

NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKES IN THE UNITED STATES

Given this illustrated scenario, it would only take approximately 20-30 Hydrogen Bombs to completely destroy a once Great Nation such as the USA. If the top 100 major Urban Centers were targeted alone, 90 percent of the 250+ Million People of the USA would parish within 3 weeks. As the scenario portrays, 1 Detonation alone on each of the top 20 major Cities from the list would vaporize instantaneously over 30 million people. Targets do not include Military Installations.

#	City; State	POP
1	New York City; New York	8,336,697
2	Los Angeles; California	3,857,799
3	Chicago; Illinois	2,714,856
4	Houston; Texas	2,160,821
5	Philadelphia; Penn	1,547,607
6	Phoenix; Arizona	1,488,750
7	San Antonio; Texas	1,382,951
8	San Diego; California	1,338,348
9	Dallas; Texas	1,241,162
10	San Jose; California	982,765
11	Austin; Texas	842,592
12	Jacksonville; Florida	836,507
13	Indianapolis; Indiana	834,852
14	San Francisco; California	825,863
15	Columbus; Ohio	809,798
16	Fort Worth; Texas	777,992
17	Charlotte; North Carolina	775,202
18	Detroit; Michigan	701,475
19	El Paso; Texas	672,538
20	Memphis; Tennessee	655,000

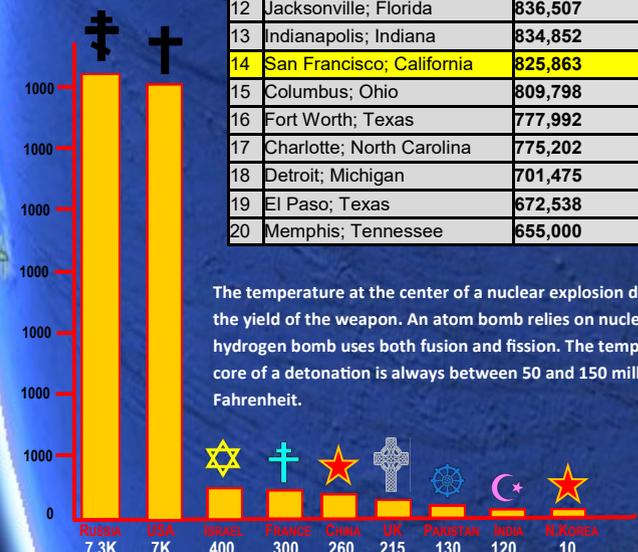
~20 Tsar Bombs of 100 MT each or Hydrogen Bombs would kill approximately 33 Million People Instantaneously, 10% of a population of ~300 million. Another 20-30 million would die due to Radiation within a few weeks.



The temperature of the center of a nuclear bomb can reach temperatures hotter than the core of our Sun. The Sun reaches nuclear fusion through gravity and so it burns at a mere 15 million degrees Fahrenheit. A thermonuclear bomb has a significant reaction rate because the Earth's air pressure is very low in comparison.



