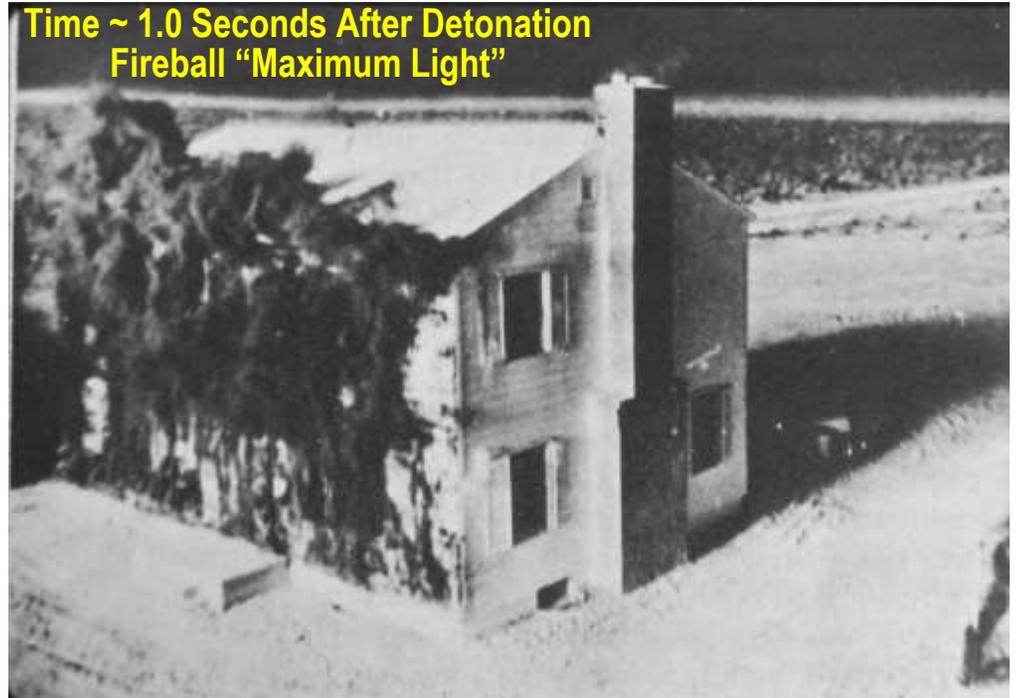


# Actual Weapons Effects at ~ 5 km Range from “Ground-Zero” and 11 Seconds After the Detonation

Time ~ 0.1 Seconds After Detonation  
Fireball “First Light”



Time ~ 1.0 Seconds After Detonation  
Fireball “Maximum Light”



Time ~ 11.0 Seconds After Detonation  
Shock Front Arrives



Time ~ 11 + 1 Seconds After  
Shock Front Winds Arrives (290 km/hr)

## Effects of the Flash of Light and Heat from the Fireball at Hiroshima



Effects of the light from fireball at Hiroshima. The fireball produced an extremely intense flash of light for about  $100^{\text{th}}$  of a second that caused the brick surfaces to thermally expand and shatter, producing surfaces of lighter color. The shadow areas were produced by intervening objects that prevented the light from the fireball from falling on the brick surface

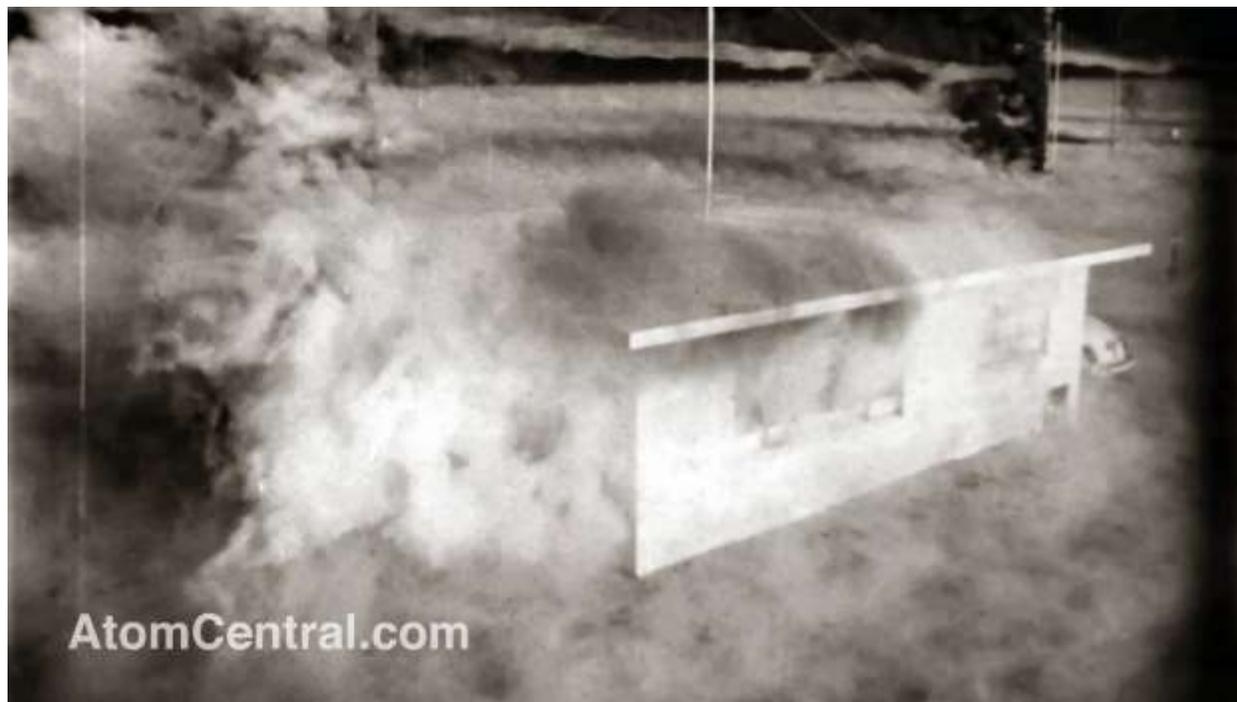
# Fire Ignitions and Smoke from the Light and Heat from the Detonation Fireball

---



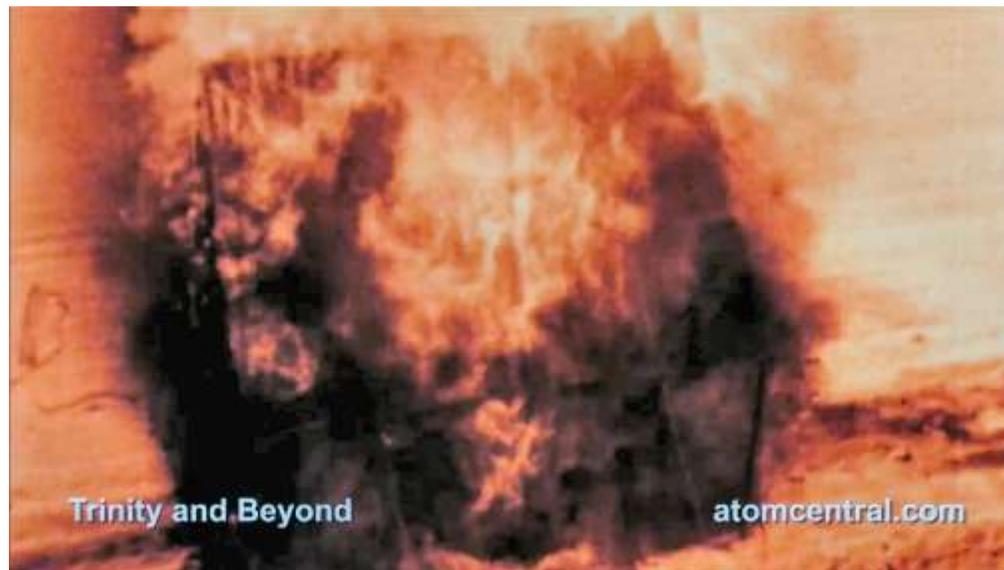
# Fire Ignitions and Smoke from the Light and Heat from the Detonation Fireball

---



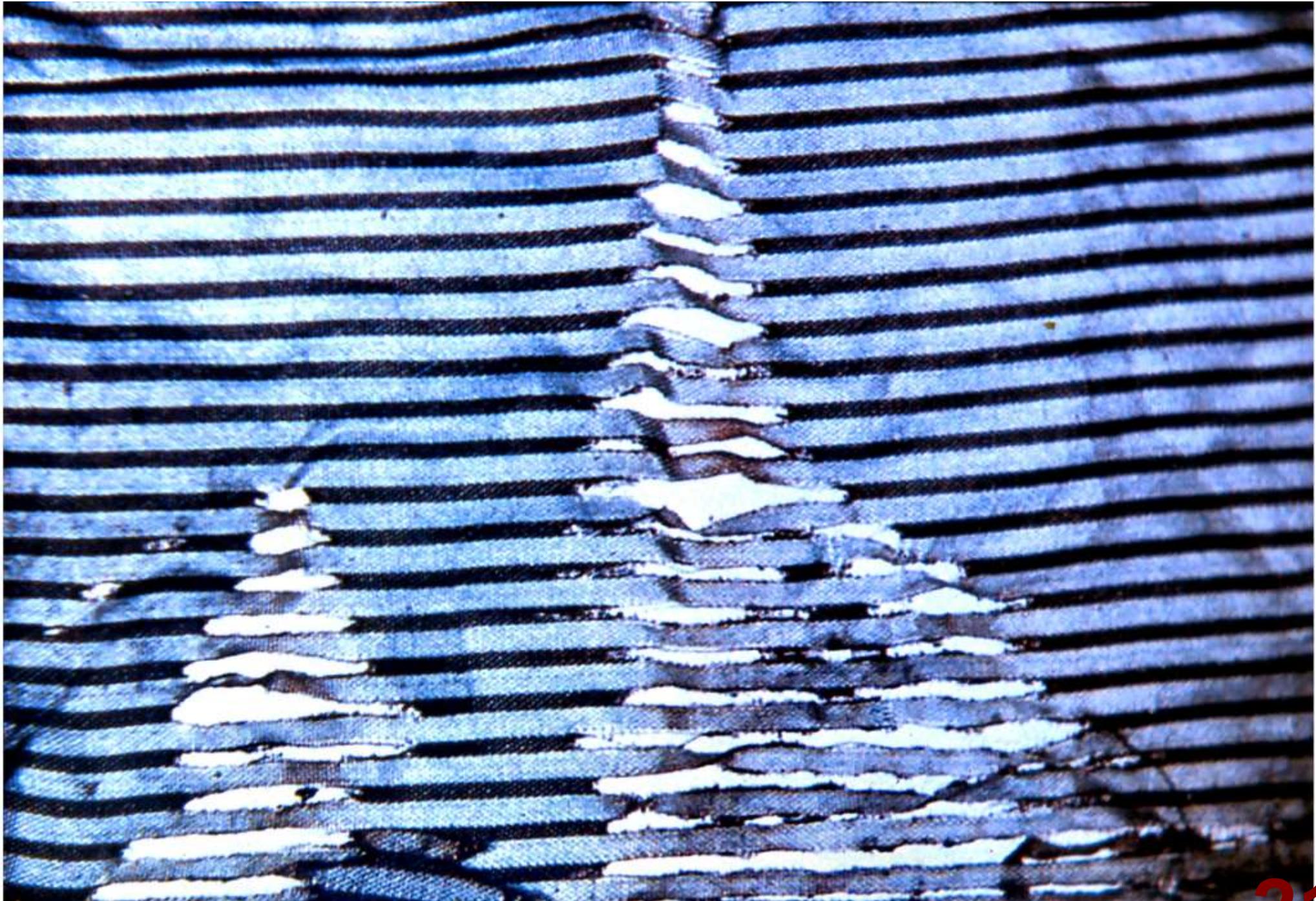
# Fire Ignitions and Smoke from the Light and Heat from the Detonation Fireball

---



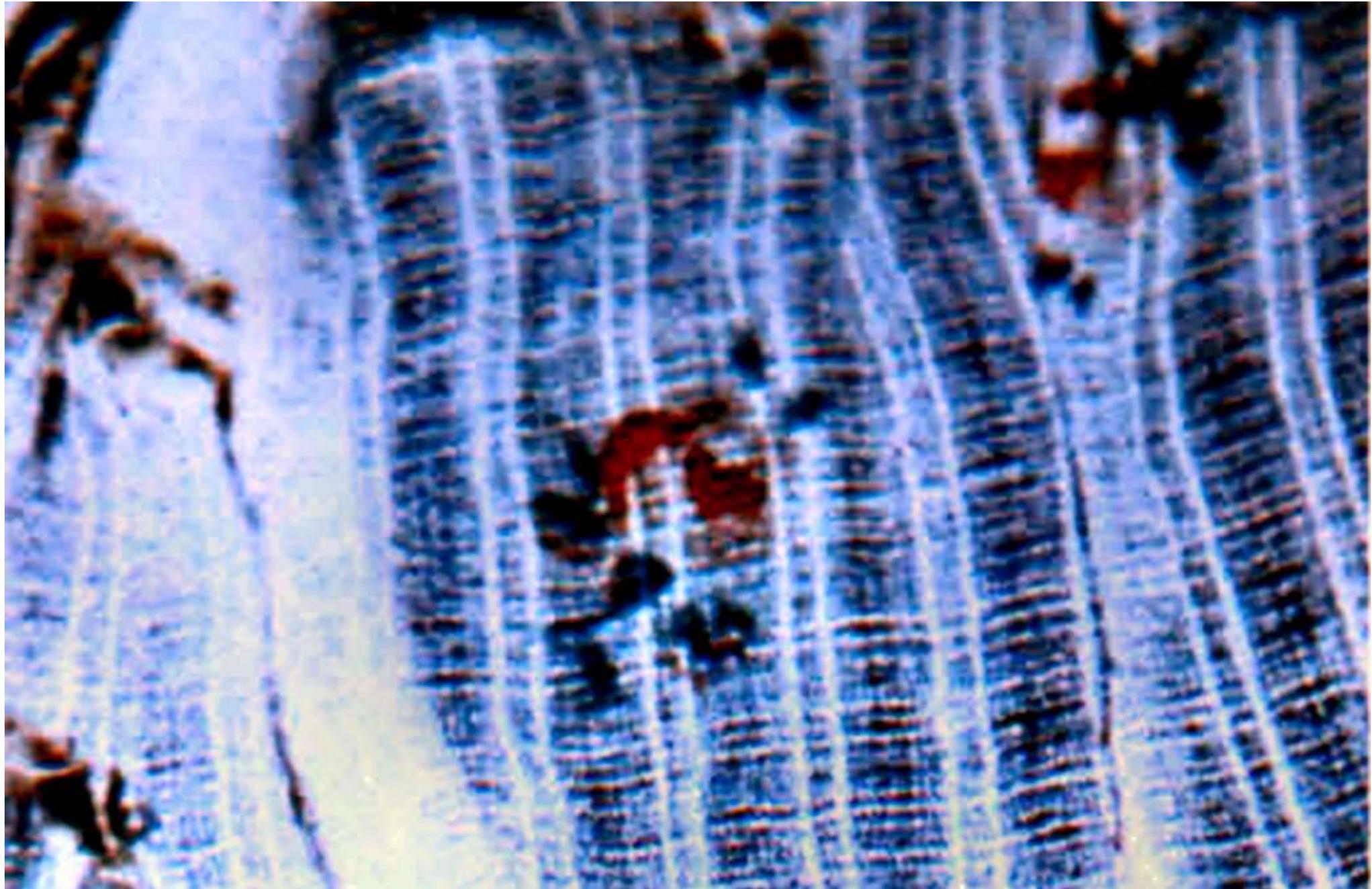
## Effects of the Flash of Light and Heat from the Fireball at Hiroshima

---



## Effects of the Flash of Light and Heat from the Fireball at Hiroshima

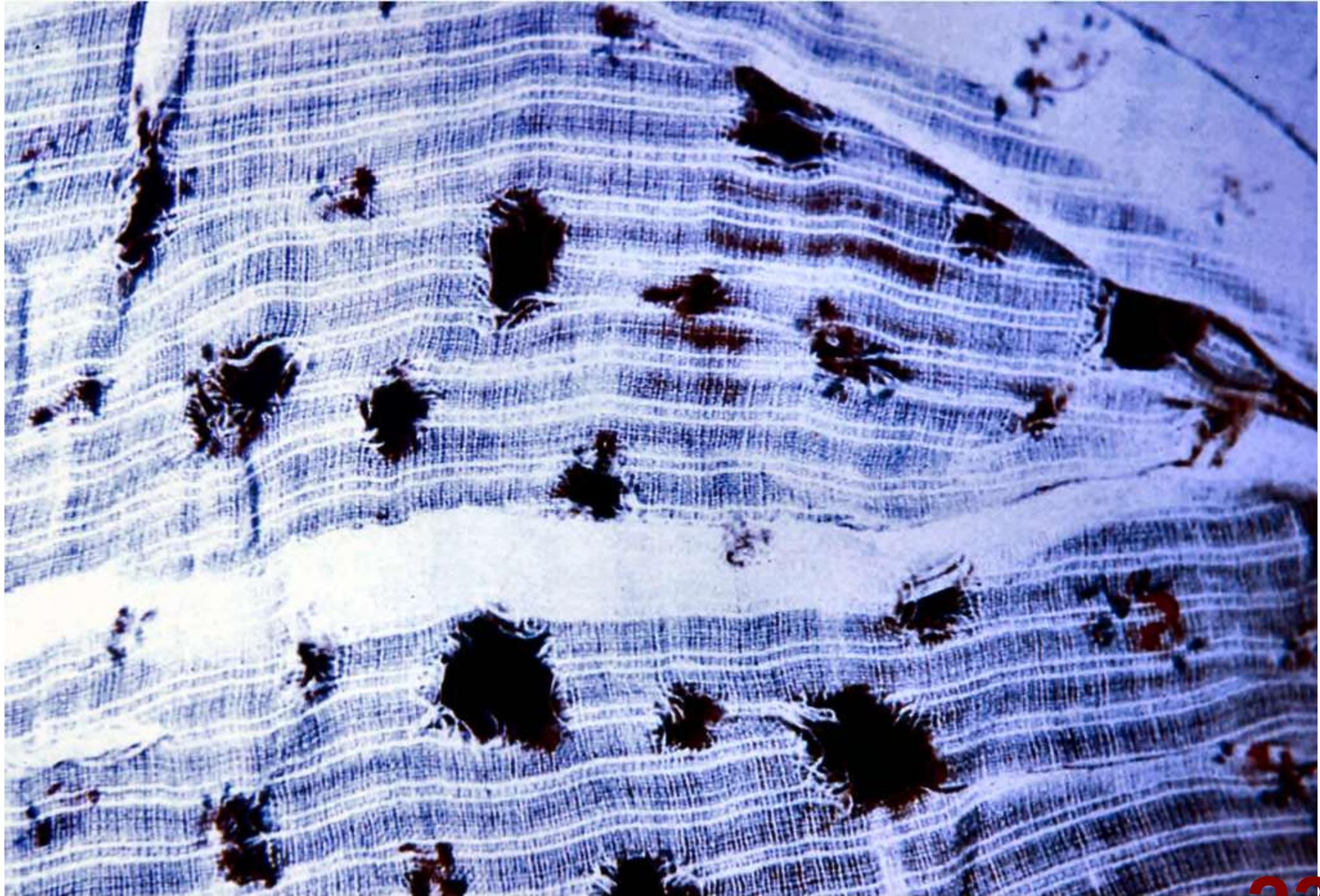
---



Effects of the Flash of Light and Heat from the Fireball at Hiroshima

## Effects of the Flash of Light and Heat from the Fireball at Hiroshima

---



## Effects of the Flash of Light and Heat from the Fireball at Hiroshima

---



# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 5 of 8)

~30 to 40 Seconds  
After the Detonation of an  
800 kt Nuclear Weapon

Radioactivity in the Dust Cloud  
~ 1,000,000 Times at One Minute  
~ 10,000 Times at One Hour  
~ 100 Times at One Day  
the Radioactive Release  
from the Chernobyl Accident!

Target Debris Lifted Into the Air  
by the Outgoing Primary and  
Reflected Shock Wave

Smoke Emanating  
from Structures

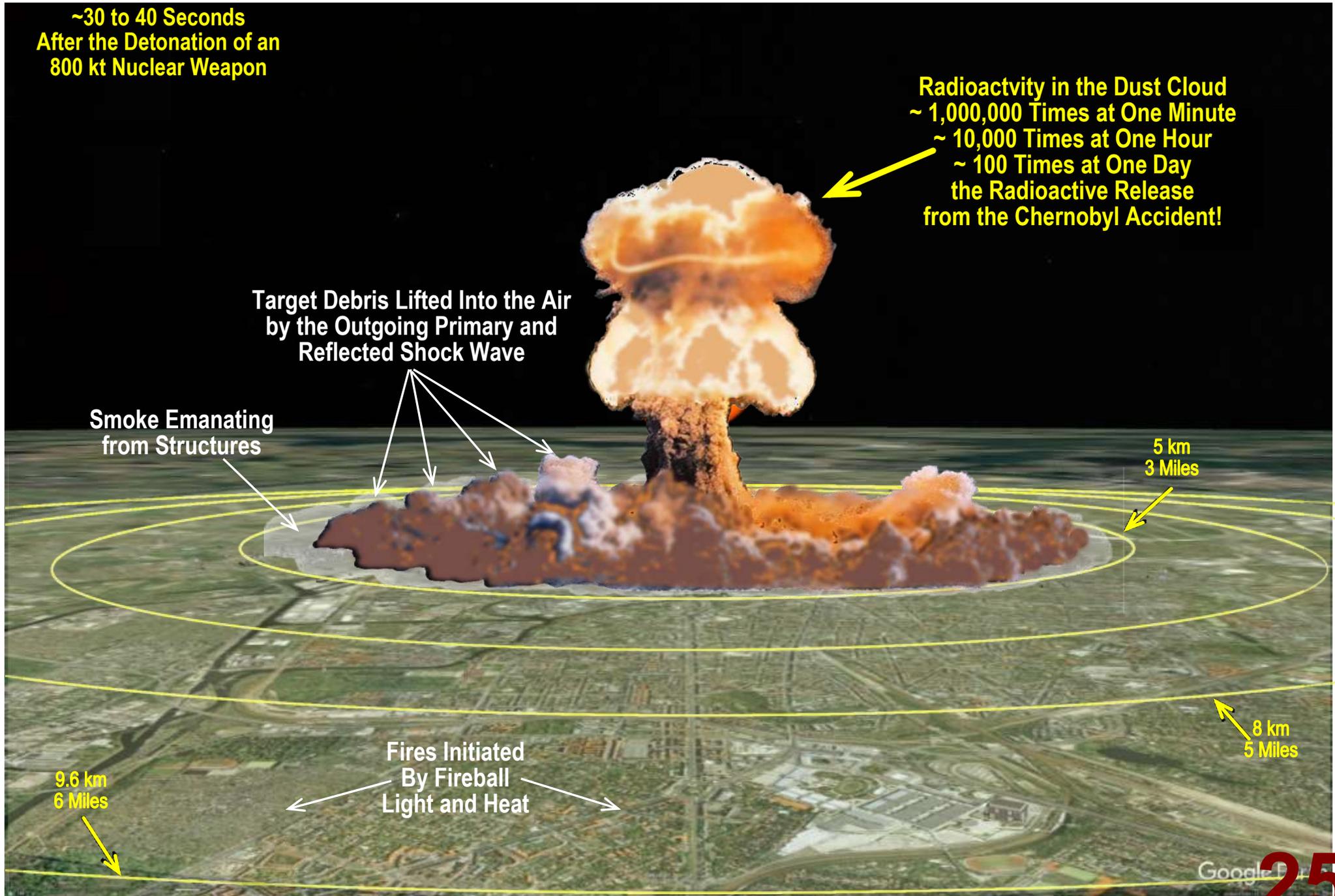
5 km  
3 Miles

8 km  
5 Miles

9.6 km  
6 Miles

Fires Initiated  
By Fireball  
Light and Heat

Google Earth



# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 6 of 8)