YIELD: MEGATONS 15 KT 1 MT 10 MT 15 MT 50 MT 100 MT

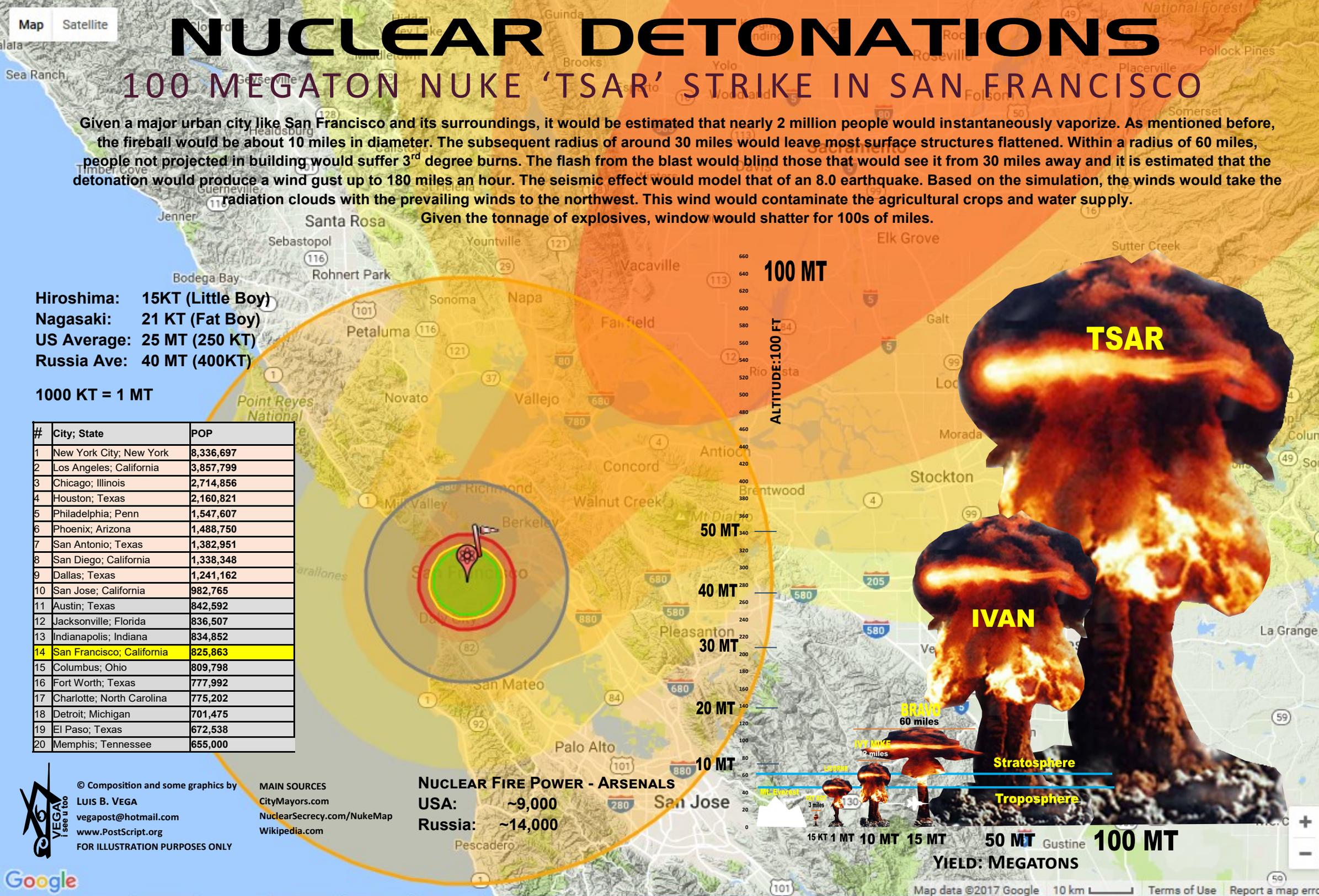


The temperature at the center of a nuclear explosion depends on the yield of the weapon. An atom bomb relies on nuclear fission, a hydrogen bomb uses both fusion and fission. The temperature at the core of a detonation is always between 50 and 150 million degrees Fahrenheit.

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
US Dept of State Geographer
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MAIN SOURCES
CityMayors.com
NuclearSecrecy.com/NukeMap
Wikipedia.com



NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN SAN FRANCISCO

Given a major urban city like San Francisco and its surroundings, it would be estimated that nearly 2 million people would instantaneously vaporize. As mentioned before, the fireball would be about 10 miles in diameter. The subsequent radius of around 30 miles would leave most surface structures flattened. Within a radius of 60 miles, people not projected in building would suffer 3rd degree burns. The flash from the blast would blind those that would see it from 30 miles away and it is estimated that the detonation would produce a wind gust up to 180 miles an hour. The seismic effect would model that of an 8.0 earthquake. Based on the simulation, the winds would take the radiation clouds with the prevailing winds to the northwest. This wind would contaminate the agricultural crops and water supply.

Given the tonnage of explosives, window would shatter for 100s of miles.

- Hiroshima: 15KT (Little Boy)
- Nagasaki: 21 KT (Fat Boy)
- US Average: 25 MT (250 KT)
- Russia Ave: 40 MT (400KT)

1000 KT = 1 MT

#	City; State	POP
1	New York City; New York	8,336,697
2	Los Angeles; California	3,857,799
3	Chicago; Illinois	2,714,856
4	Houston; Texas	2,160,821
5	Philadelphia; Penn	1,547,607
6	Phoenix; Arizona	1,488,750
7	San Antonio; Texas	1,382,951
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13	Indianapolis; Indiana	834,852
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15	Columbus; Ohio	809,798
16	Fort Worth; Texas	777,992
17	Charlotte; North Carolina	775,202
18	Detroit; Michigan	701,475
19	El Paso; Texas	672,538
20	Memphis; Tennessee	655,000

NUCLEAR FIRE POWER - ARSENALS
 USA: ~9,000
 Russia: ~14,000

Drag the marker to wherever you'd like to target.

San Francisco, CA USA

Enter a yield (in kilotons):

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:

1,937,220



Estimated injuries:

2,373,590

In any given 24-hour period, there are approximately ~13,000,000 people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- **Radiation radius (500 rem): 6.99 km (153 km²)**
500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.
- **Fireball radius: 7.92 km (197 km²)**
Maximum size of the nuclear fireball; relevance to lived effects depends on height of detonation. If it touches the ground, the amount of radioactive fallout is significantly increased.
- **Air blast radius (20 psi): 10.1 km (321 km²)**
At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%.
- **Air blast radius (5 psi): 21.2 km (1,420 km²)**
At 5 psi overpressure, most residential buildings collapse, injuries are universal, fatalities are widespread.
- **Radiation radius (3rd degree burns): 64.2 km (12,960 km²)**
Third degree burns extend throughout the layers of skin, and are often painless because they destroy the pain nerves. They can cause severe scarring or disablement, and can require amputation. 100% probability for 3rd degree burns at this yield is 13.9 cal/cm².

Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

Created by Alex Wellerstein, 2012-2017.

NUKEMAP is sponsored by:
 the College of Arts and Letters,
 Stevens Institute of Technology



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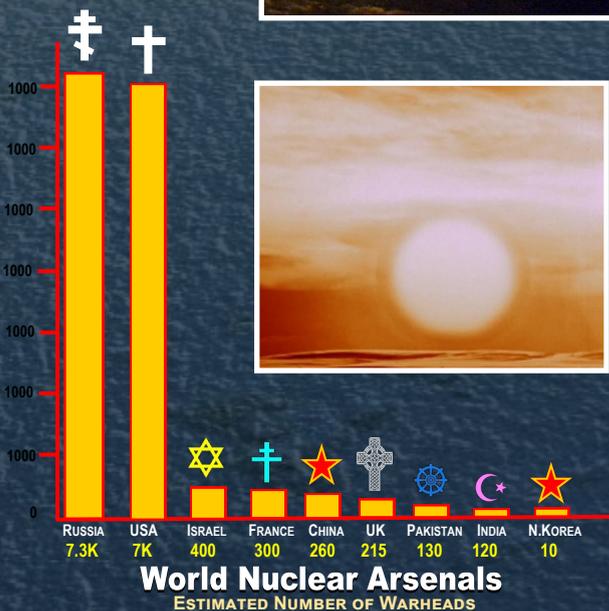
NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN SAN FRANCISCO

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The mushroom cloud would be seen by people as far as 300 miles as it would rise above the *stratosphere*. Mind you, this would just be 1 bomb. In a real life scenario, and with arsenals of over 1000s of such nuclear devises, multiple nuclear detonations would be expected in the major urban areas. In the case of the North Bay Area of San Francisco, California the taking-out of the city proper would cripple the western grid of financial markets. The major tech companies leading research and innovation in the sciences, medicine and other disciples that have a high concentration in the Bay Area would be wiped-out. A further detonation of bombs to destroy Silicon Valley which is approximately 60 miles from San Francisco would obliterate the brain-power of the leading tech innovators in the world. Many of the top companies and internet giants are located here. Based on this sole 1 nuclear devise of 100 MT, it would be estimated that over 2 million people would die of injuries sustained after 3 days.