~30 to 40 Seconds  
After the Detonation of an  
800 kt Nuclear Weapon

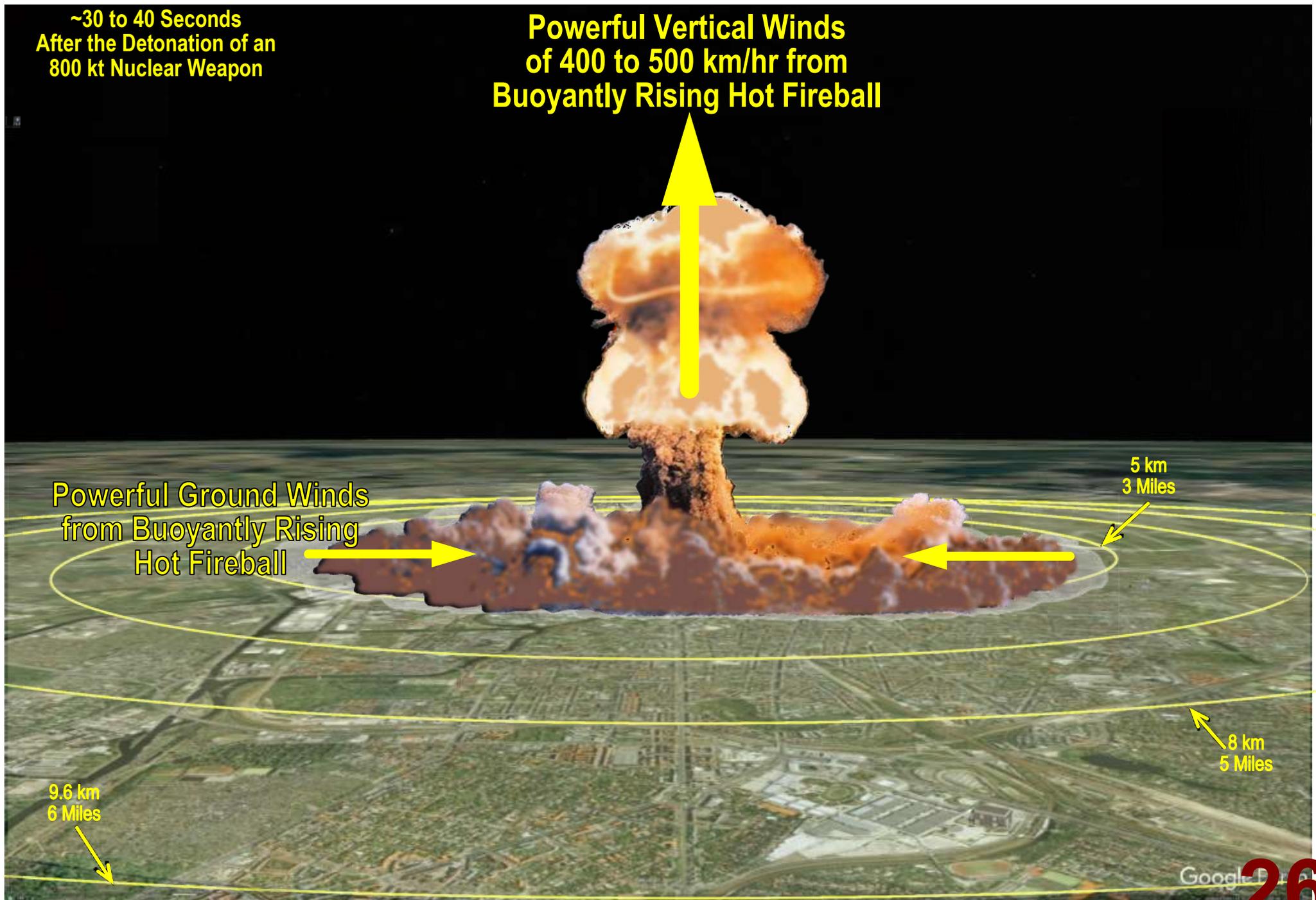
Powerful Vertical Winds  
of 400 to 500 km/hr from  
Buoyantly Rising Hot Fireball

Powerful Ground Winds  
from Buoyantly Rising  
Hot Fireball

5 km  
3 Miles

8 km  
5 Miles

9.6 km  
6 Miles

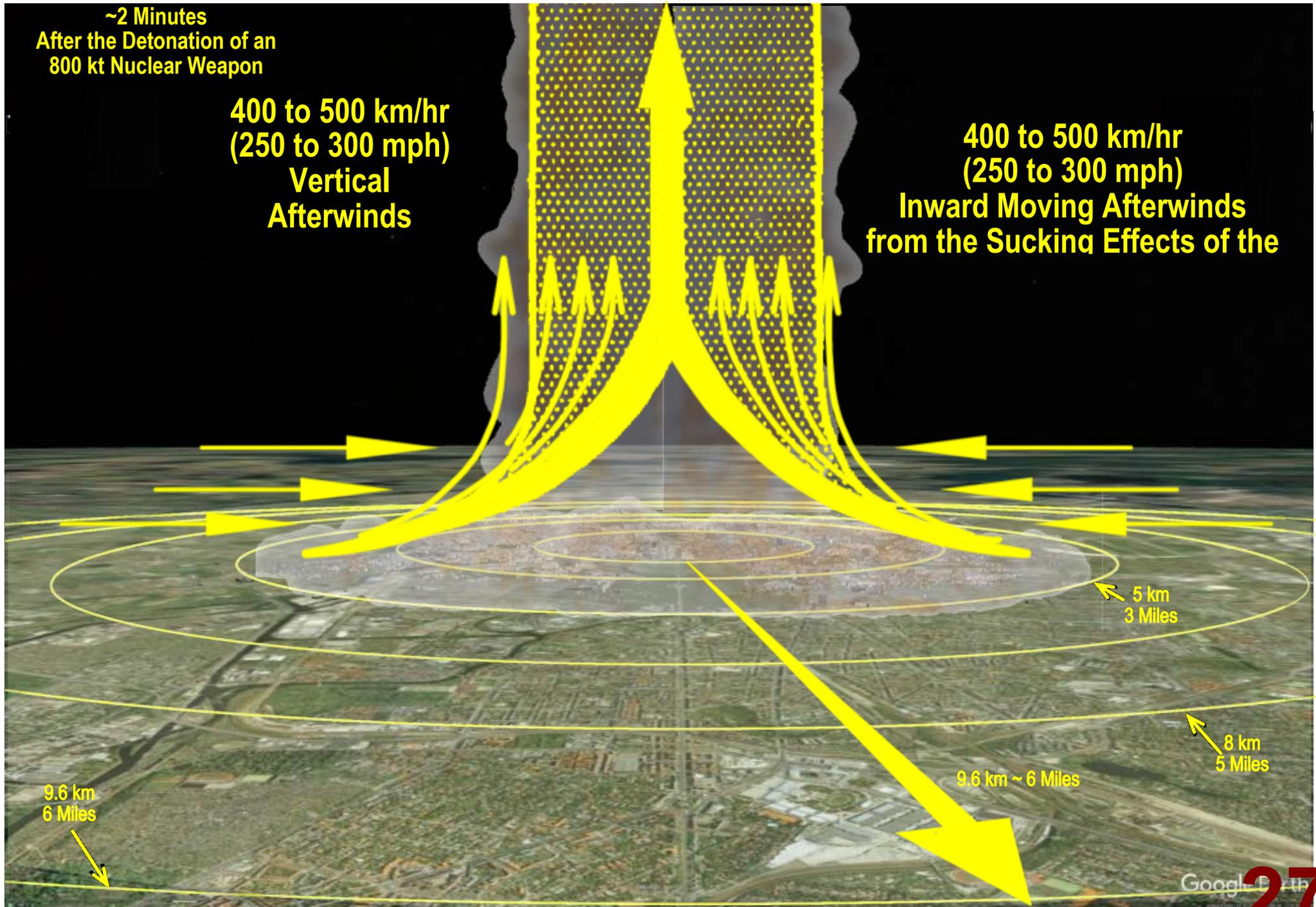


# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 7 of 8)

~2 Minutes  
After the Detonation of an  
800 kt Nuclear Weapon

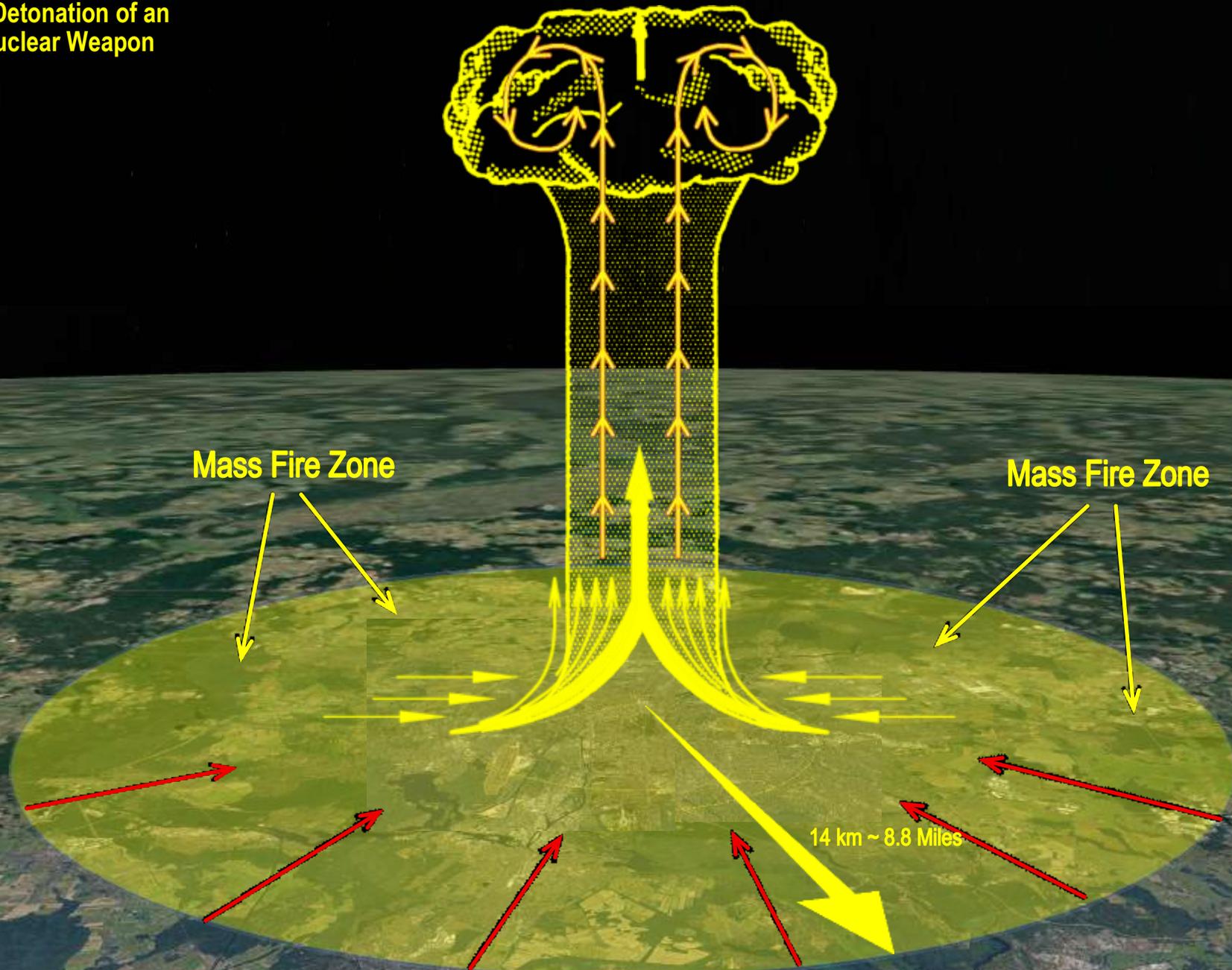
400 to 500 km/hr  
(250 to 300 mph)  
Vertical  
Afterwinds

400 to 500 km/hr  
(250 to 300 mph)  
Inward Moving Afterwinds  
from the Sucking Effects of the



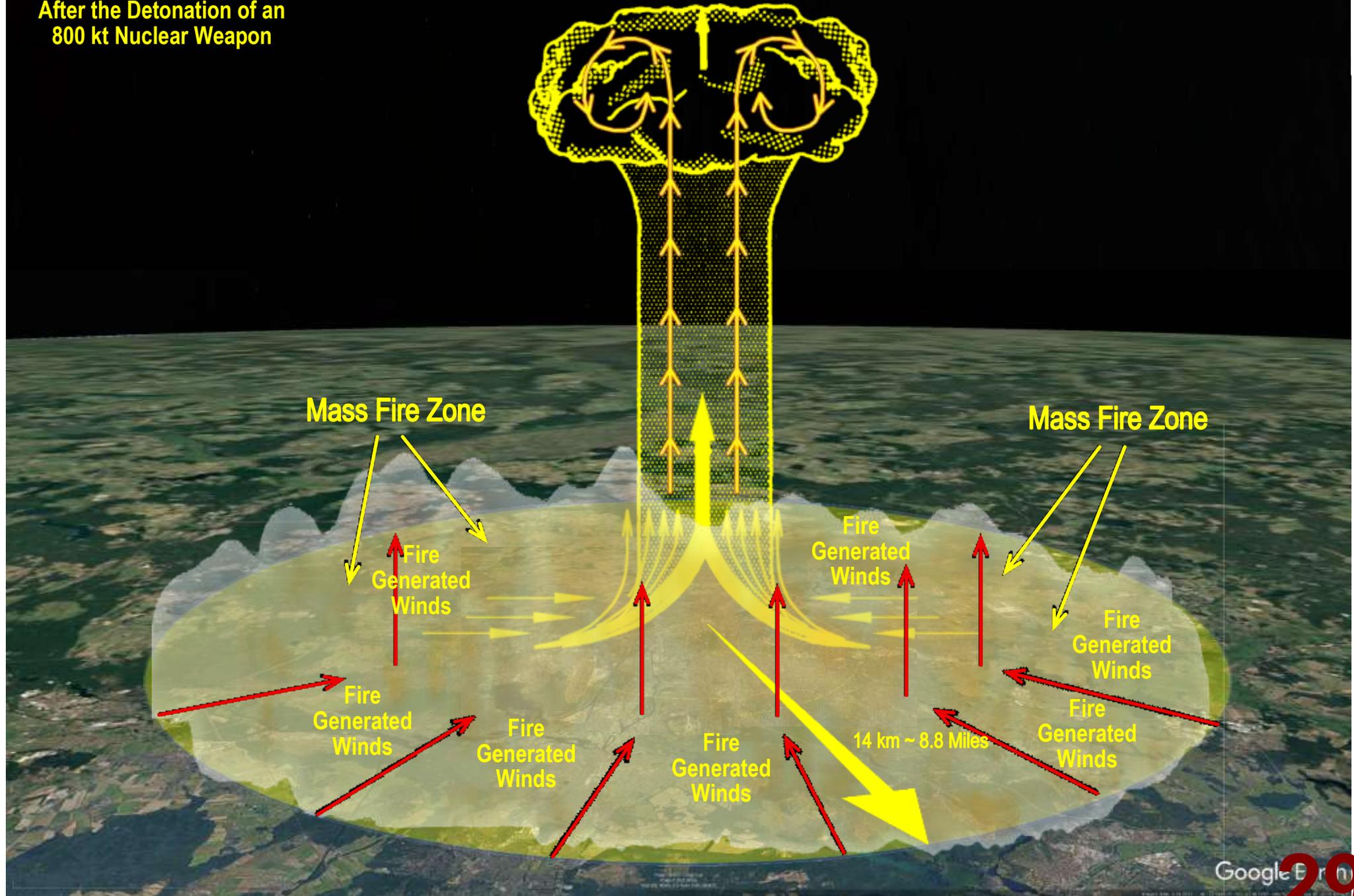
# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 8 of 8)

~10 Minutes  
After the Detonation of an  
800 kt Nuclear Weapon



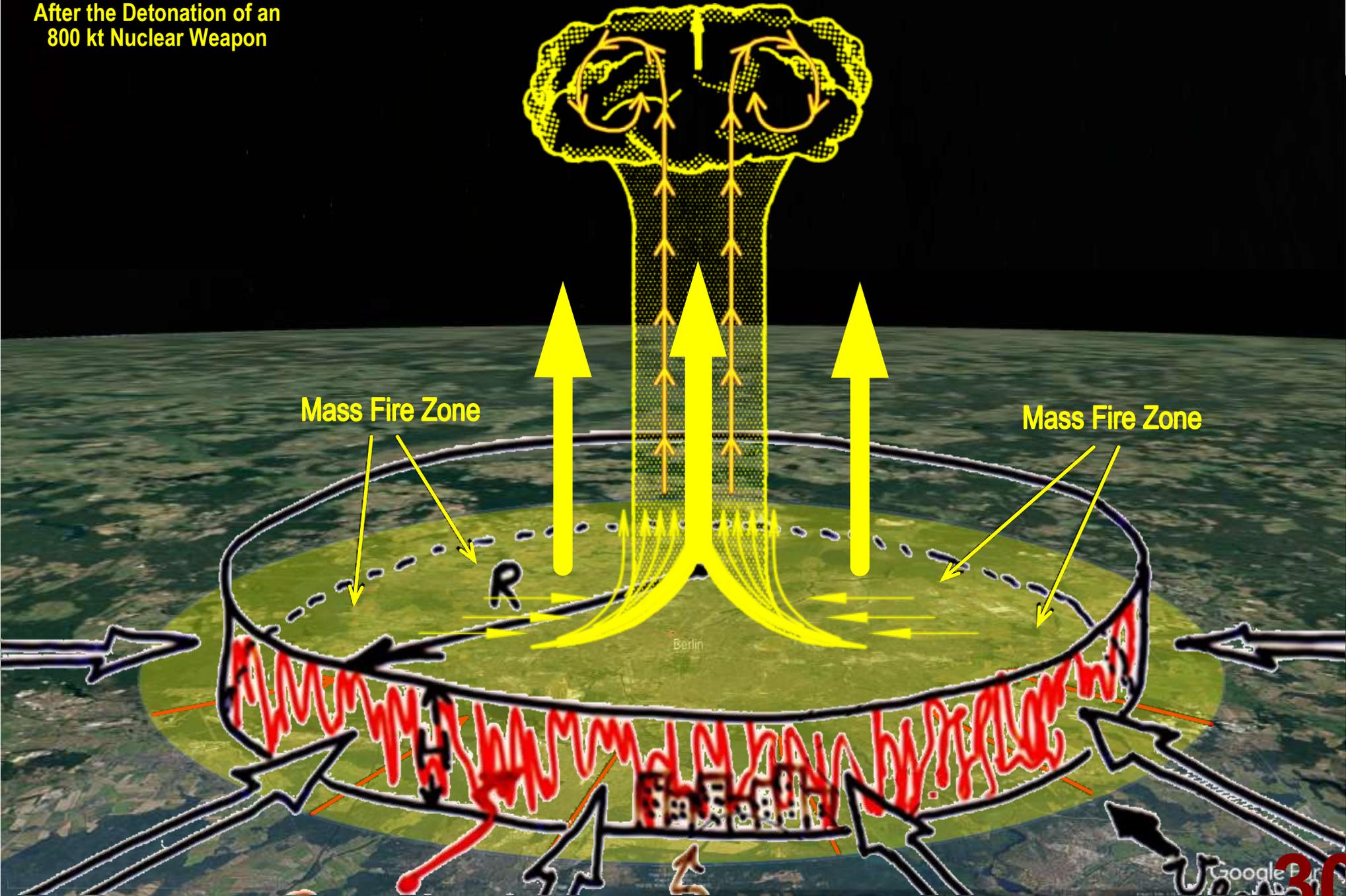
# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 9 of 8)