The 50 MT detonation created an **8.0** earthquake.



The 50 MT fireball was about 6 miles across and did not touch the ground.



Image Landsat / Copernicus
Data LDEO-Columbia, NSF, NOAA
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data MBARI

NUKEMAP 2.42 : FAQ

Drag the marker to wherever you'd like to target.

San Francisco, CA USA

Enter a yield (in kilotons): **100000**

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:

1,937,220



Estimated injuries:

2,373,590

In any given 24-hour period, there are approximately **~13,000,000** people in the 1 psi range of the most recent detonation.

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Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

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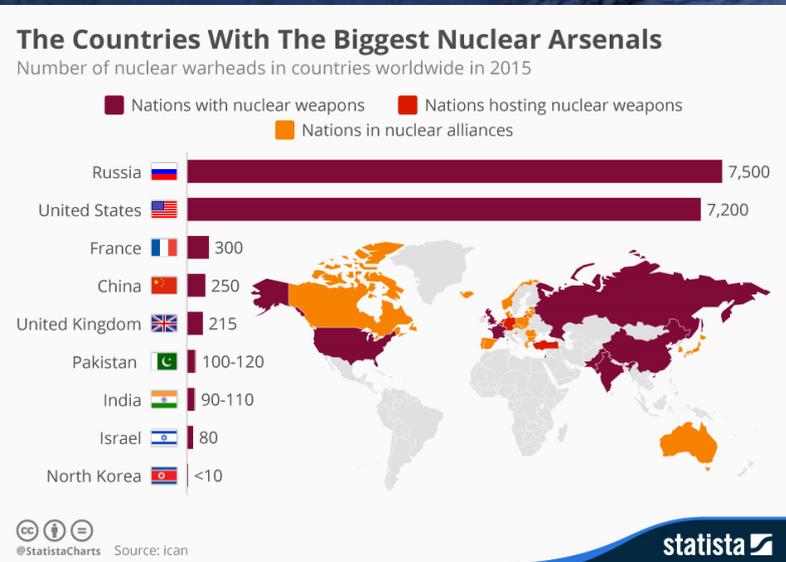
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NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN THE BAY AREA

A western U.S. state, stretches from the Mexican border along the Pacific for nearly 900 miles. Its terrain includes cliff-lined beaches, redwood forest, the Sierra Nevada Mountains, Central Valley farmland and the Mojave Desert. The city of Los Angeles is the seat of the Hollywood entertainment industry. Hilly San Francisco is known for the Golden Gate Bridge, Alcatraz Island and cable cars. Capital: Sacramento. Population: 40 million (2020). California is the most populous state in the United States and the third most extensive by area. Located on the western (Pacific Ocean) coast of the U.S., California is bordered by the other U.S. states of Oregon, Nevada, and Arizona and shares a border with Mexico.



With only approximate 10 Russian Tsar 100 Megaton warheads, the majority of California's nearly 40 million people would be killed and/or injured. As the state is the current bread basket of the nation and the 6th largest economy in the world, such an apocalyptic scenario would also cripple the American Union. The vast military industrial complex of several seaports, mainly San Diego with its Marine and Navy installations would render a military blow to America's might.

● = Populated Area

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 Image Landsat / Copernicus
 Data LDEO-Columbia, NSF, NOAA
 Data MBARI

NUKEMAP 2.42 : FAQ

Drag the marker to wherever you'd like to target.