~10 Minutes  
After the Detonation of an  
800 kt Nuclear Weapon



# Actual Consequences of the Detonation of One SS-18 Nuclear Warhead (800 kt) over Berlin (Slide 8 of 8)

~10 Minutes  
After the Detonation of an  
800 kt Nuclear Weapon

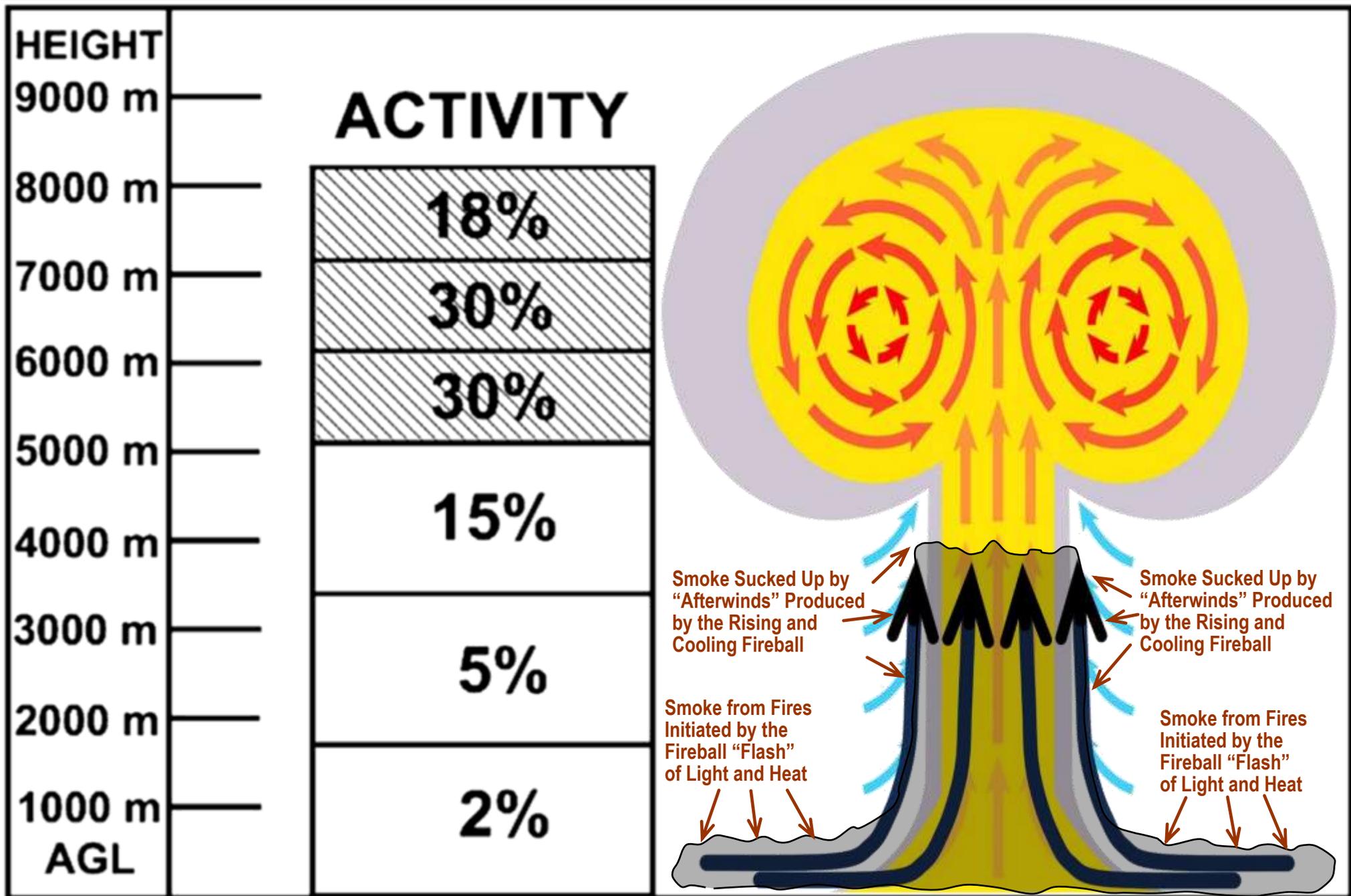


# Intensifying Fire-Driven Winds as Areas of Firestorm Burn in July 1943 Hamburg

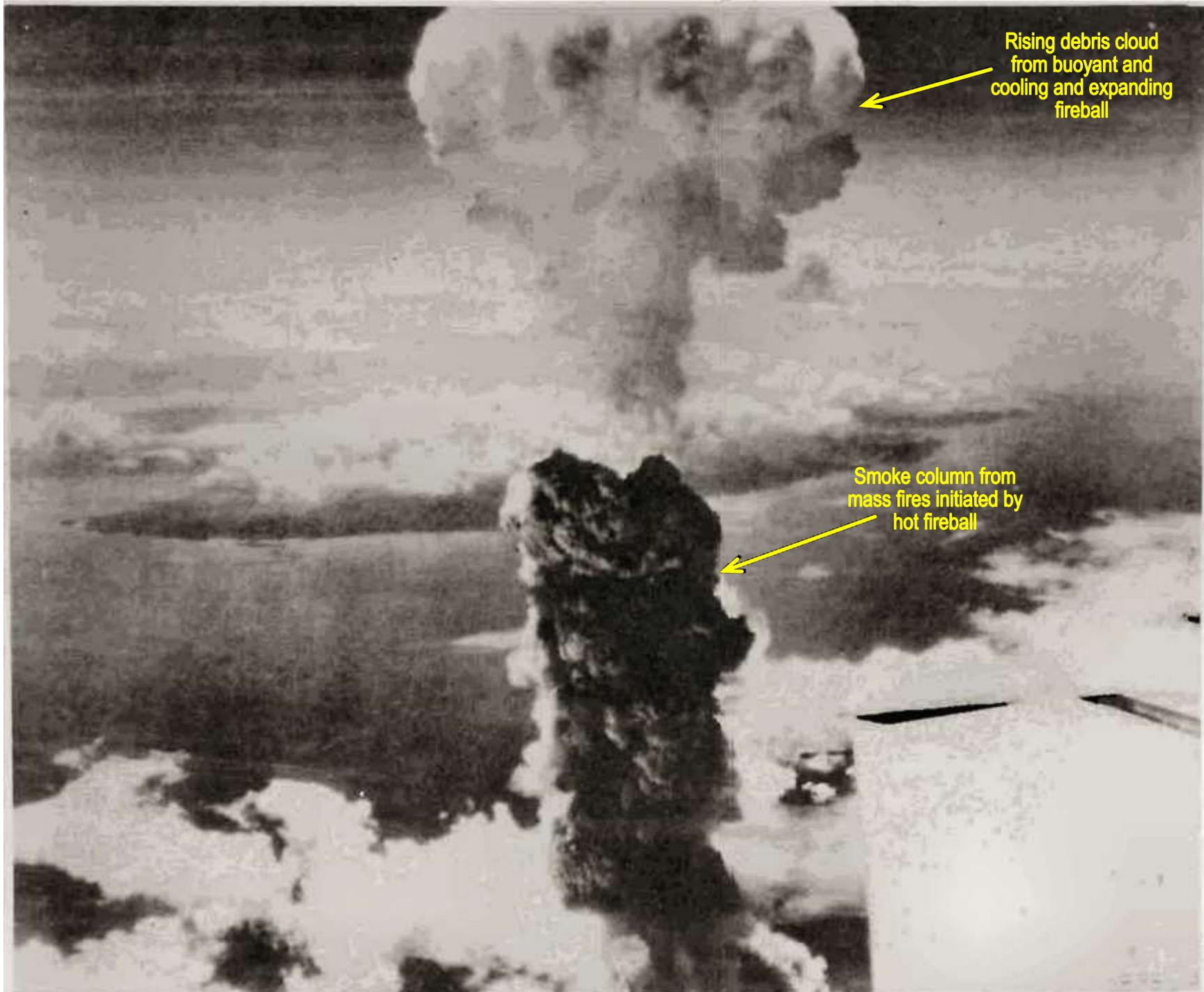
---



# Total Radioactivity Fraction in Each Vertical Segment of a 10 Kt Tactical Nuclear Detonation



# Smoke Cloud from Mass Fire Creeping Stem of Nuclear Explosion Debris Cloud over Nagasaki

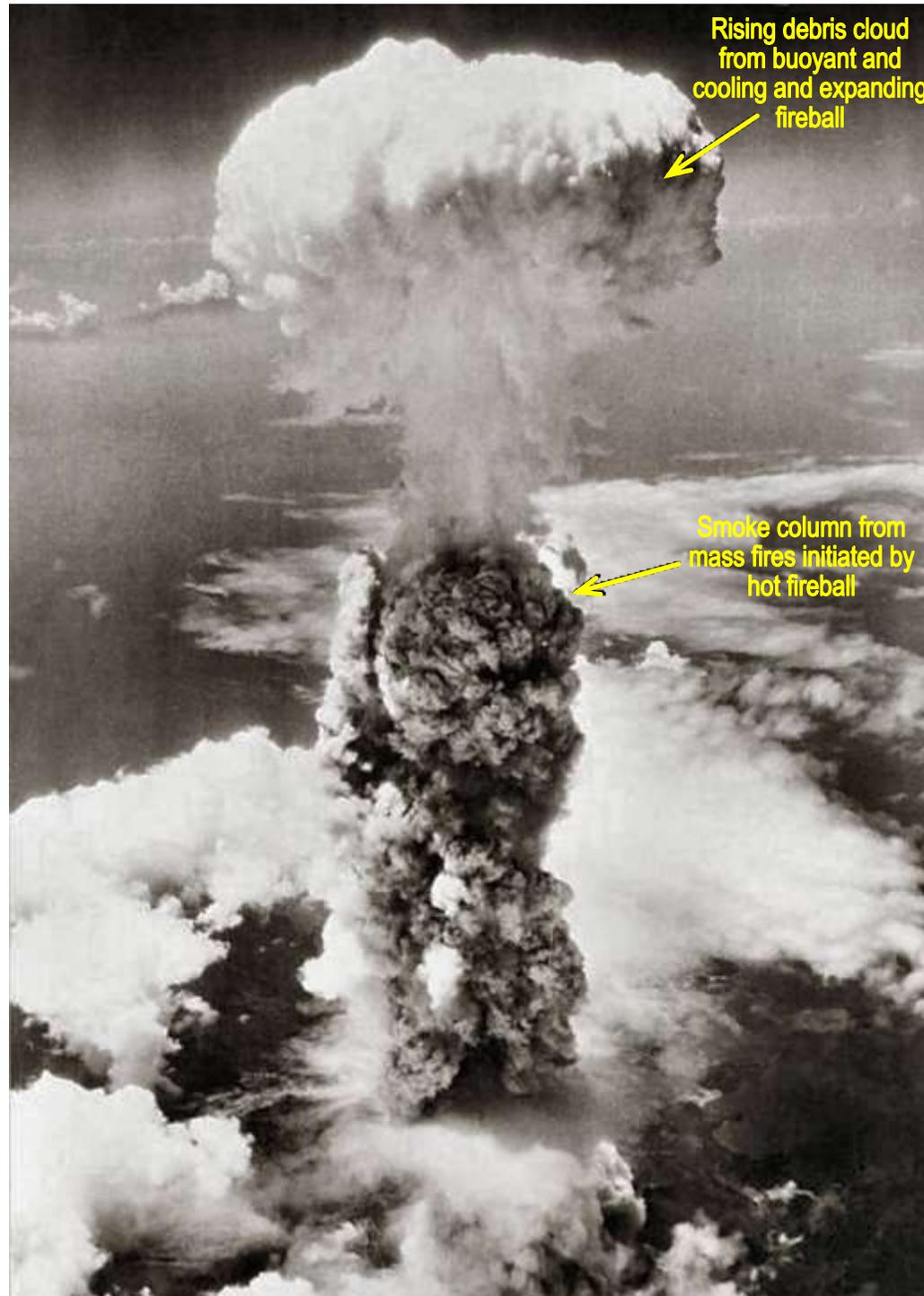


Rising debris cloud  
from buoyant and  
cooling and expanding  
fireball

Smoke column from  
mass fires initiated by  
hot fireball

Nuclear explosion debris cloud over Nagasaki about eight minutes after detonation and at roughly 8 miles distance. The height of the cloud tops is about 40,000 feet

# Smoke Cloud from Mass Fire Creeping Stem of Nuclear Explosion Debris Cloud over Hiroshima



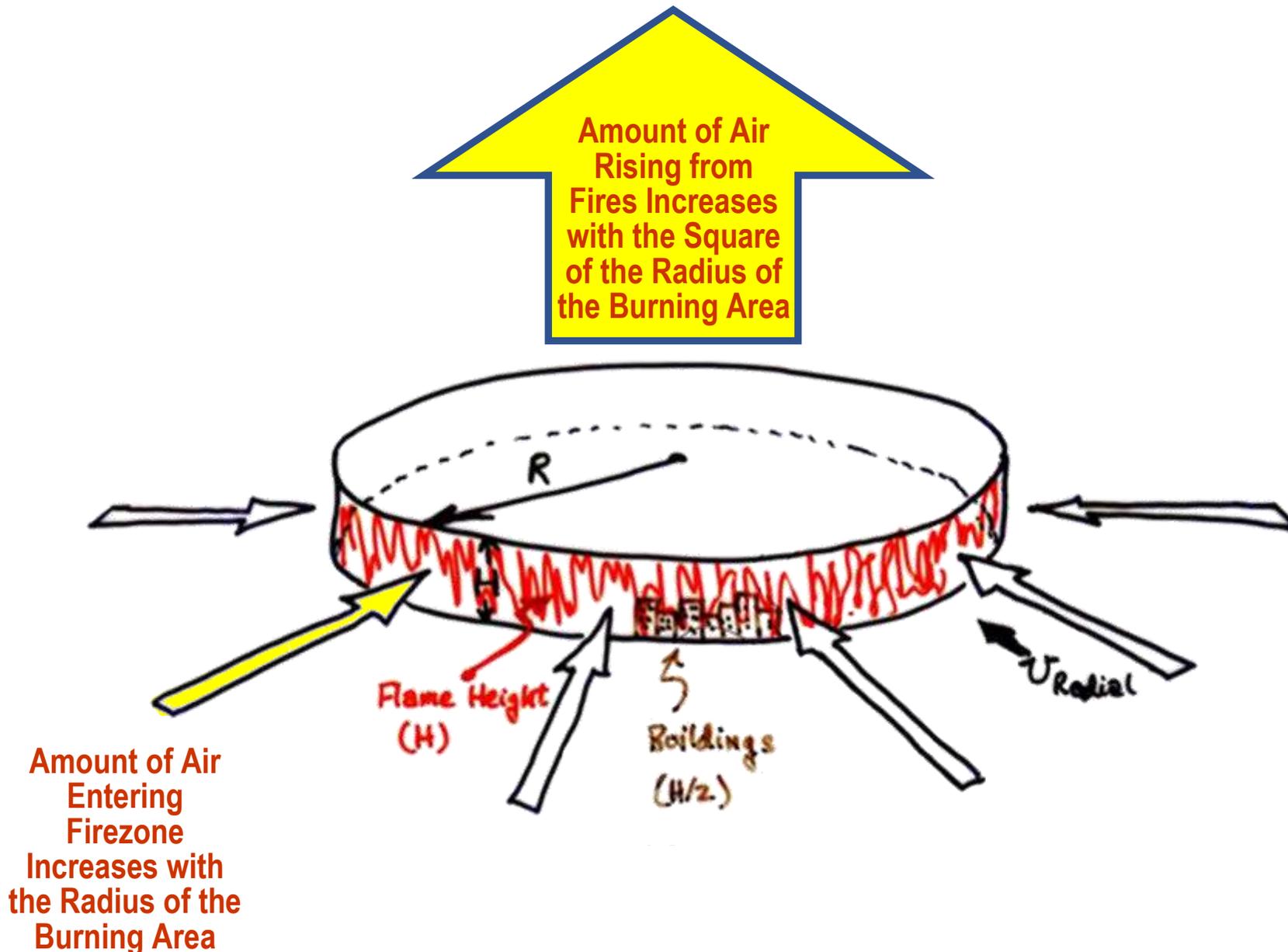
# Zone of Mass Fire (Firestorm) Following 800 kt Attack on Berlin

Roughly 500 to 800 km<sup>2</sup> to (200 to 300 mi<sup>2</sup>) Destroyed by “Firestorm”

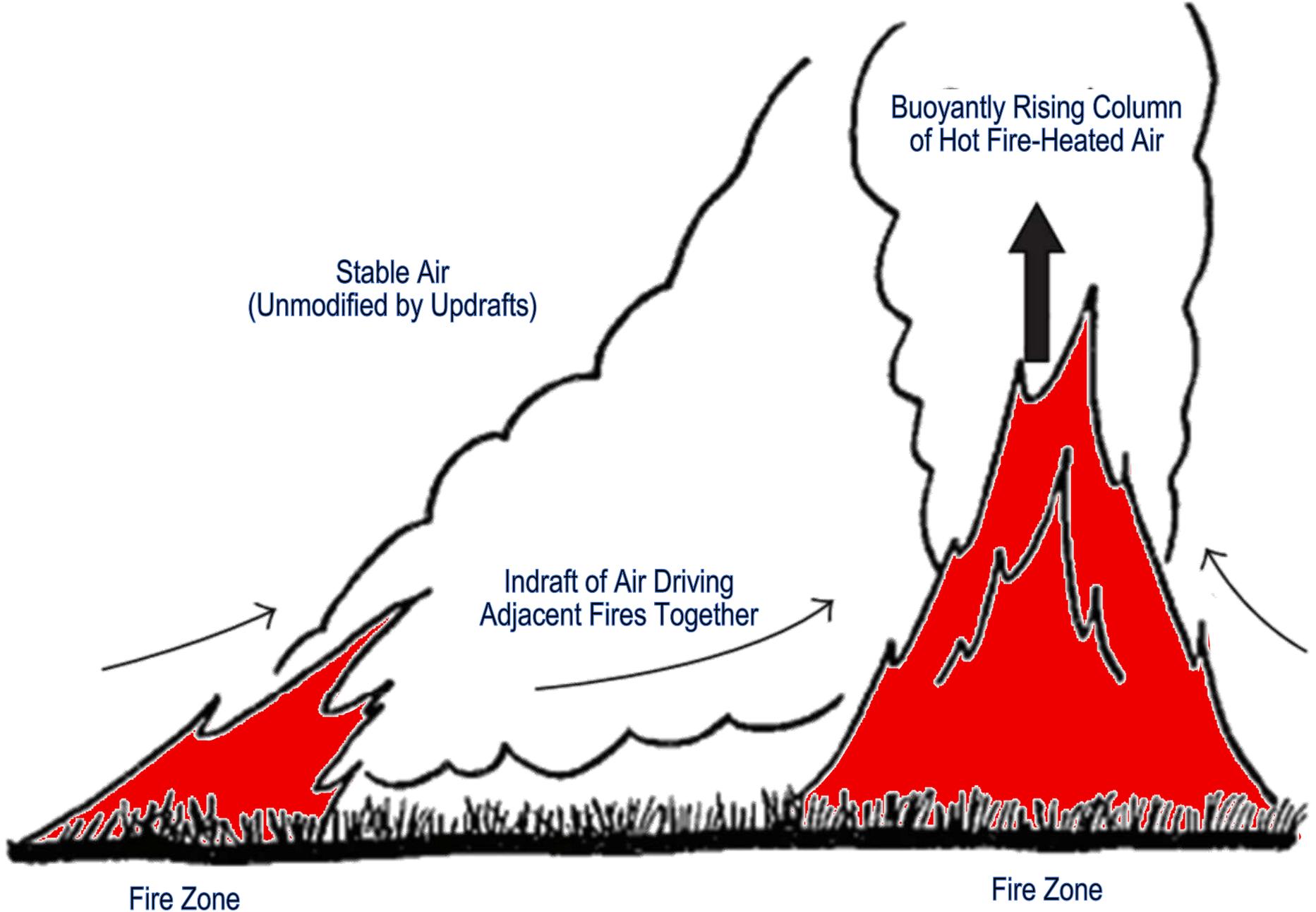


The Wind Speeds and Air Temperatures in a Large Area Fire Will Increase  
With the Radius of the Fire Zone – Wind Speeds of Hurricane Force and Air-Temperatures Above  
the Boiling Point of Water Are to be Expected for 3 to 6 Hours Following an Attack

---



# Coalescing of Adjacent Areas of Fire from Updraft Winds of Buoyantly Rising Air Columns

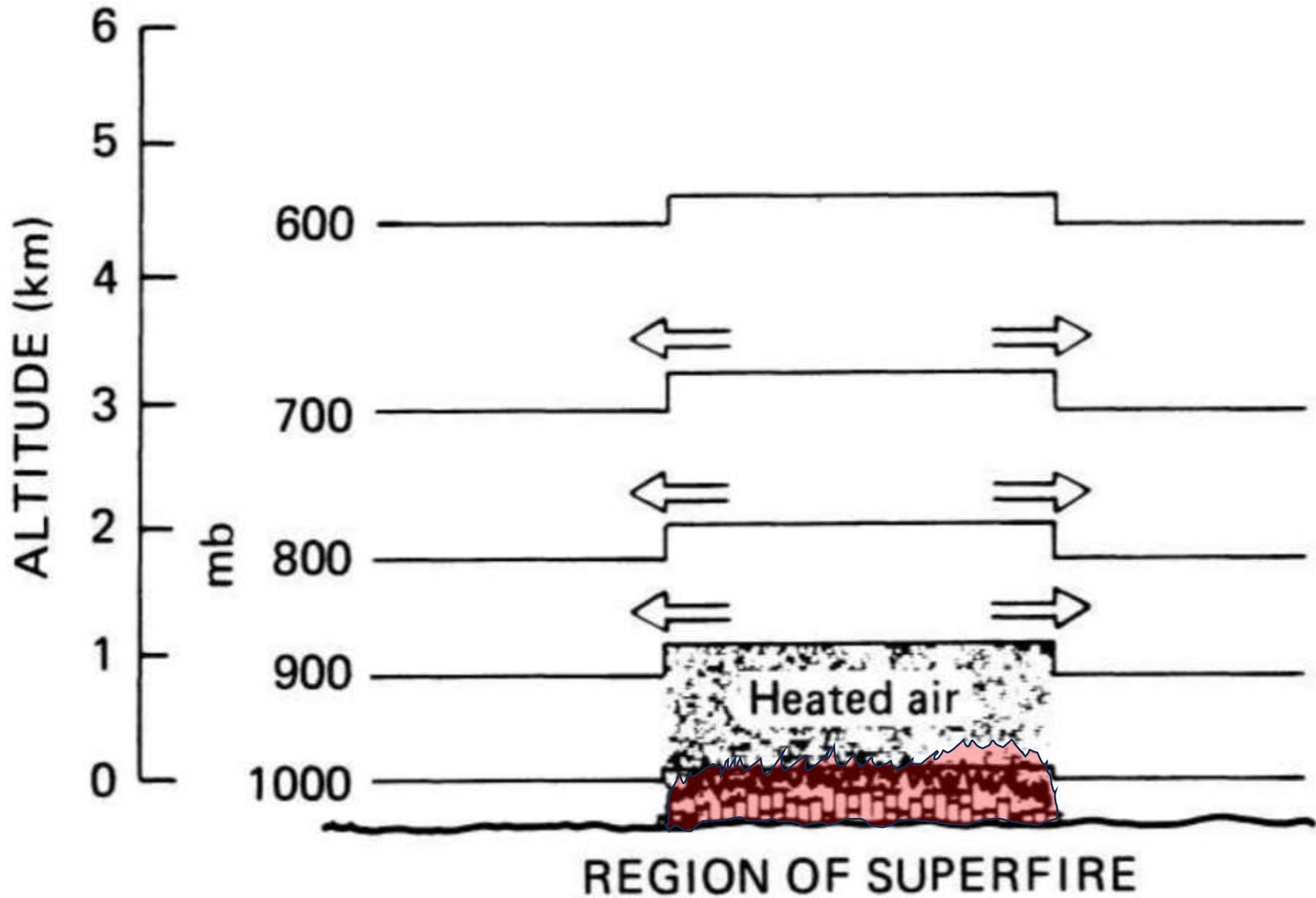


# Fire-Generated Winds from Buoyantly Rising Heated Air from Large-Area Zone of Fire

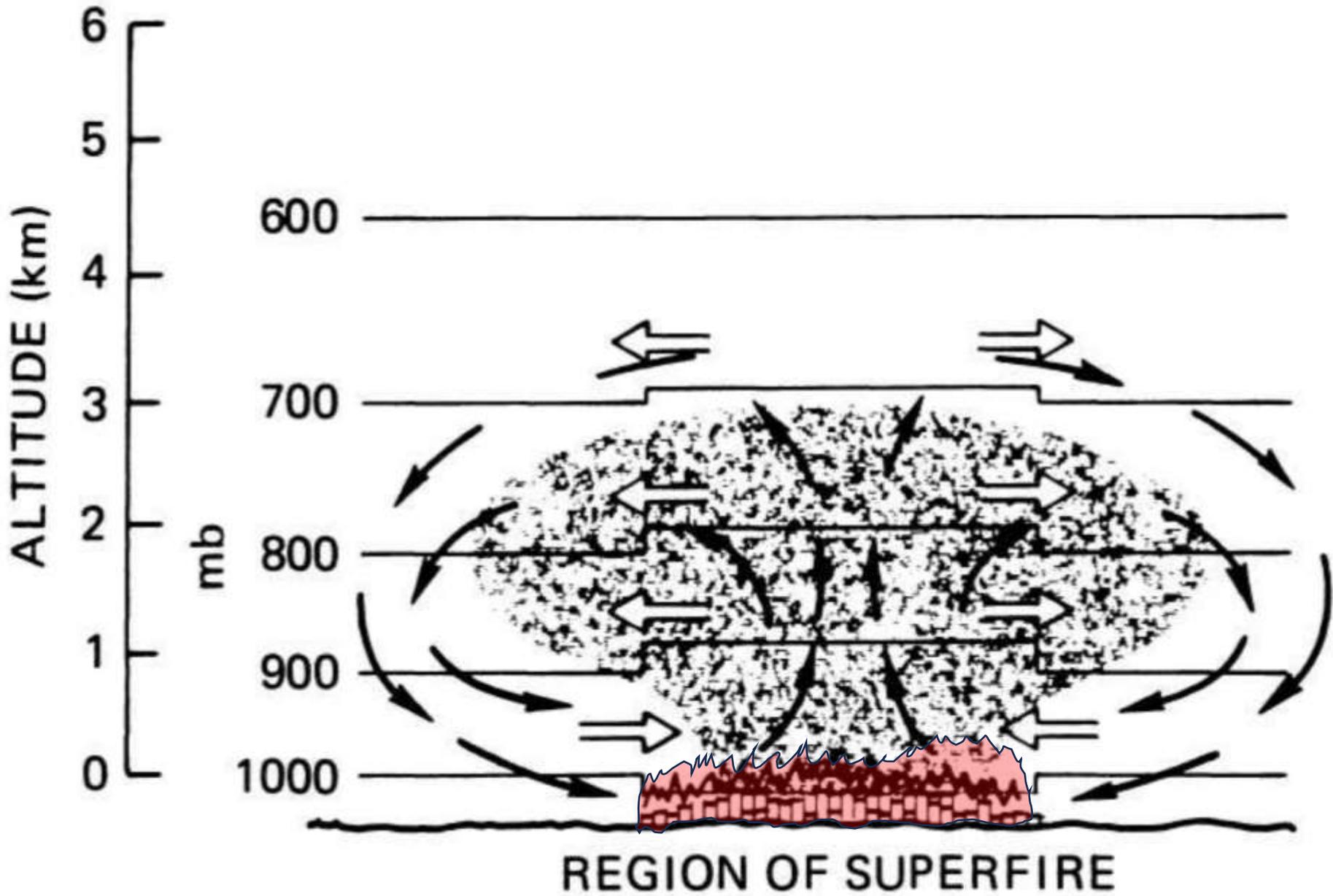
---



# How Firestorm Develops from Rising Buoyant Air

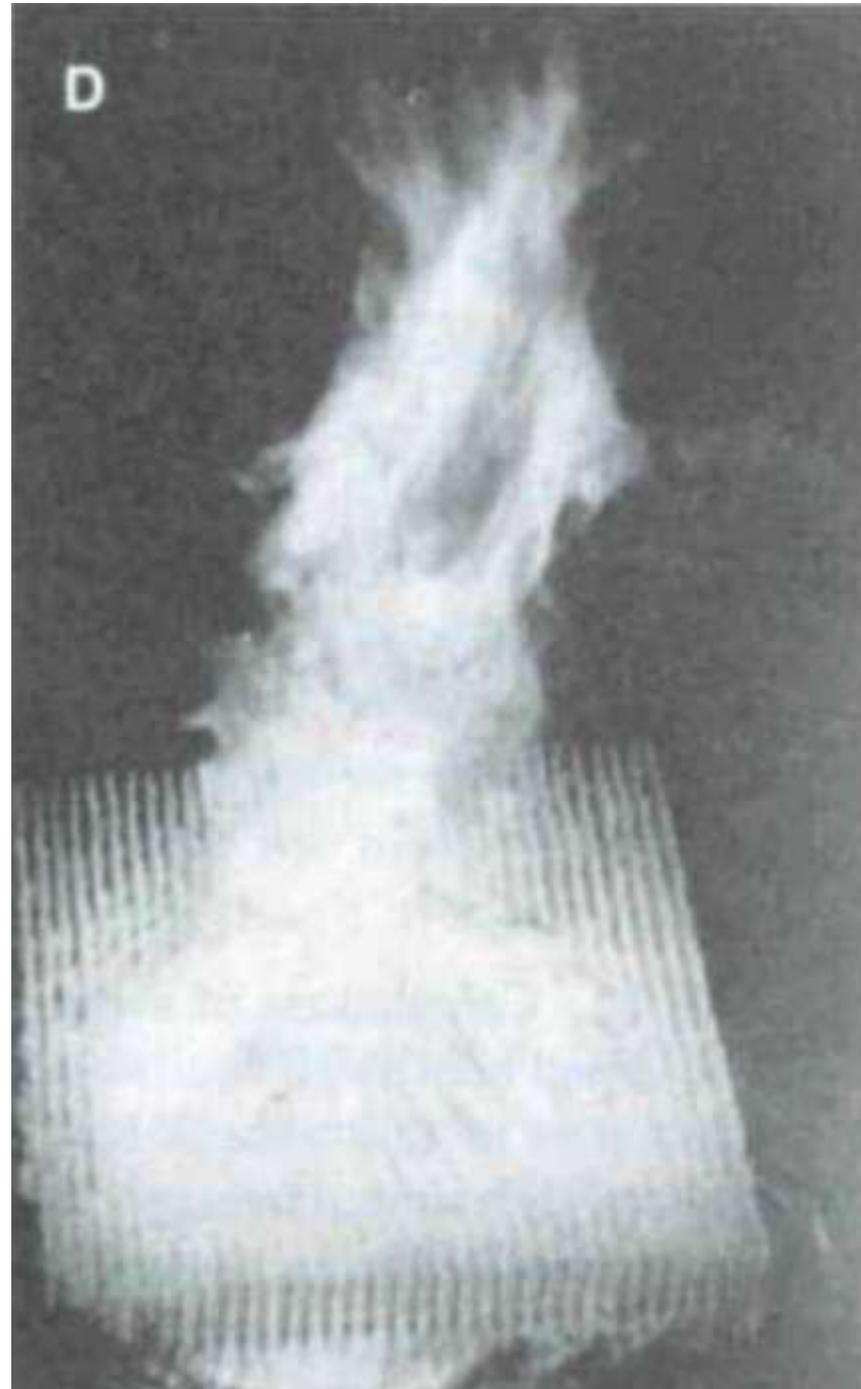
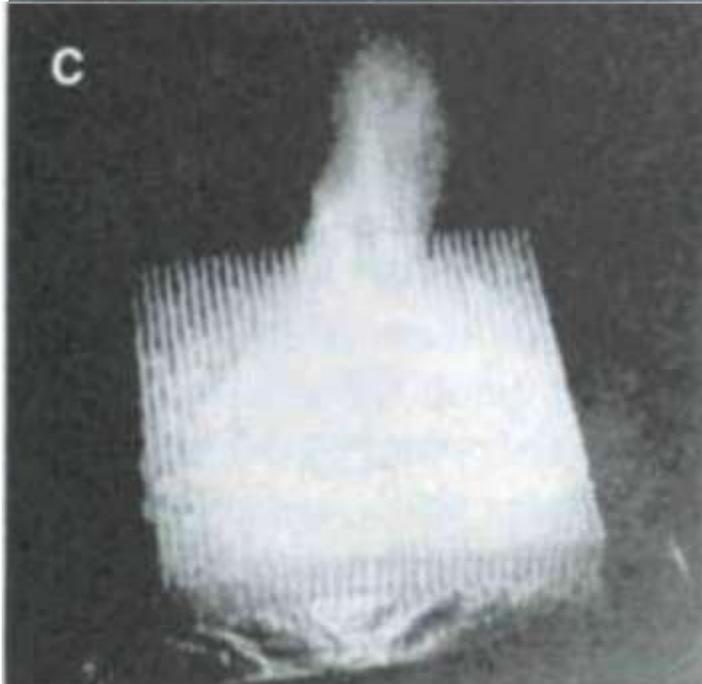
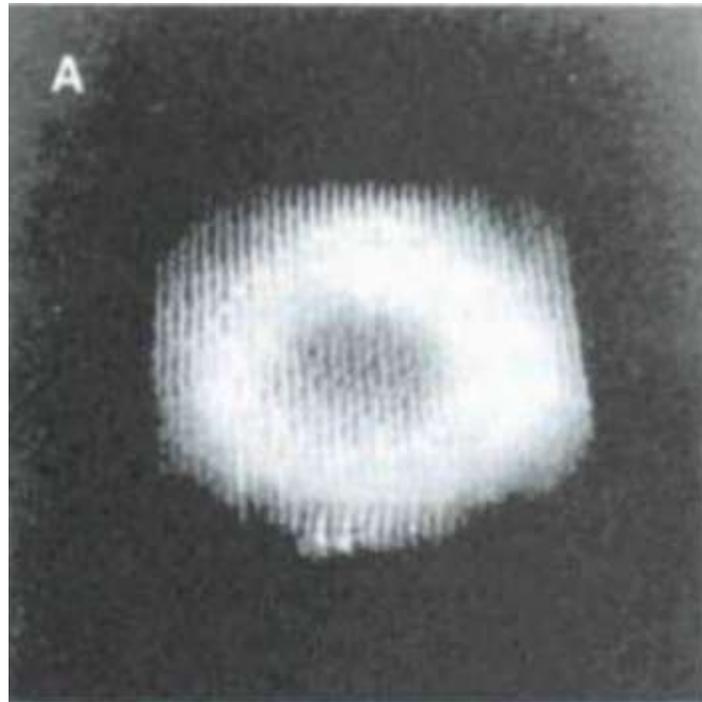


# How Firestorm Intensifies from Rising Buoyant Air



# Table Top Experiment with Candles that Demonstrates How Firestorm Circulation Develops

---



# FIRESTORM!: Hurricane Force Ground-Winds and Tornadoes Created by Superheated Air from Combustion

---



# FIRESTORM!: Hurricane Force Ground-Winds and Tornadoes Created by Superheated Air from Combustion

---







## Victims of the Hamburg Firestorm Who Stayed in Their Shelter

---



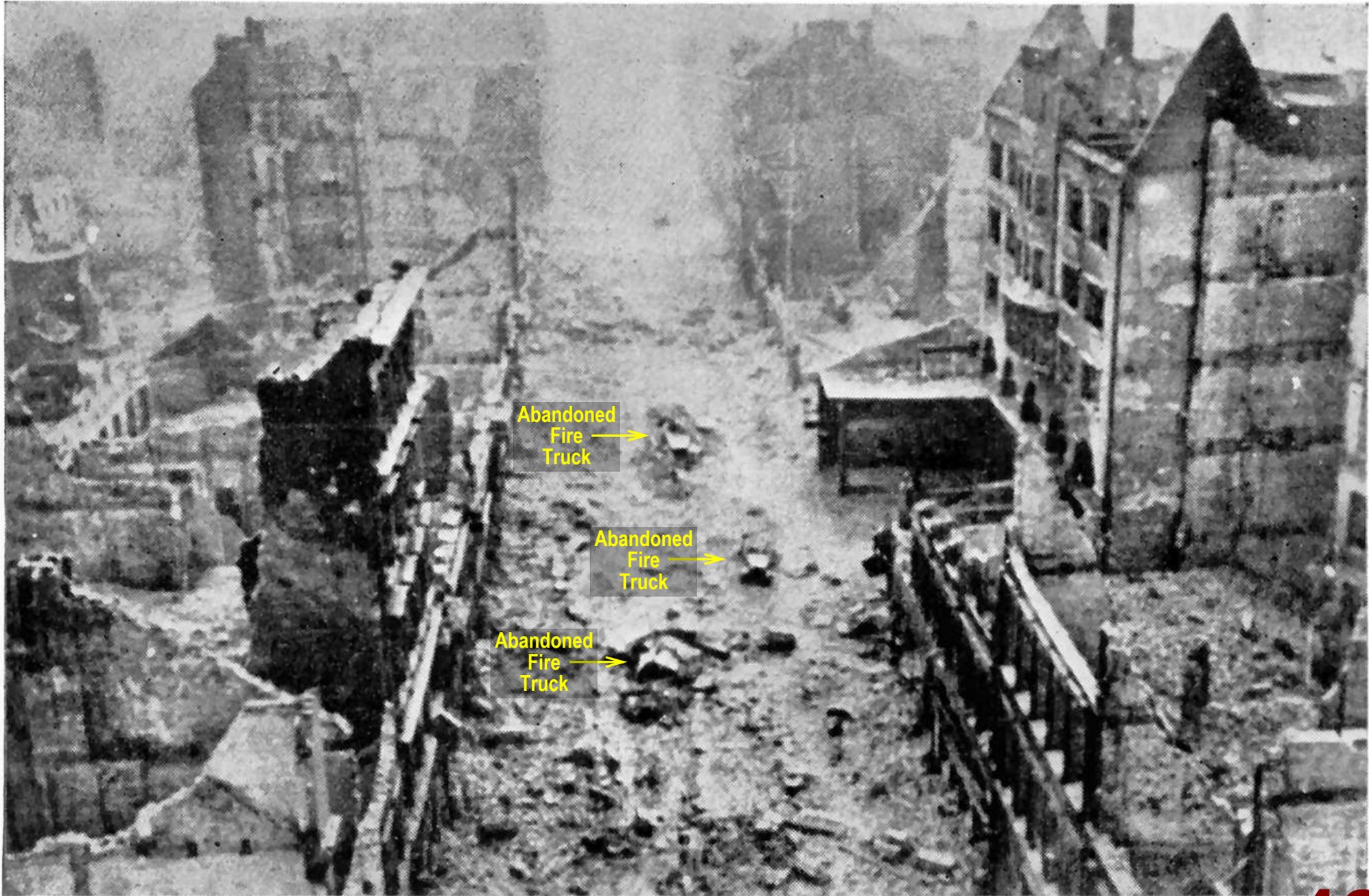
## Explosive Bombs Not Needed : Production of Debris Everywhere from Collapsing Structures

---



# Firetrucks Abandoned in the Streets Due to Heated Hurricane-Force Winds Above the Temperature of Boiling Water and Carrying Burning Fire-Embers and Other Debris

---



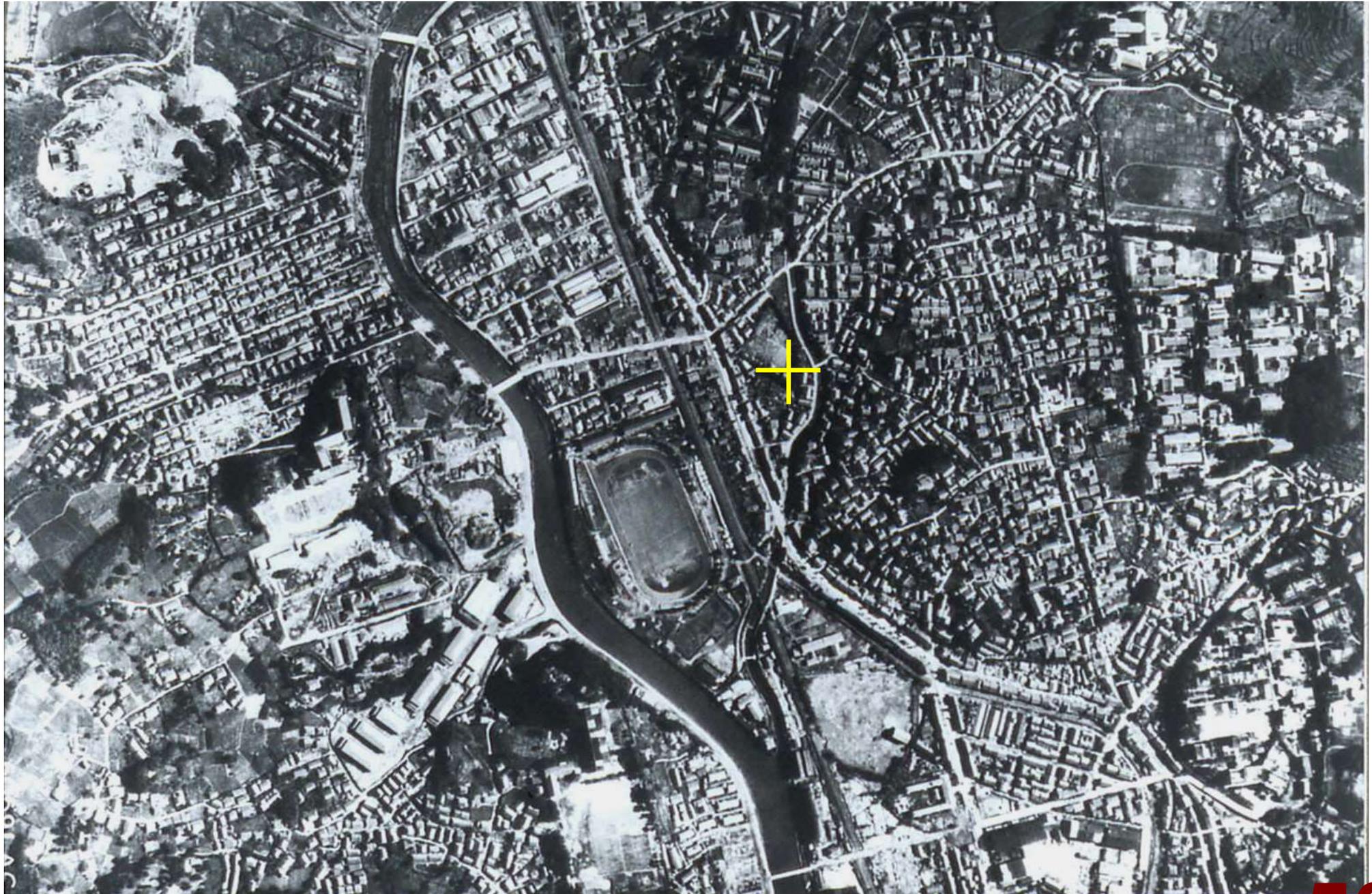
## Area Being Cleared Where Depth of Debris from Collapsed Buildings Can be Seen

---

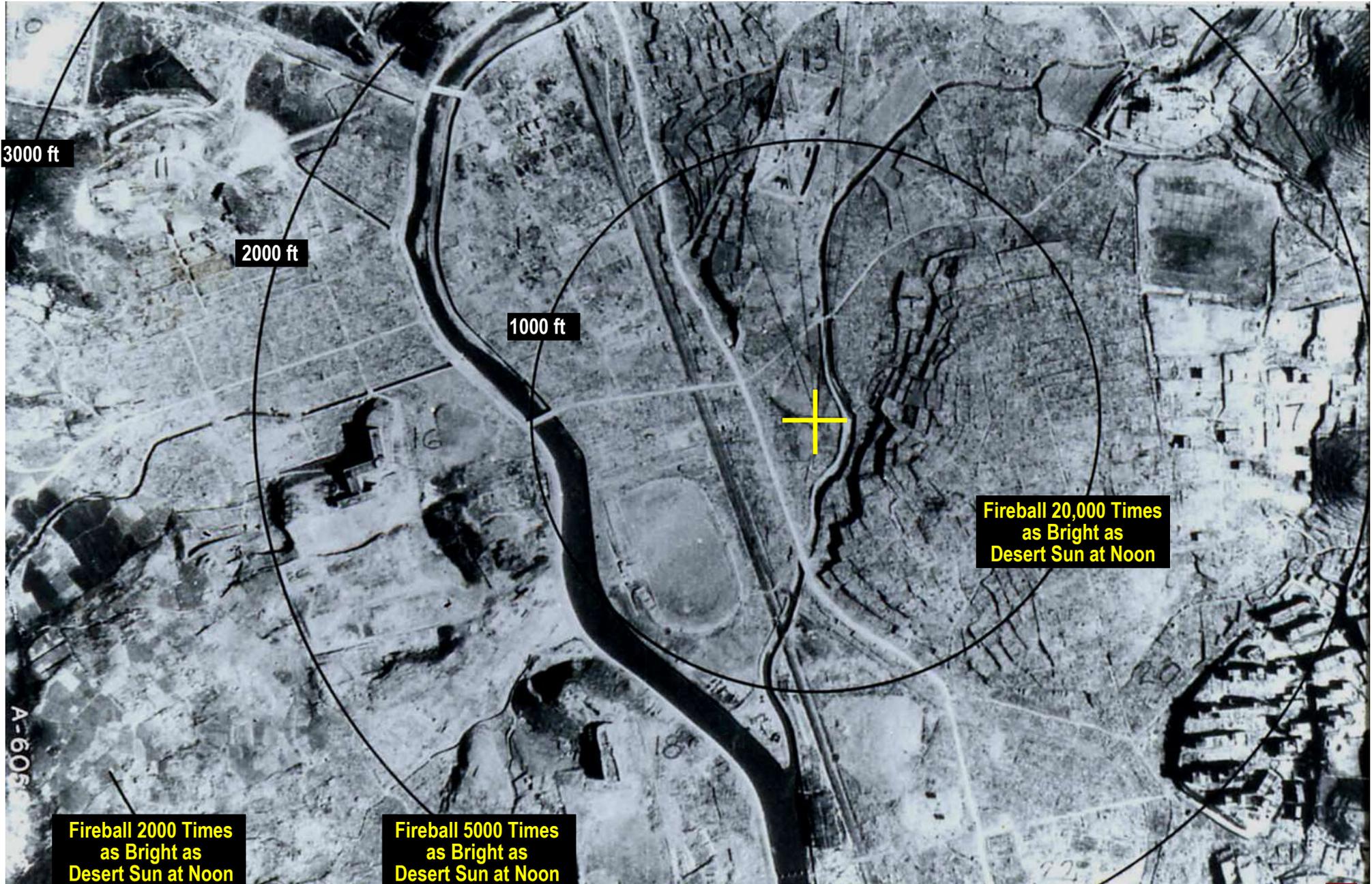


**Nagasaki, Japan Immediately Prior to Nuclear Attack and “Firestorm” from the Detonation of a 22 Kiloton Bomb on August 8, 1946 (Slide 1 of 2)**

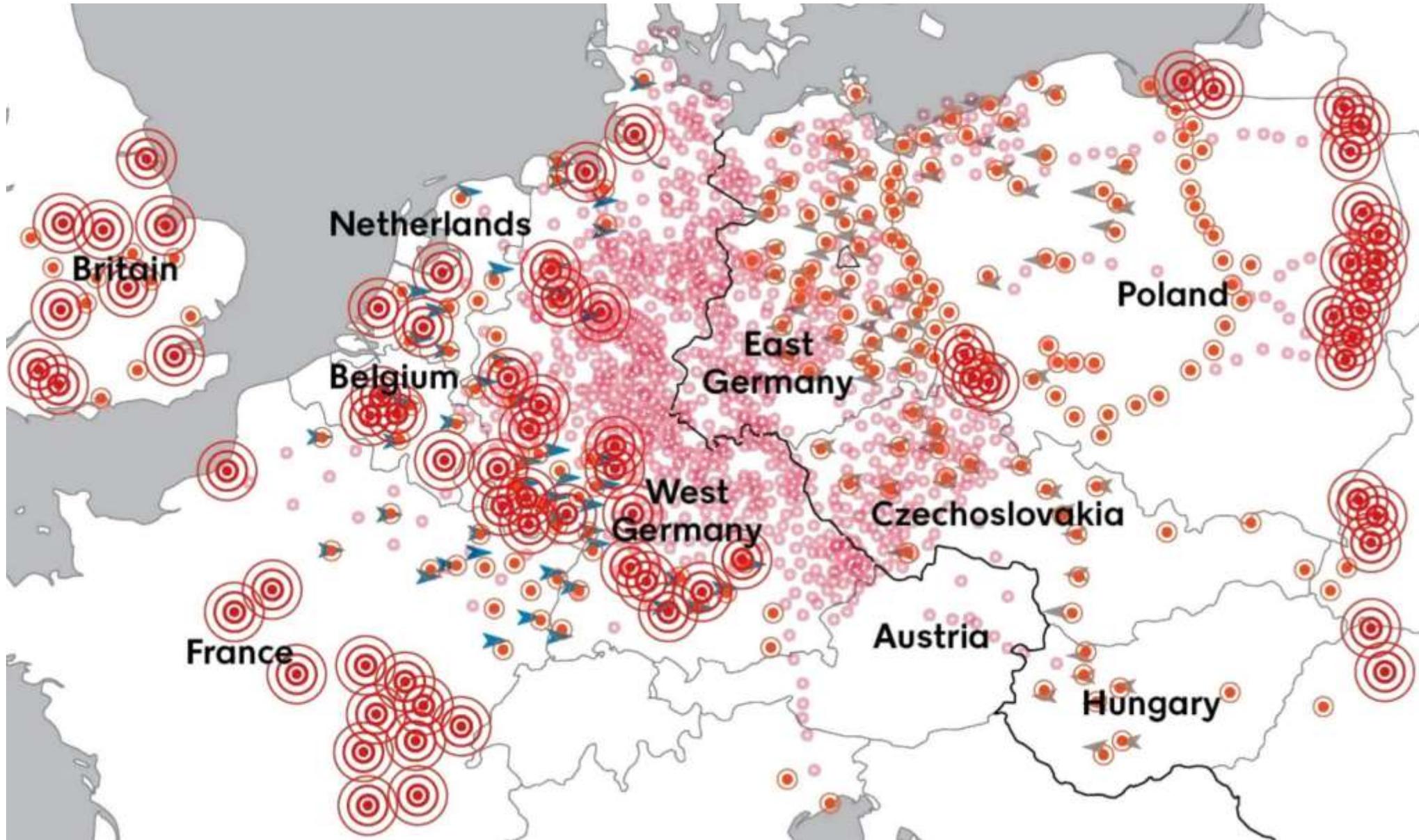
---



# Nagasaki, Japan After a Nuclear Attack and "Firestorm" from the Detonation of a 22 Kiloton Bomb on August 8, 1946 (Slide 2 of 2)