Los Angeles, CA USA

Enter a yield (in kilotons): 100000

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:

7,947,470



Estimated injuries:

5,707,000

In any given 24-hour period, there are approximately 24,002,597 people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

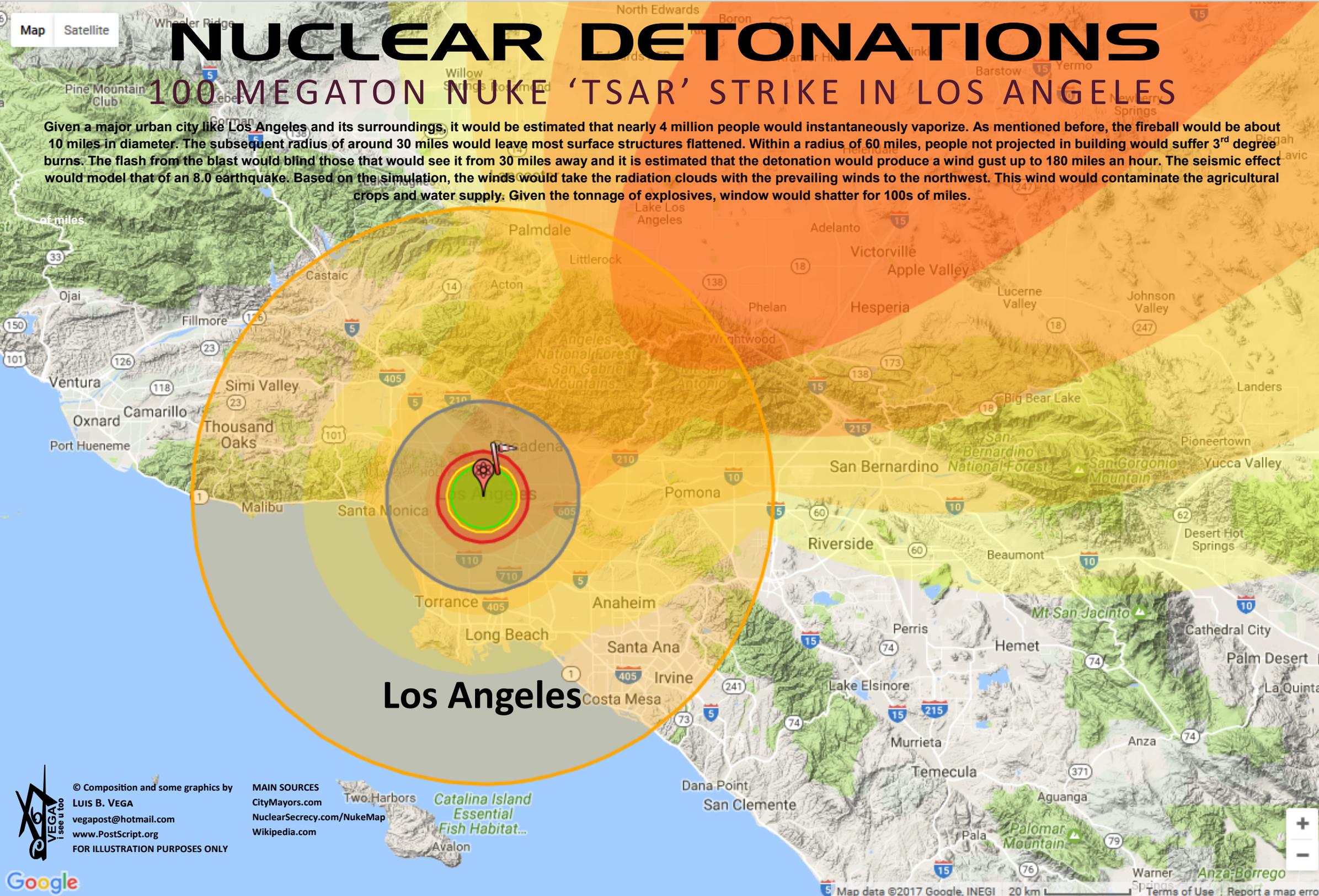
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Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

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NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN LOS ANGELES

Given a major urban city like Los Angeles and its surroundings, it would be estimated that nearly 4 million people would instantaneously vaporize. As mentioned before, the fireball would be about 10 miles in diameter. The subsequent radius of around 30 miles would leave most surface structures flattened. Within a radius of 60 miles, people not projected in building would suffer 3rd degree burns. The flash from the blast would blind those that would see it from 30 miles away and it is estimated that the detonation would produce a wind gust up to 180 miles an hour. The seismic effect would model that of an 8.0 earthquake. Based on the simulation, the winds would take the radiation clouds with the prevailing winds to the northwest. This wind would contaminate the agricultural crops and water supply. Given the tonnage of explosives, window would shatter for 100s of miles.