# Nuclear Attacks by Day 5 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



Nuclear-Weapons  
Detonations

 Tactical

1-15 kt Bomb

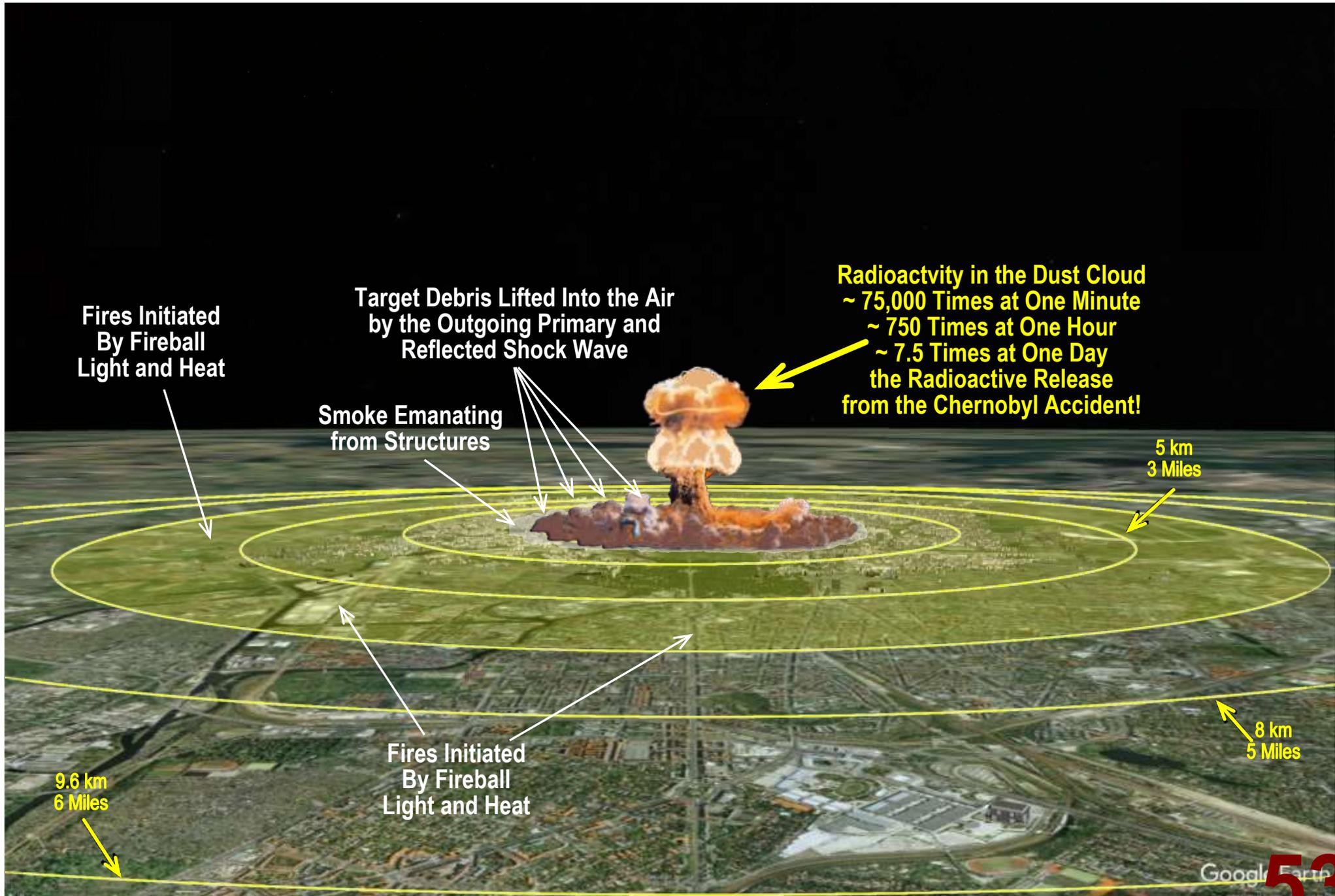
 Theater

75 kt Bomb

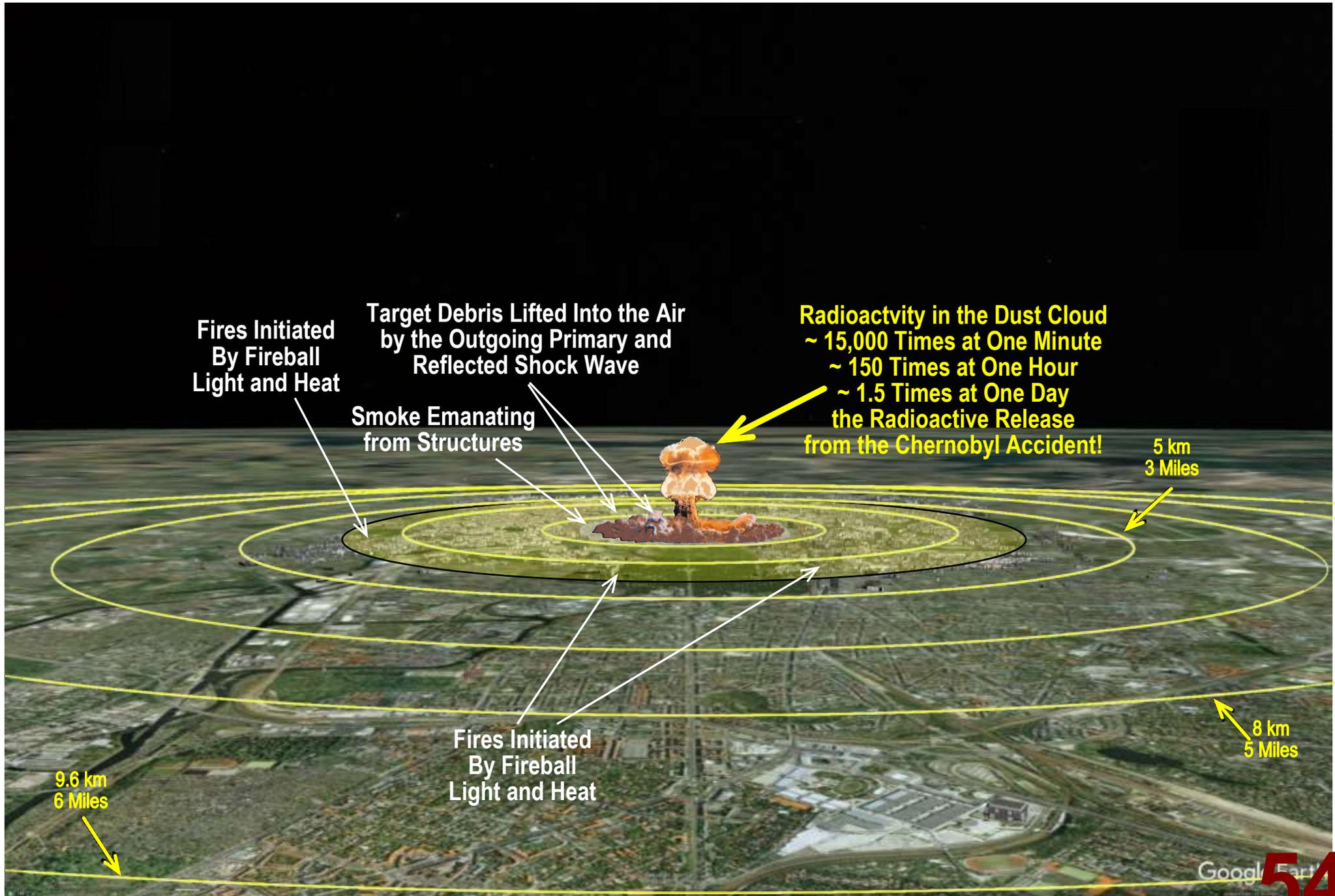
 Strategic

100 – 800 kt Bomb

# Actual Consequences of a Russian "Theater Nuclear Weapon" (75 kt) Detonation over Berlin (Yield Revealed in Statement by Putin)

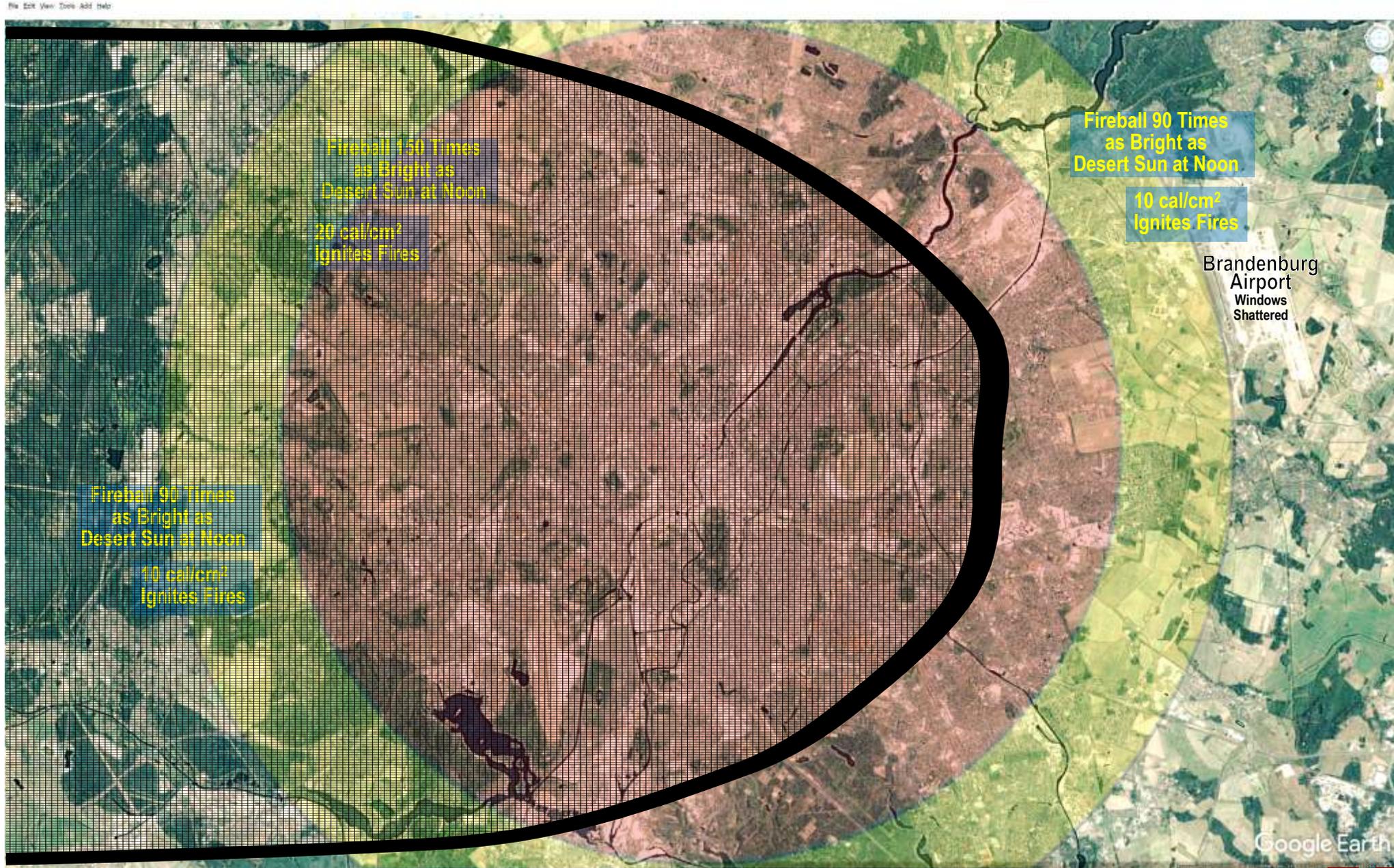


# Actual Consequences of a Russian "Tactical Nuclear Weapon" (15 kt) Detonation over Berlin (Typically Delivered by Artillery Shells)



# Zone of Mass Fire (Firestorm) Following 800 kt Attack on Berlin

Roughly 500 to 800 km<sup>2</sup> to (200 to 300 mi<sup>2</sup>) Destroyed by “Firestorm”

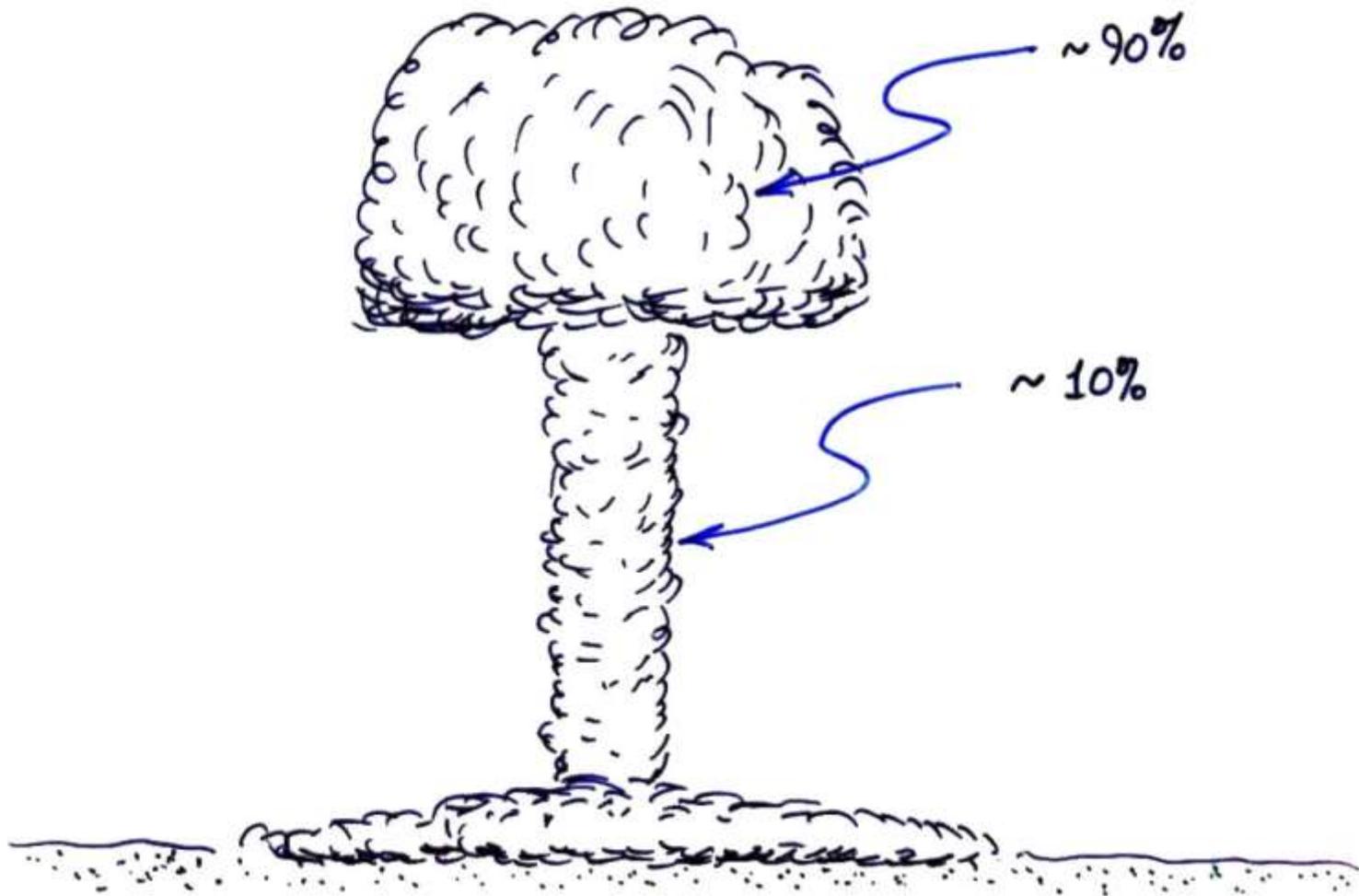


---

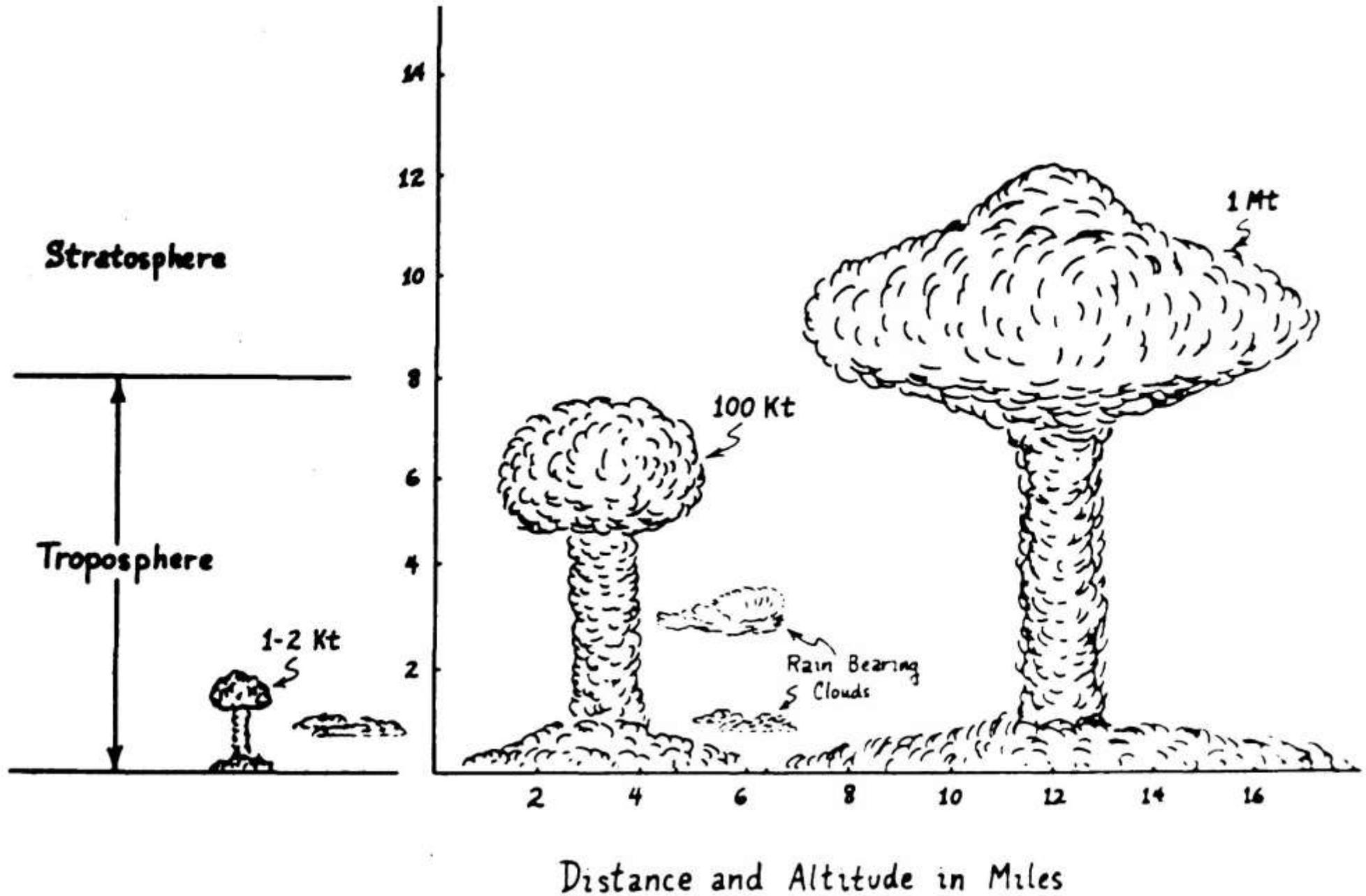
# **RADIOACTIVITY FROM DETONATION**

---

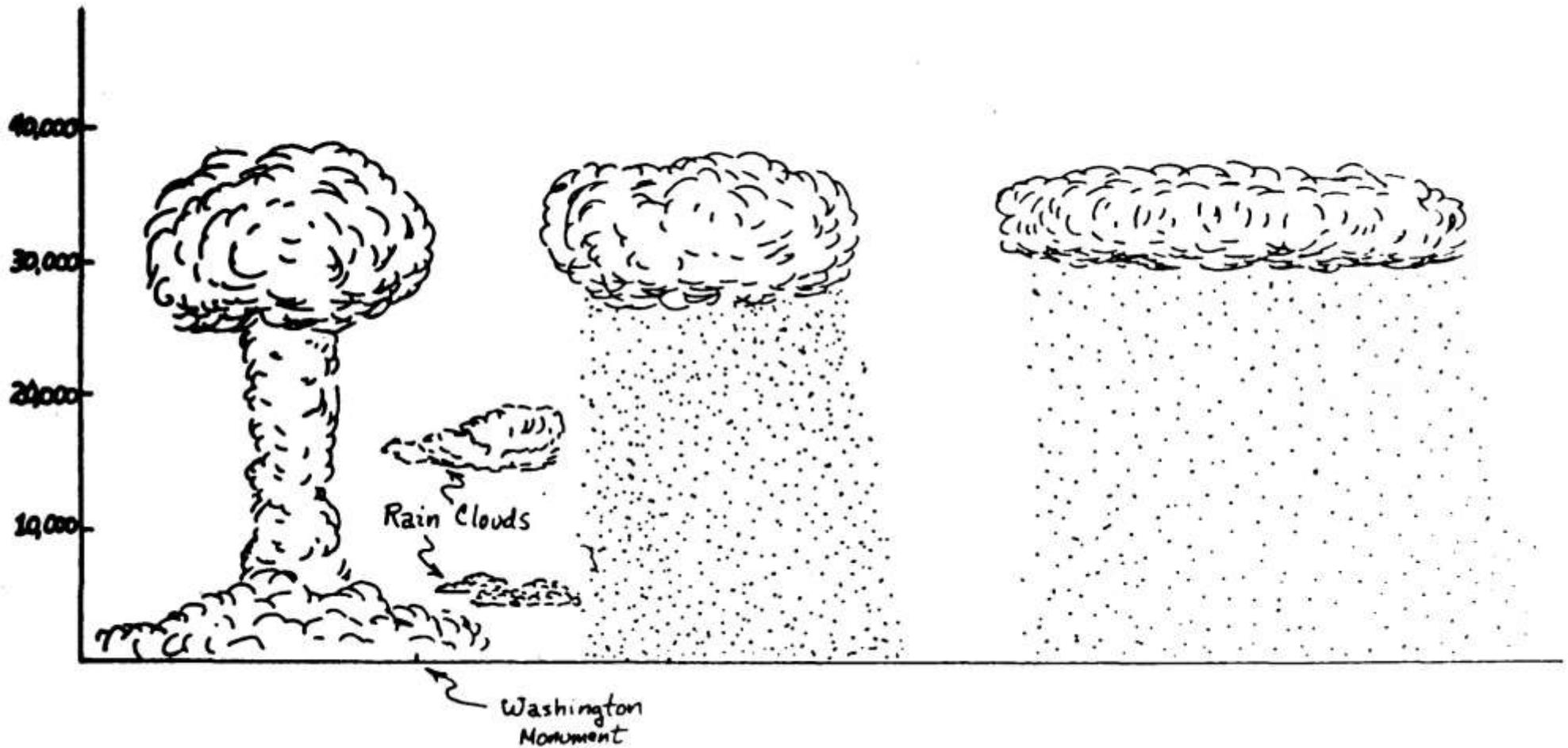
Spatial Distribution of Lofted Weapons  
Residues from Contact Surface Burst



# Radioactive Nuclear Debris Clouds from Nuclear Detonations



# Radioactive Fallout from Wind-Driven Nuclear Debris Cloud



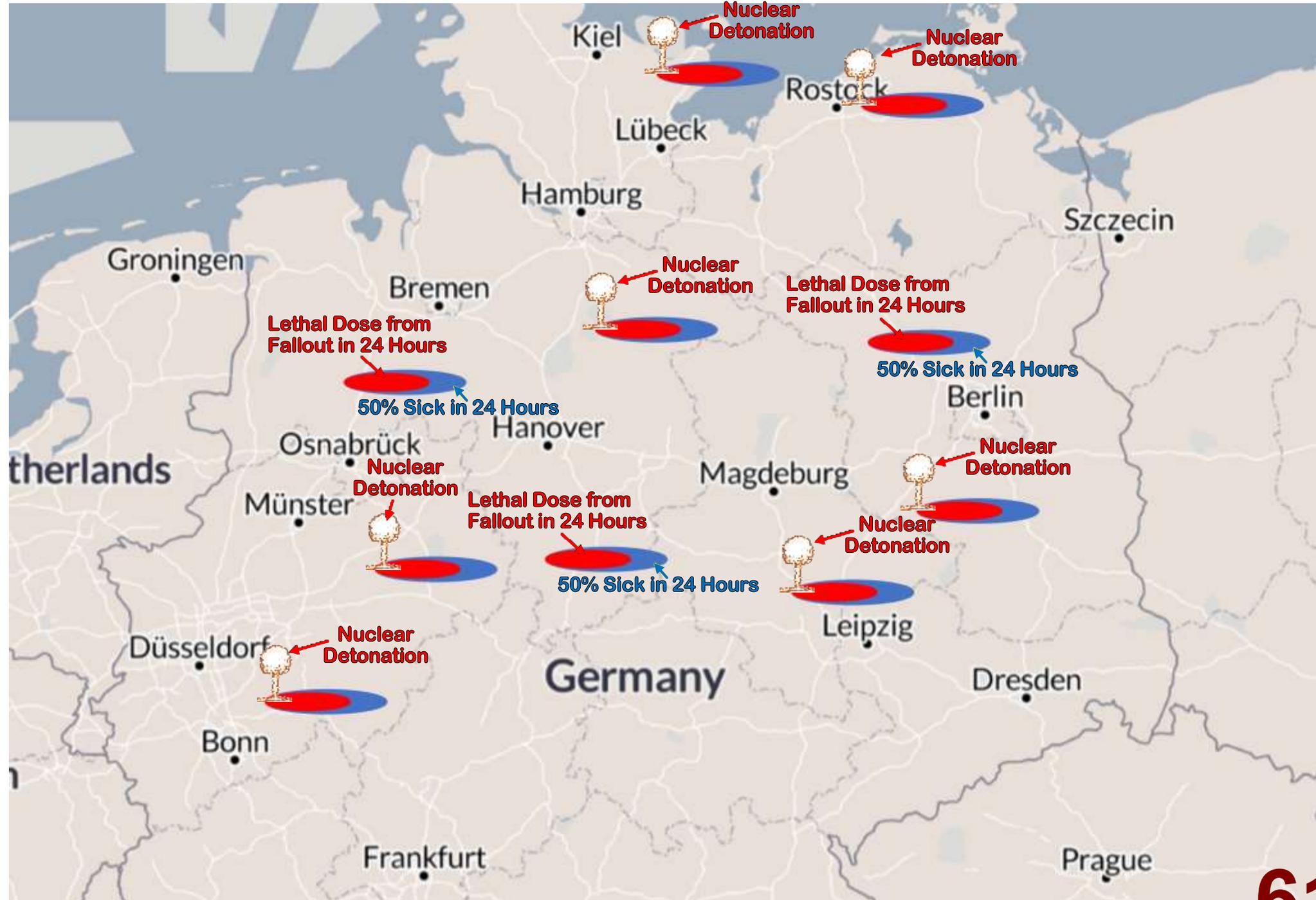
# Zone of Mass Fire (Firestorm) Following 800 kt Attack on Berlin

Roughly 500 to 800 km<sup>2</sup> to (200 to 300 mi<sup>2</sup>) Destroyed by “Firestorm”

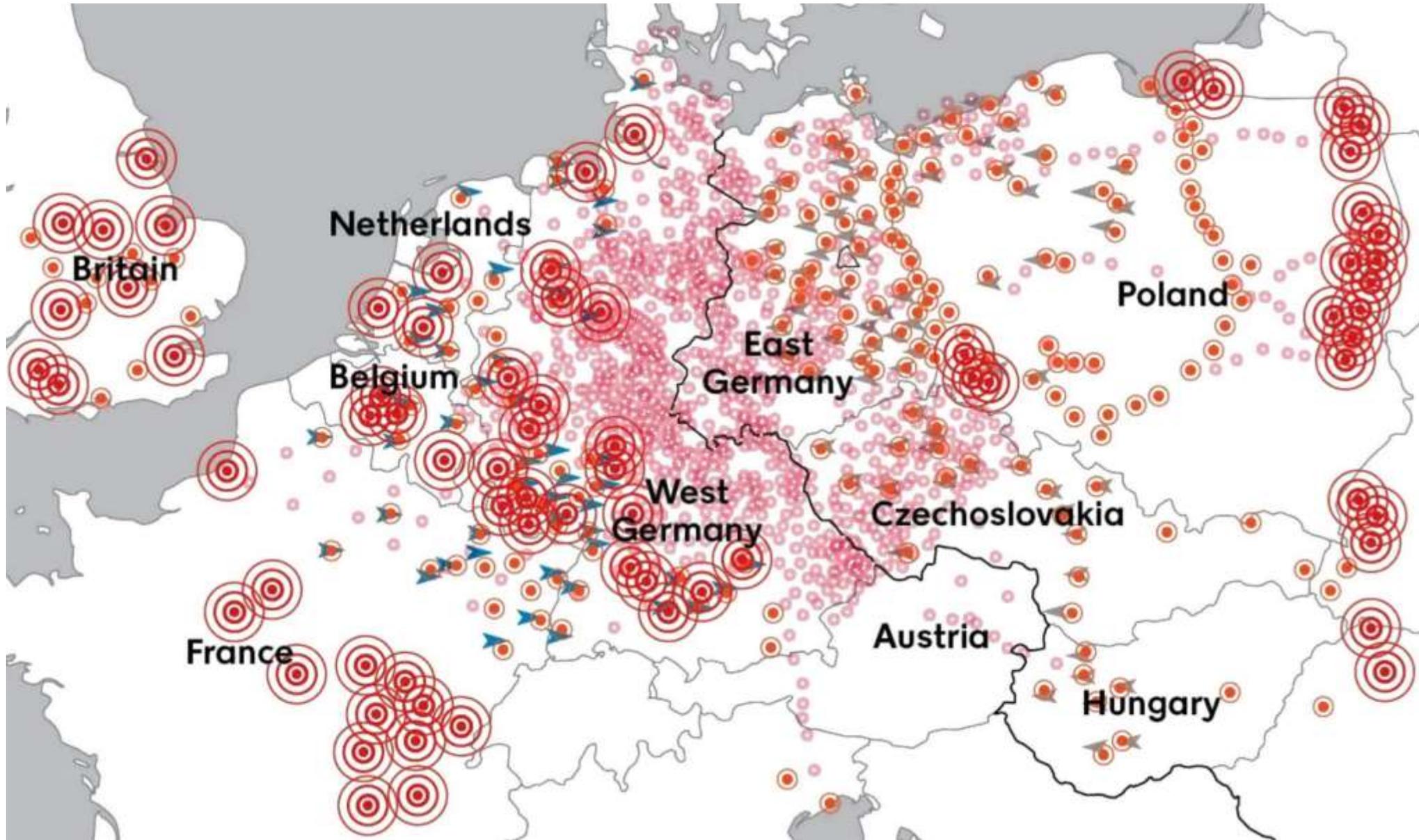


# Potential Fallout Patterns from Very Limited Russian Tactical Nuclear Missile Counterstrikes

Notes: Weapon Yields ~ 75 kt (Cited by Putin); 20 mph Winds; 50% Fission Yields



# Nuclear Attacks by Day 5 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War



Nuclear-Weapons  
Detonations

 Tactical

1-15 kt Bomb

 Theater

75 kt Bomb

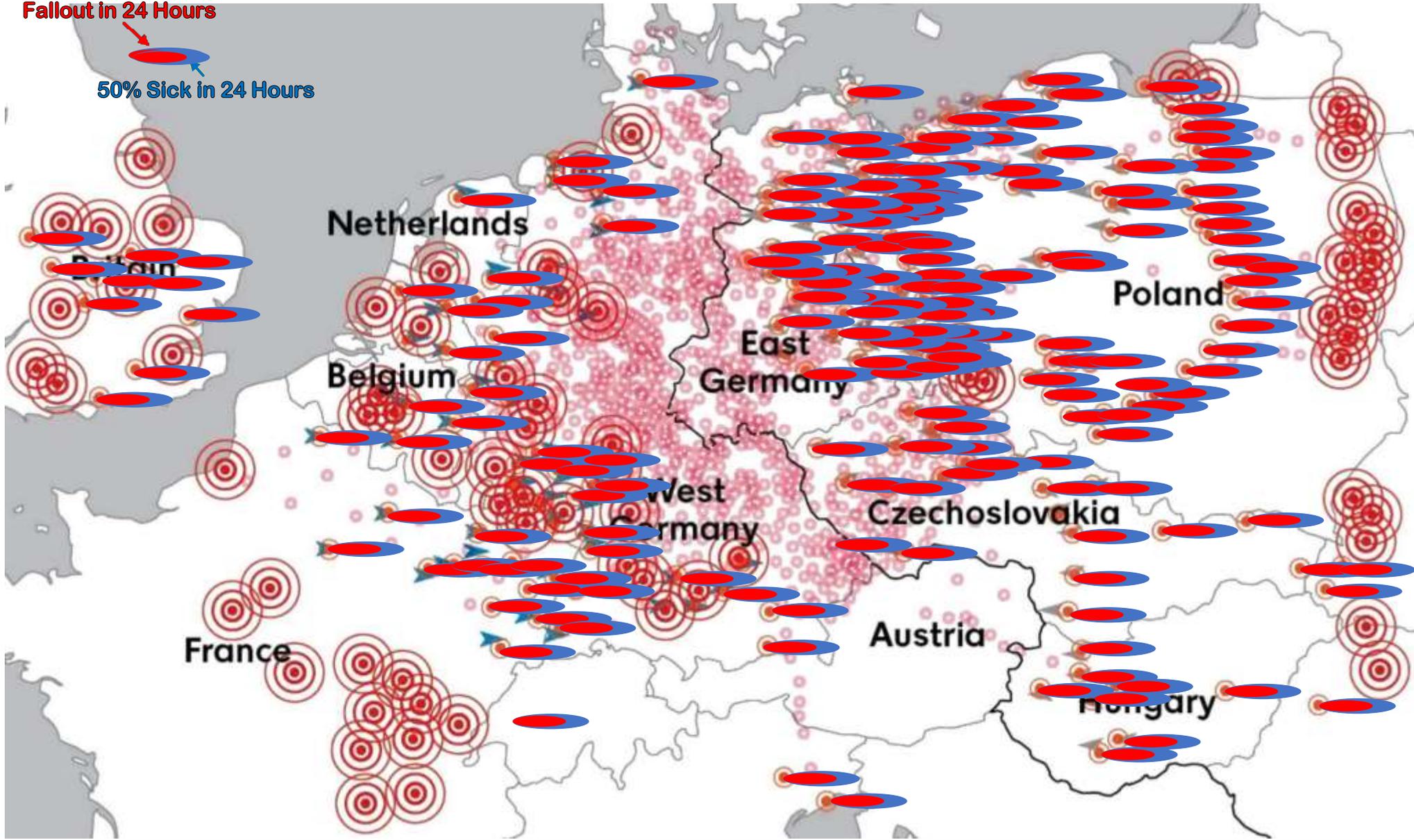
 Strategic

100 – 800 kt Bomb

# Nuclear Attacks by Day 5 of the 1983 Nuclear War Game (Able Archer) which then Escalated Into a Global Nuclear War

Lethal Dose from  
Fallout in 24 Hours

50% Sick in 24 Hours



Nuclear-Weapons  
Detonations

Tactical

1-15 kt Bomb

Theater

75 kt Bomb

Strategic

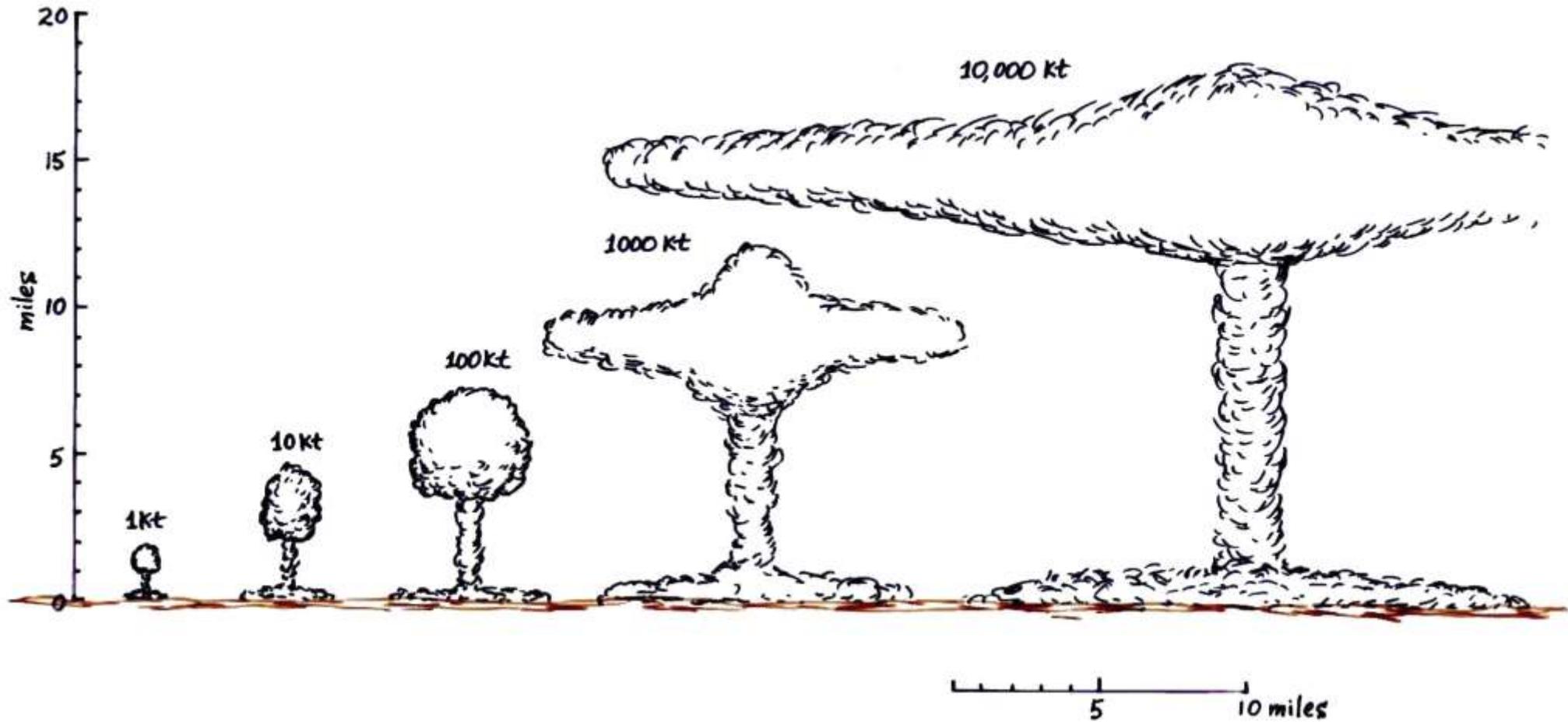
100 - 800 kt Bomb

## Man Dying from Radiation Exposure



Profound changes in the human immune and blood system occur after exposure to radiation. White blood cells, critical for fighting infection diminish in numbers. Clotting of blood is also depressed. This results in victims of radiation exposure to die of internal hemorrhaging and infection. Exposure to levels of radiation poisoning that do not kill the individual quickly can result in death occurring in 4 to 6 weeks from an initial exposure.

# Radioactive Nuclear Debris Clouds from Nuclear Detonations of Different Explosive Yields



---

# Policy Implications for Germany

---

- The effects of nuclear weapons are so large and extensive, a nuclear war will effectively end modern civilization
- As such, Fighting and winning a nuclear war is simply not technically possible
- This is a fact based on physical realities, not a policy “viewpoint.”
- Nuclear weapons are simply too destructive and lethal for winning to be meaningful for human civilization
- In view of this situation, deterring nuclear war is the only sensible policy objective for human civilization
- Actions that provoke instability (rather than deterrence) are therefore counterproductive
- Deterrence that does not provoke instabilities, requires wise and thought-out management of nuclear forces

- The deployment of hypersonic and cruise missiles to Germany has nothing to do with deterrence.
- Deterrence is already achieved by substantial nuclear-strike capabilities in submarines, long-range, ballistic missiles, ship-based missiles, bombs deliverable by aircraft and a host of other systems.
- The deployment mobile short-warning strike systems on German soil will be perceived by Russia as a nuclear war-fighting provocation aimed at achieving “delusional nuclear primacy”
- It will not be a deterrent, but will instead provoke a dangerous short-response Russian force posture
- It will drastically reduce the warning times for Russian leaders to react to a Western decapitating nuclear attack and gravely increase the chances of an accidental use of nuclear weapons.
- If there is an accidental use of nuclear weapons in Germany, it will almost certainly instantly escalate into a global nuclear war
- This extremely ill-advised deployment is a result of a dangerous and delusional nuclear war-fighting doctrine called Nuclear Primacy
- Nuclear Primacy is a delusional belief system that denies the physical realities of nuclear weapons and argues it is possible to fight and win nuclear wars.
- The theory requires that the winning side disarm the enemy by striking first, fast, and forcefully
- This delusional theory of nuclear war-fighting simply ignores the vast and overwhelming killing power of nuclear weapons.

**A Potential Path to an Accident  
Involving US and Russian Strategic Nuclear Forces**

---

# **The US-German Typhon Deployment A Guarantee to Make Europe an Ignition Point for Global Nuclear War**

---

Presentation to *Deep Dive*

July 17, 2024

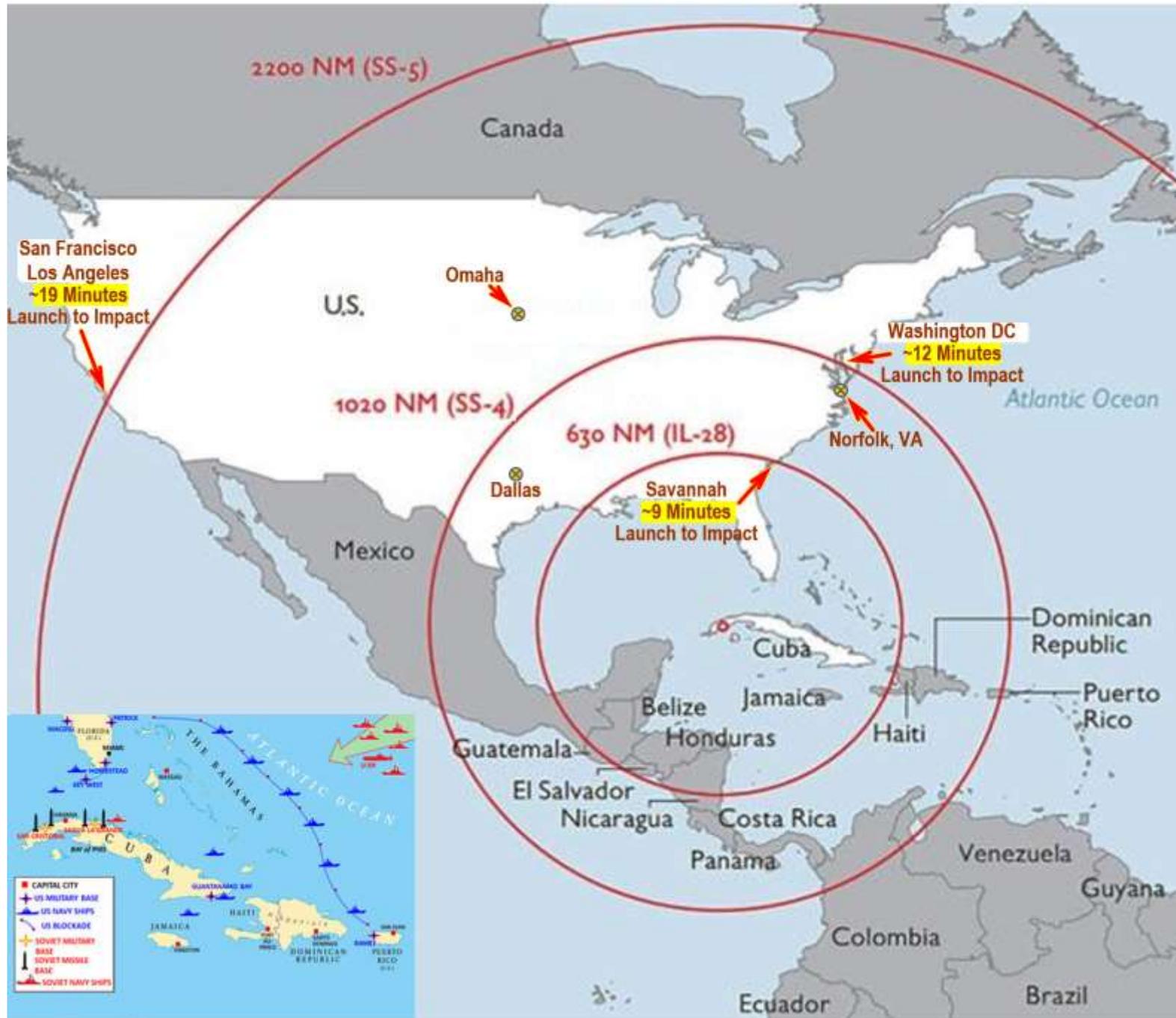
Theodore A. Postol

Professor Emeritus of Science, Technology, and National Security Policy

Massachusetts Institute of Technology

postol@mit.edu; 617 543-7646

# Timelines for Russian Nuclear Strikes Against Washington DC and Other US Cities from Cuba in 1962



**These Short Timelines from Launch to Impact Were a Major Factor Precipitating the Cuban Missile Crisis of 1962**

<b>Launch from Cuba to Impact on Target City</b>		
<b>Target City</b>	<b>Time to Impact (Minutes)</b>	<b>Range to Target (km)</b>
Washington DC	12	1839
New York	13	2166
Boston	14	2443
Omaha	14	2374
Dallas	11.5	1750
Savannah	9	1028
San Francisco	19	4100

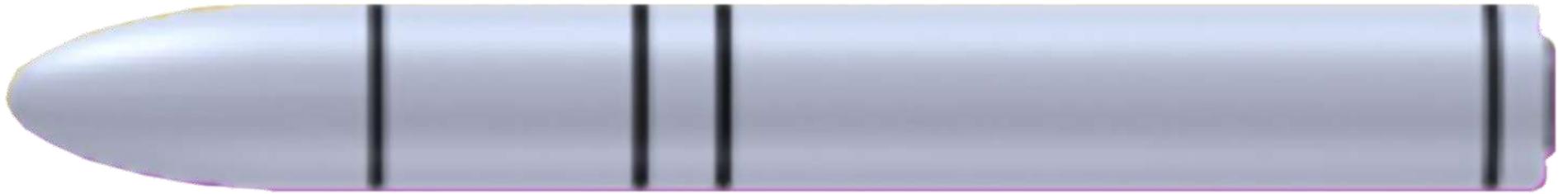
**Warning Timelines from German Territory to Moscow  
3 to 11 Minutes**

Launch to Impact (Minimum Energy) Time to Moscow from 2000 km ~ 12.5 Minutes

Launch to Impact (Minimum Energy) Time to Moscow from Germany's Eastern Border (1500 km) ~ 12 Minutes

Warning Times as Determined by Choices of Trajectory and Radar Line-of-Sight from Moscow

**3 to 11 Minutes**



---

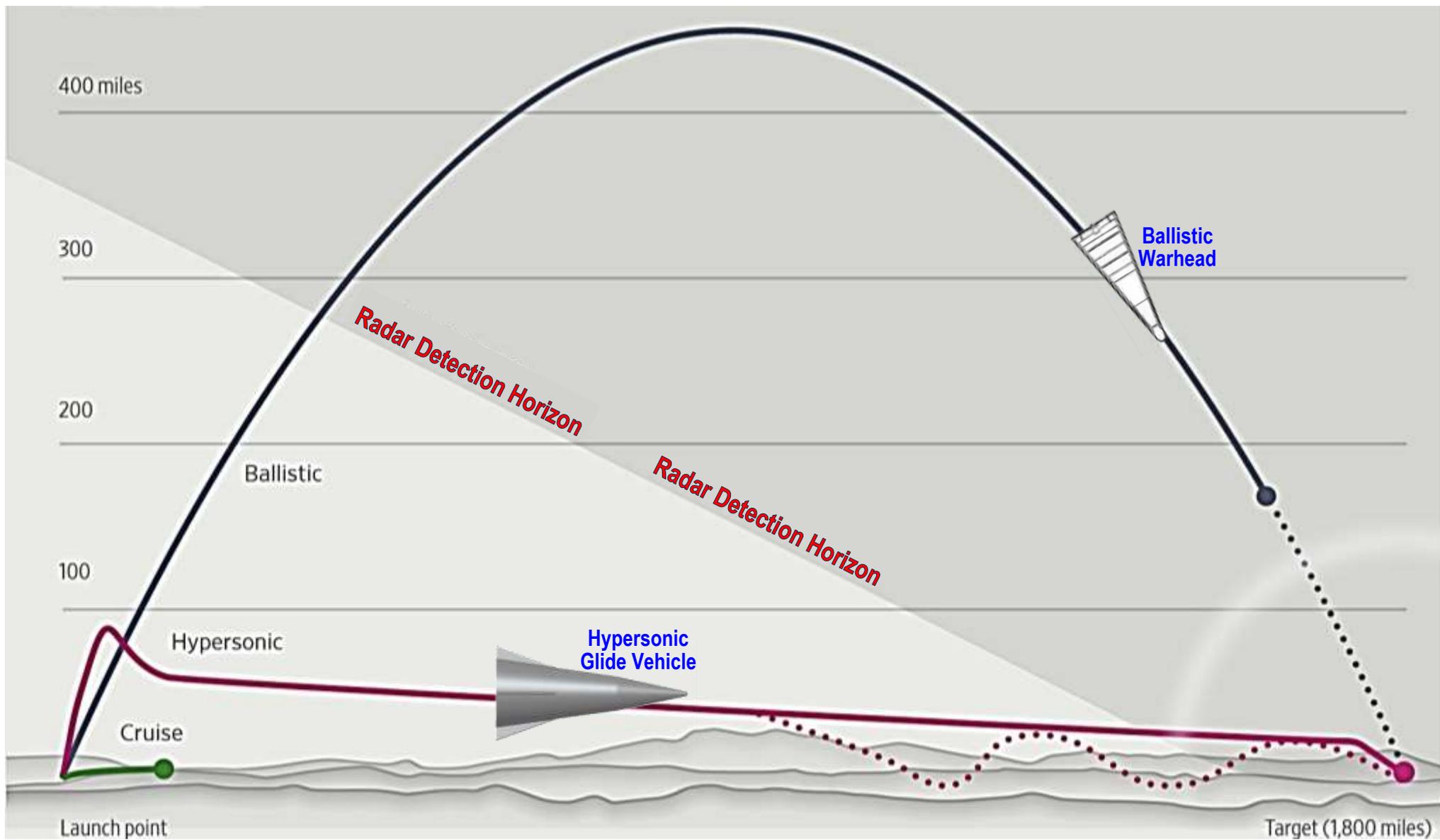
## **The Uncomprehended NUCLEAR DANGER**

---

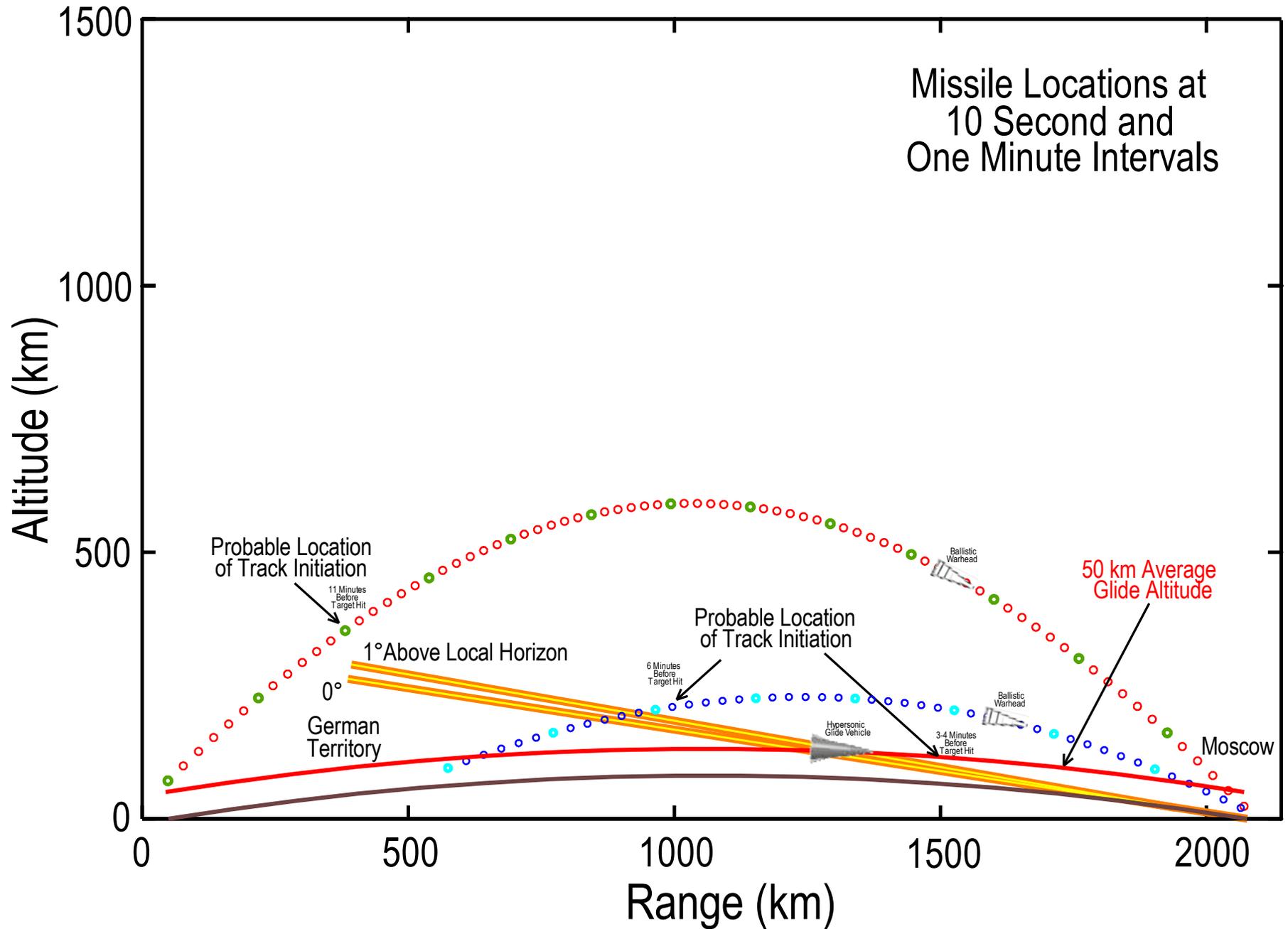
**The Currently Under Development Hypersonic Missile System  
Announced by the US and Germany for Deployment in 2026  
Will Create an Unstable Nuclear Threat Environment in Europe  
Far More Dangerous Than the Environment that Led  
to the Cuban Missile Crisis of 1962**

---

**The Planned Typhan Hyperson Missile System Will Very Substantially Reduce Radar Early Warning Times for Russia – Which Will Have to Depend on Radars to Detect an Attack**  
**Moscow Would Have Perhaps 3 to 4 Minutes Warning- of a Nuclear Attack from German Territory**

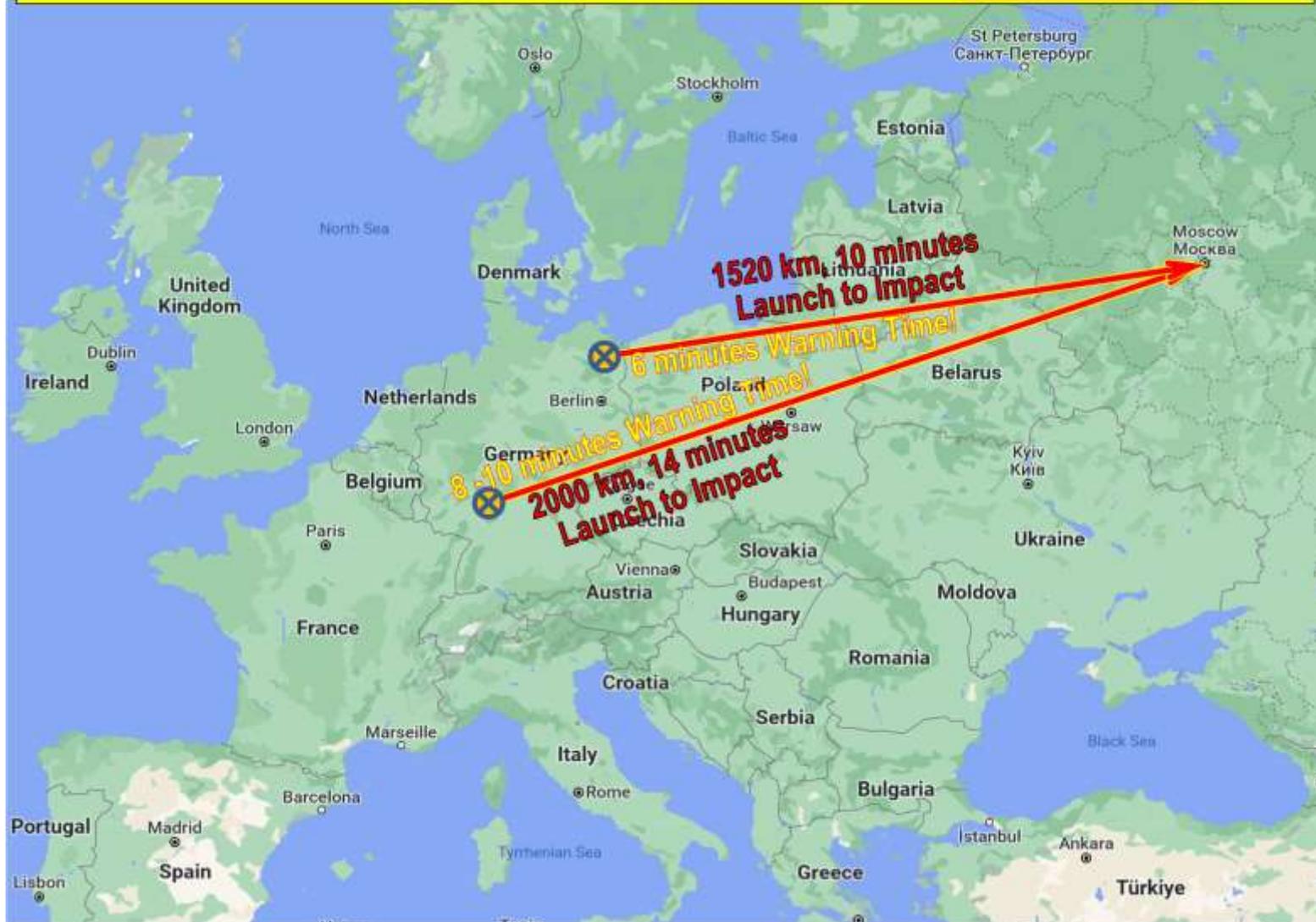


# The Ballistic Missiles will be Capable of Carrying 100kt Trident II Warheads to Moscow from German Territory on EXTREMELY SHORT TIMELINES



# Timelines for Russian Nuclear Strikes Against Moscow from Germany in 2026

**Extremely Short Warning Times for NATO Nuclear Attacks on Moscow!**  
**Radars in Moscow Could Only Detect an Incoming NATO Nuclear Attack for Times As Short as 6 Minutes!**





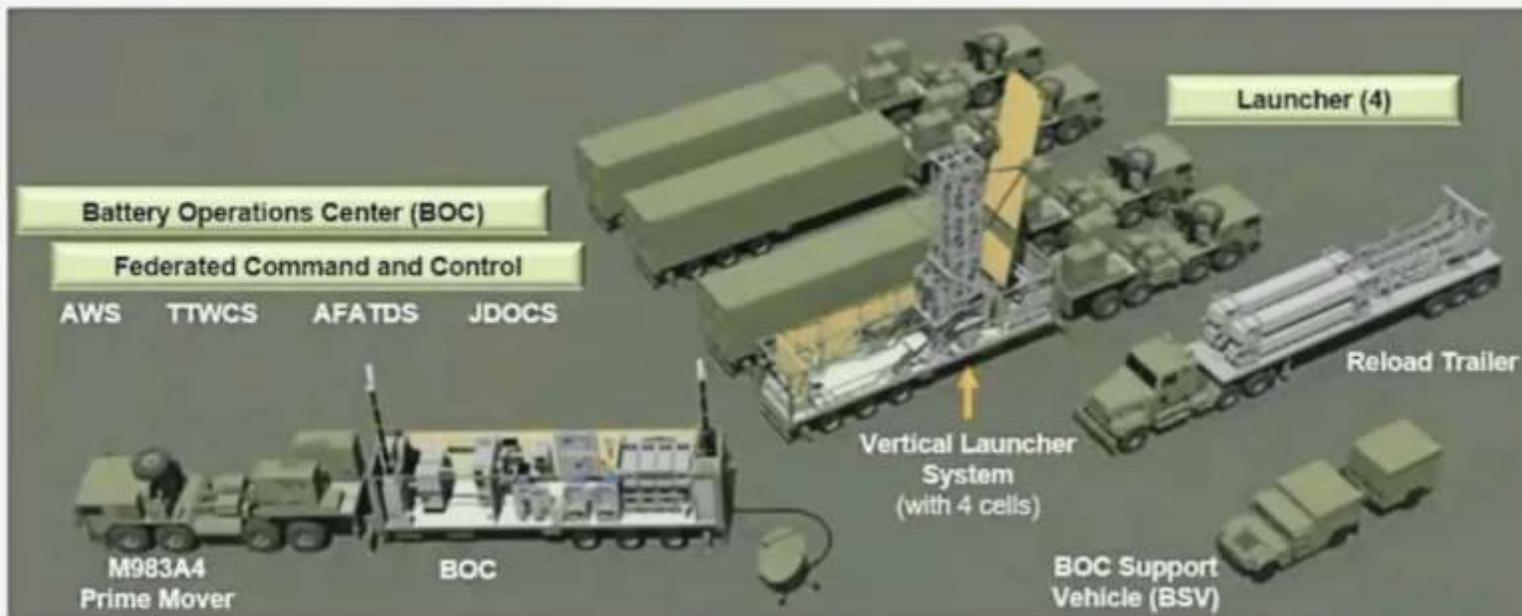
# “Typhon”: What We Are Delivering



WE DELIVER TO SOLDIERS

## Mid-Range Capability (MRC)

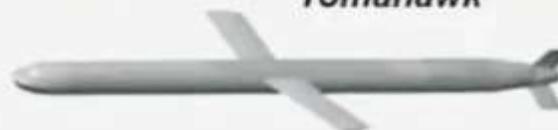
**Mission:** Deliver an initial prototype MRC NLT 4QFY23 at the Battery Level as part of the Long Range Fires Battalion in support of Multi-Domain Operations



SM-6

### Future Capability

Tomahawk  
SM-6

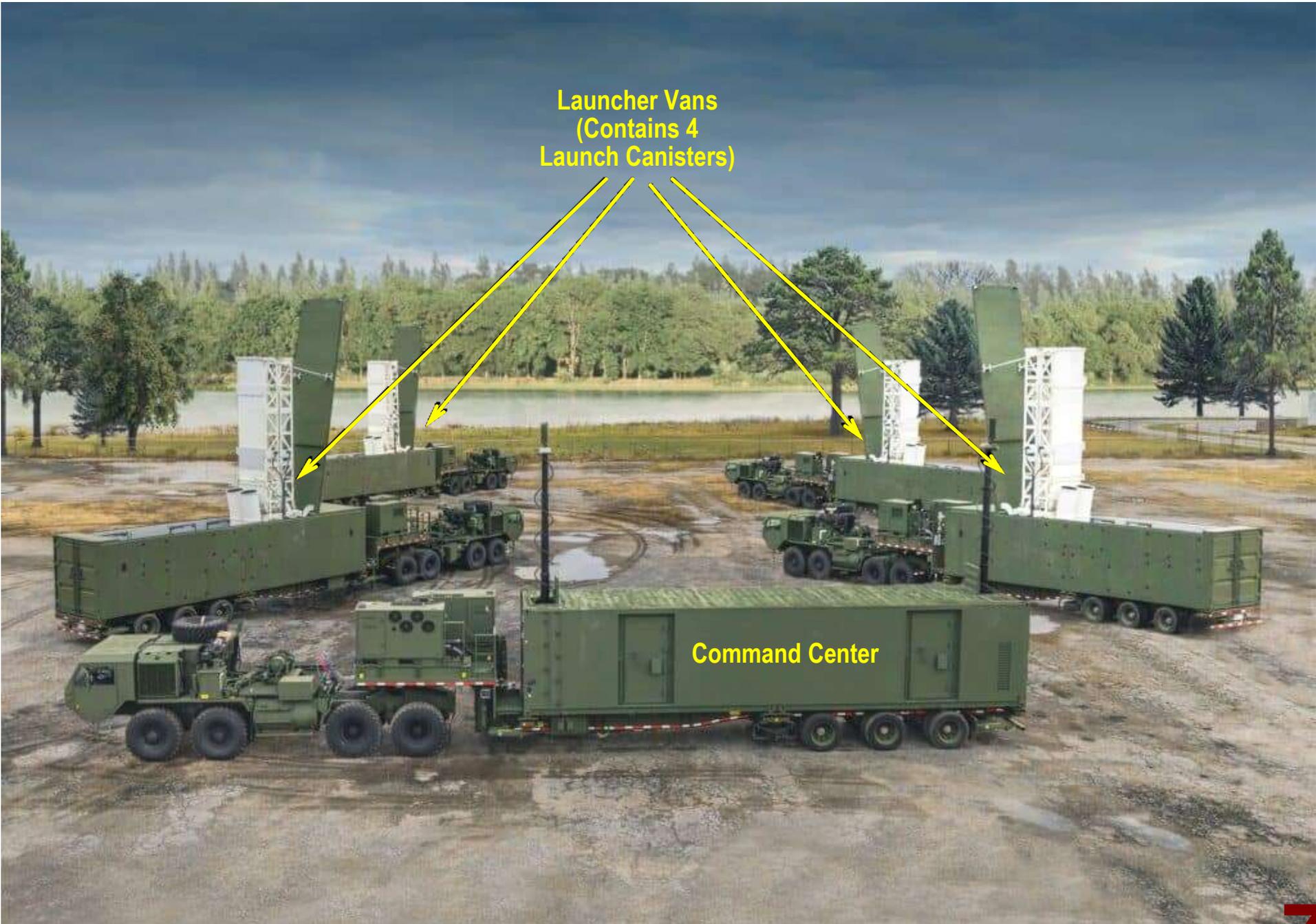


Tomahawk

## Transition Team

The Embedded Transition Team plans, programs, and synchronizes all activities associated with the development and sustainment of the MRC Program of Record (PoR)

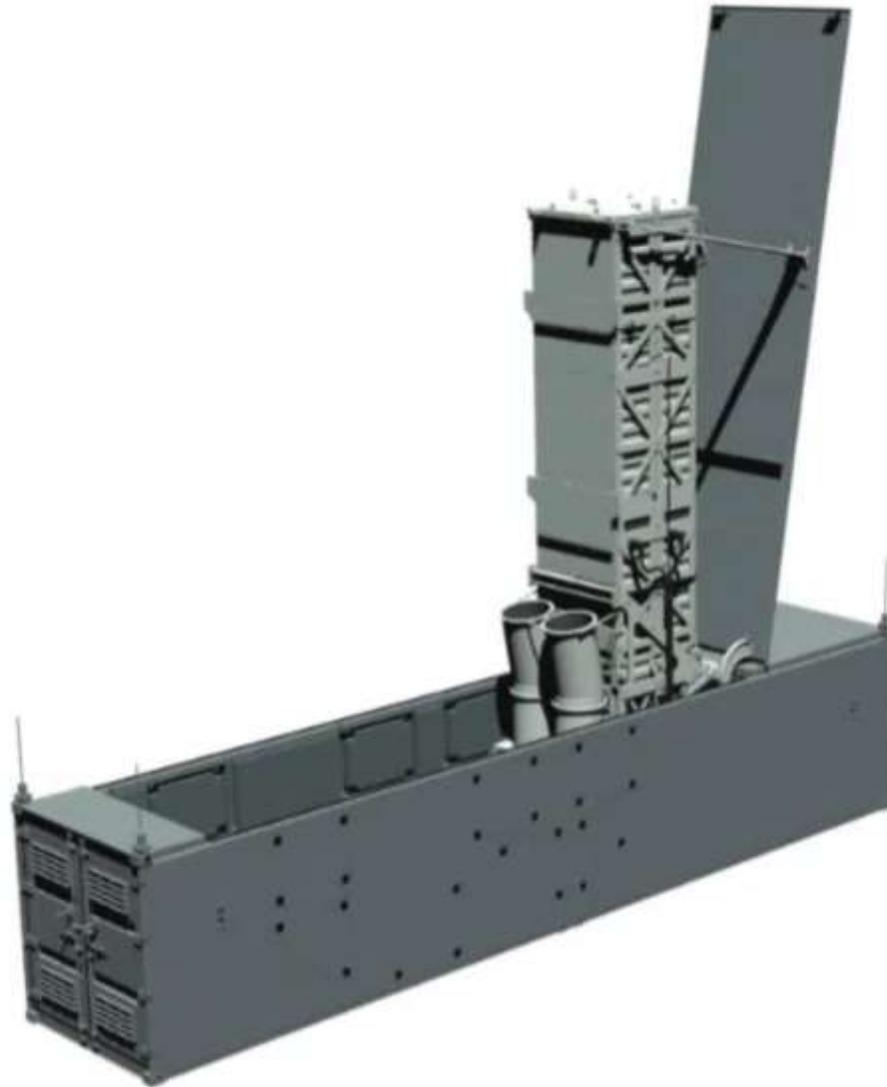
# 40 Foot Van Designed to Hold Four Aegis Missile Launch Canisters



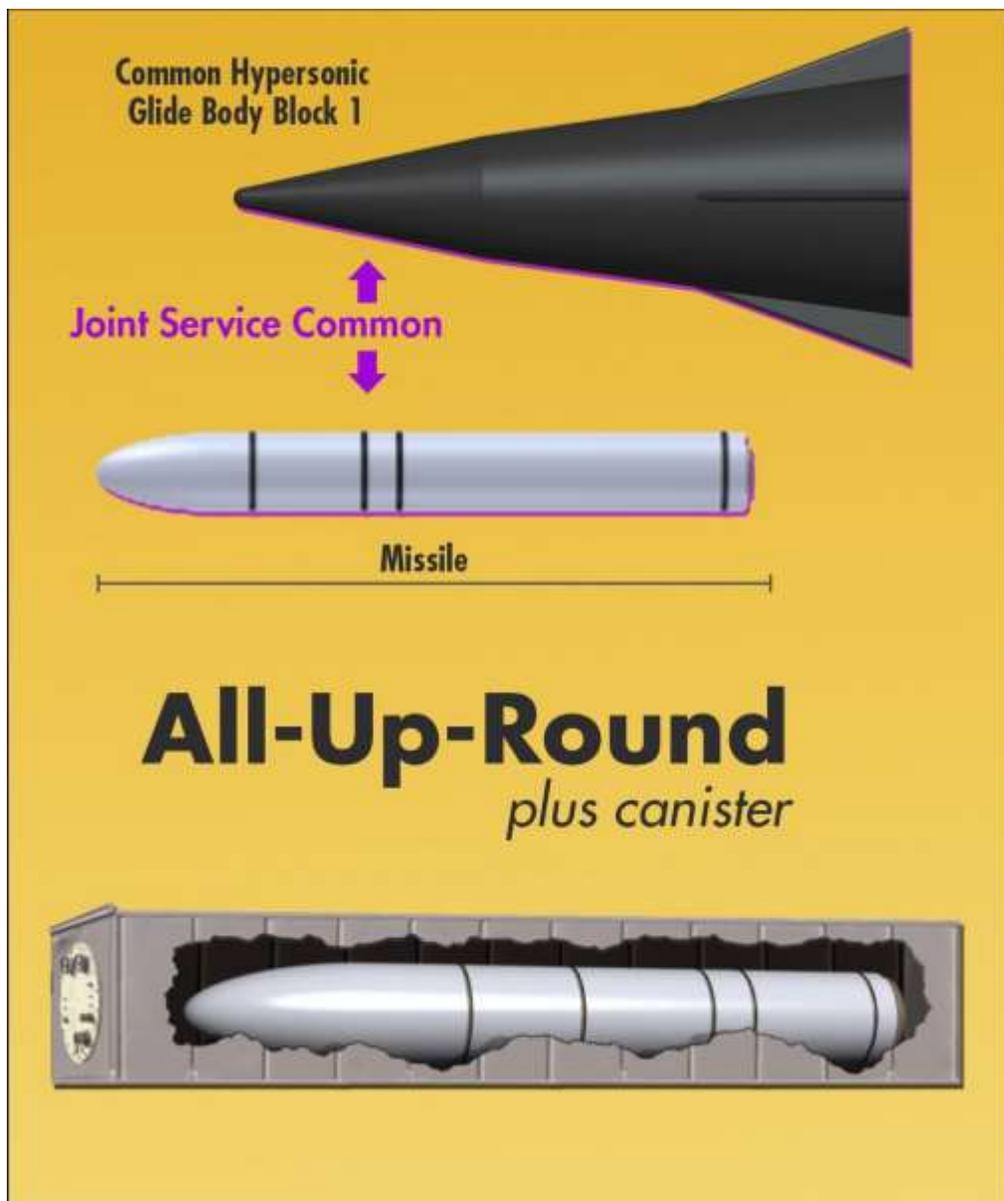
# 40 Foot Van Designed to Hold Four Aegis Missile Launch Canisters

MK 70 MOD 1  
PAYLOAD DELIVERY SYSTEM

OPTIMIZED VLS MODULE



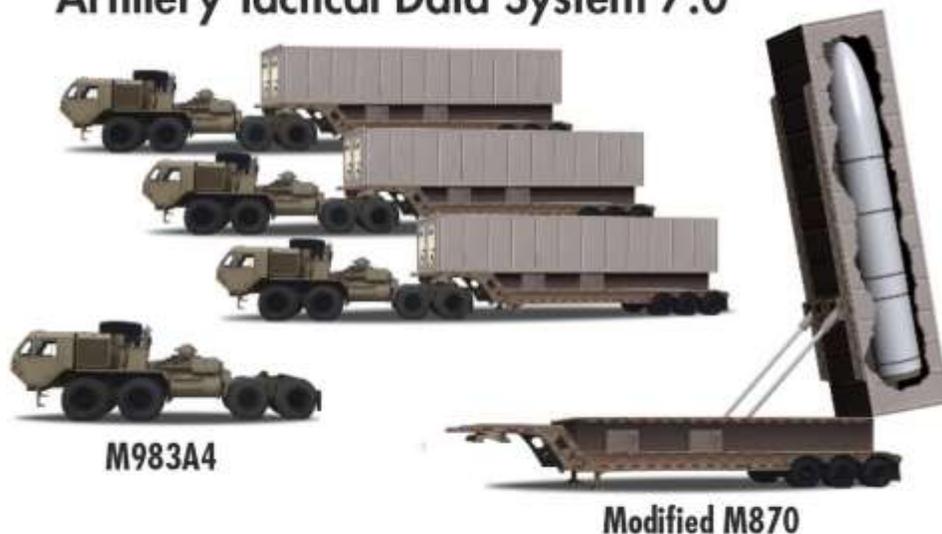
# 100 kt Warheads from the Trident II Missile Submarine Launched Ballistic Missile System are Ubiquitous in the US Nuclear Arsenal and Are the Natural Choice for the New Typhon Ballistic Missiles



## Battery Operations Center



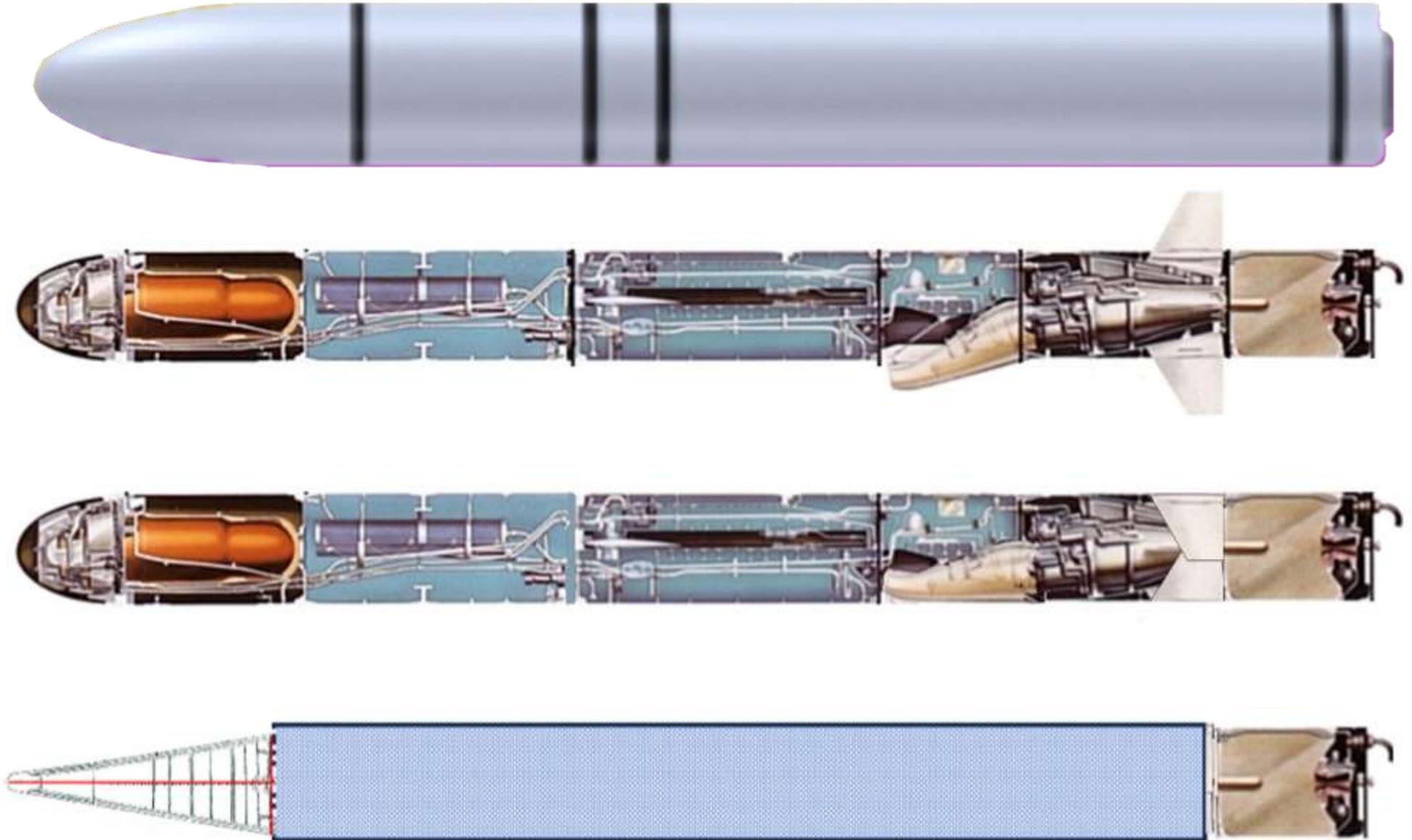
Block 1 integration: Advanced Field  
Artillery Tactical Data System 7.0



4 transporter erector launchers (TEL)  
2 rounds per TEL

# The Planned Typhan Hyperson Missile System

---



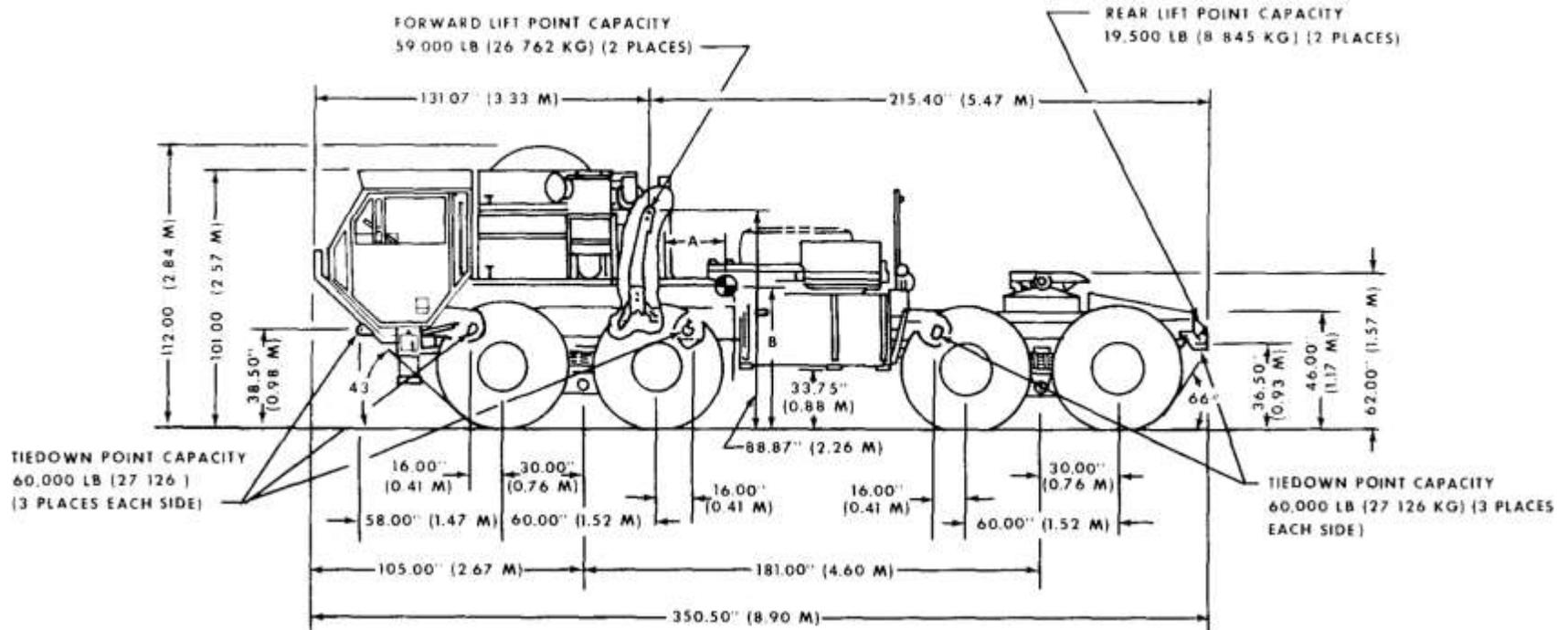
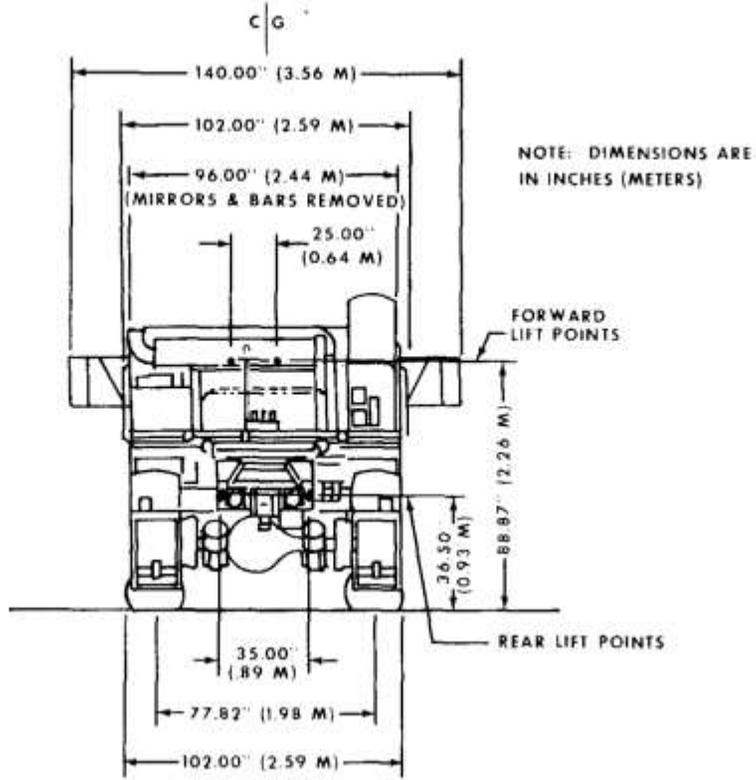
---

**The Most Threatening Mobile Launchers of Hypersonic and Cruise Missiles Will be Indistinguishable or Easily Misidentified with Numerous Other Military and Civilian Vehicle.**

**This Will Necessitate Attacking All Vehicles Identified as Potential Mobile Launchers of Hypersonic and Cruise Missiles**

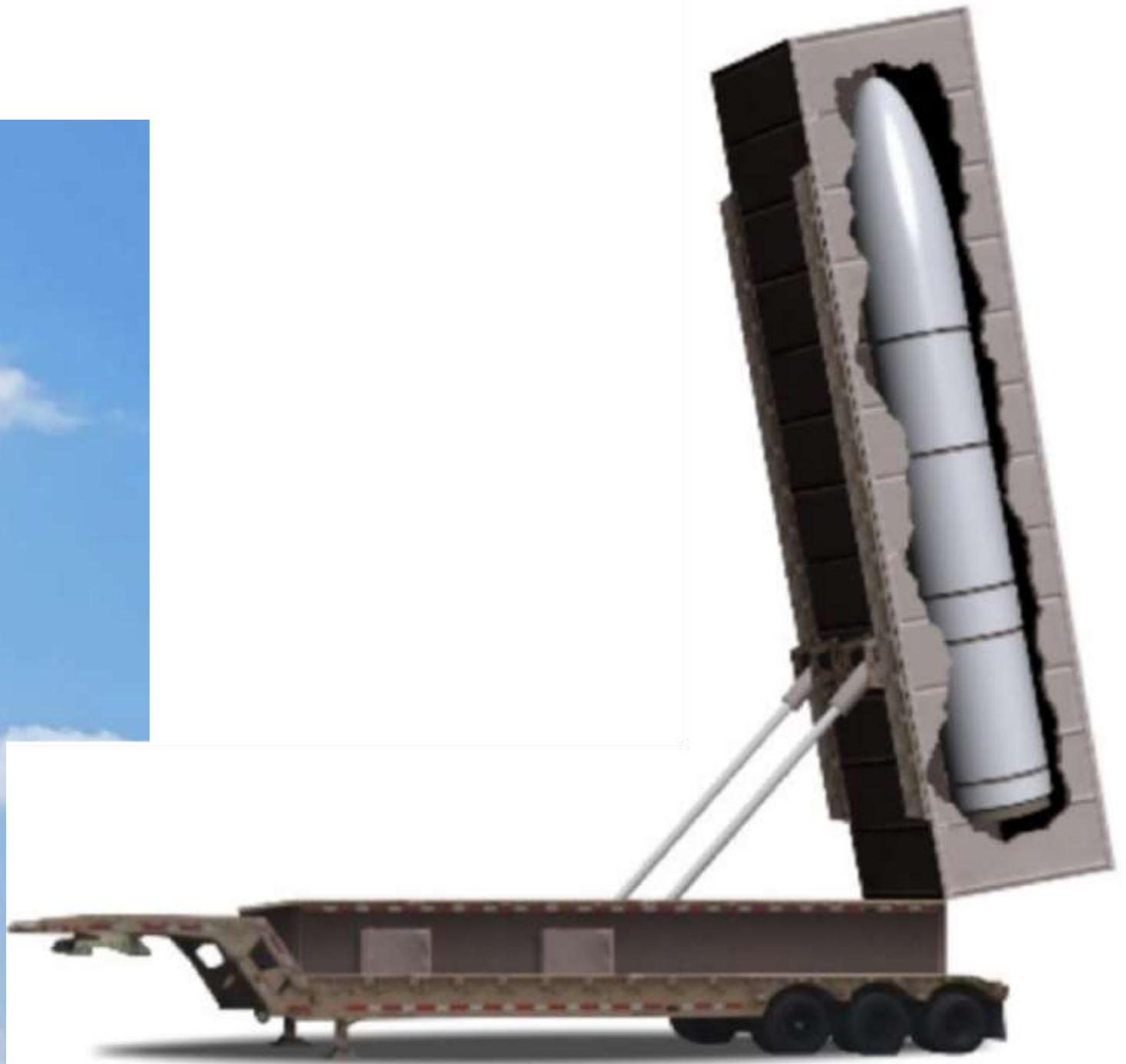
---

M983 CENTER OF GRAVITY		
	A (AFT OF CL 2ND AXLE)	B (ABOVE GROUND)
W/O CRANE	30' (0.76 M)	43 (1.09 M)
W/CRANE	36' (0.91 M)	49 (1.24 M)

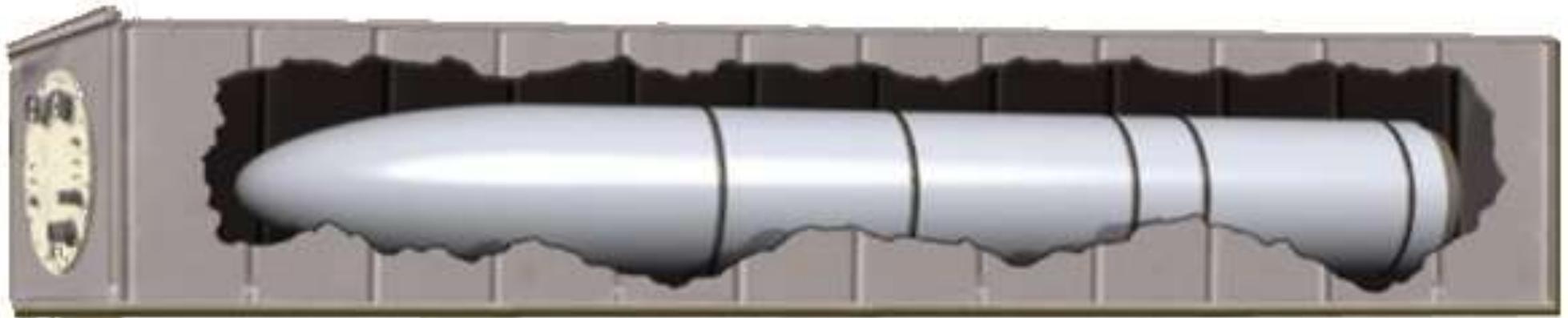
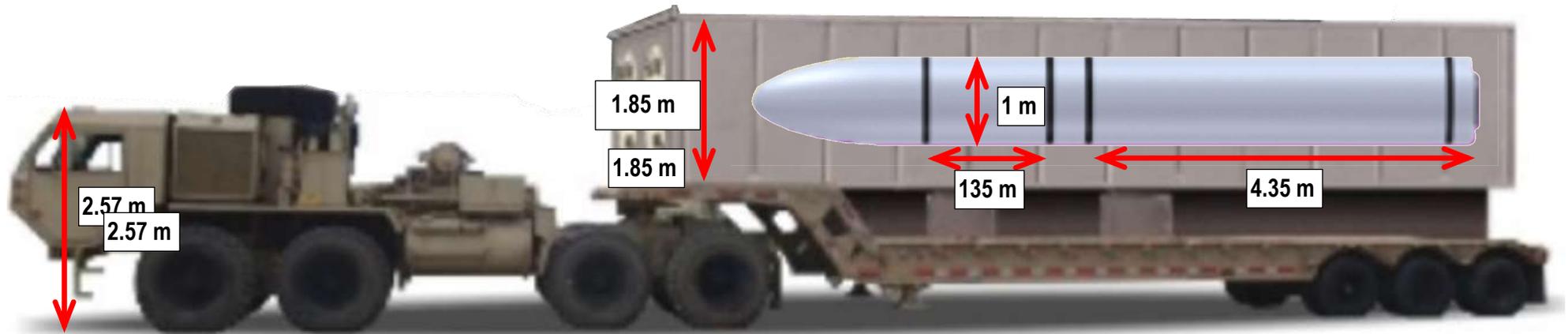








**Modified M870**



Missile Volume =  $4.48 \text{ m}^3 \times 4,060 \text{ lbs/m}^3 = 20,000 \text{ lb Missile}$ .

D5 6500 lb / 130,000 lb to 7360 km.

Payload =  $20,000 \text{ lb} \times 6500 \text{ lb} / 130,000 \text{ lb} \rightarrow 1,000 \text{ lb Payload to 6,000 to 7,000 km!}$

WHAT IS THIS THING FOR?