Drag the marker to wherever you'd like to target.

Los Angeles, CA USA

Enter a yield (in kilotons): **100000**

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:

4,947,470



Estimated injuries:

5,707,000

In any given 24-hour period, there are approximately **16,002,597** people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- **Radiation radius (500 rem): 6.99 km (153 km²)**
500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.
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Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

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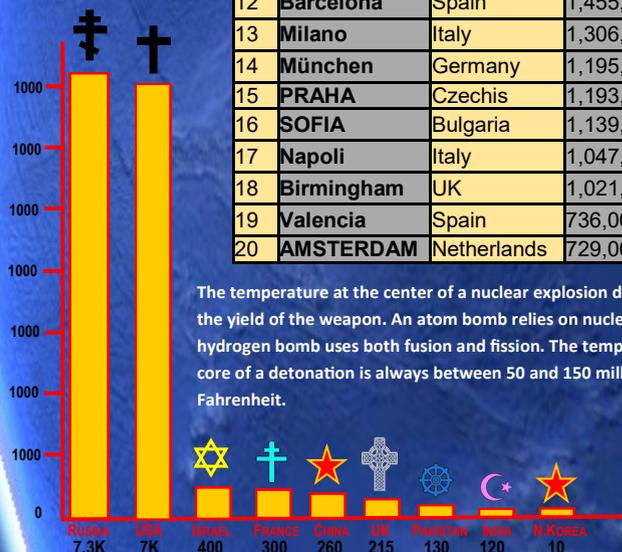


NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN EUROPE'S CAPITALS

This same scenario would be true for continental Europe. The same outcome would be in place as the area is similar in size and scope as that of the USA. Consider that with just over 100 single hydrogen bombs detonated in the USA and Europe, nearly 1 billion people would perish eventually within 3 weeks of a strike. Again, this percentage is but a fraction of the arsenal both the USA and Russia currently possesses.

#	City	Country	Pop
1	LONDON	UK	7,074,000
2	BERLIN	Germany	3,387,000
3	MADRID	Spain	2,824,000
4	ROMA	Italy	2,649,000
5	PARIS	France	2,152,000
6	BUCURESTI	Romania	2,016,000
7	BUDAPEST	Hungary	1,825,000
8	Hamburg	Germany	1,705,000
9	WARSZAWA	Poland	1,615,000
10	BEOGRAD	Serbia	1,594,000
11	WIEN	Austria	1,540,000
12	Barcelona	Spain	1,455,000
13	Milano	Italy	1,306,000
14	München	Germany	1,195,000
15	PRAHA	Czechis	1,193,000
16	SOFIA	Bulgaria	1,139,000
17	Napoli	Italy	1,047,000
18	Birmingham	UK	1,021,000
19	Valencia	Spain	736,000
20	AMSTERDAM	Netherlands	729,000



The temperature at the center of a nuclear explosion depends on the yield of the weapon. An atom bomb relies on nuclear fission, a hydrogen bomb uses both fusion and fission. The temperature at the core of a detonation is always between 50 and 150 million degrees Fahrenheit.

World Nuclear Arsenals

ESTIMATED NUMBER OF WARHEADS

Given this scenario, it would thus only take approximately 20-30 hydrogen bombs to completely destroy Europe. If the major urban centers were targeted alone, 90 percent of the 300+ million people of Europe would perish within 3 weeks. As the scenario portrays, 1 detonation alone on each major city from the list would vaporize instantaneously over 30 million people.

Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image IBCAO

~20 Tsar Bombs of 100 MT each or hydrogen bombs would kill approximately

33 million people instantaneously, 10% of a population of ~300 million. Another 20-30 million would die due to radiation within a few weeks.

~60 mile radius
Radiation Zone

~30 mile radius
Blast Zone

100 MT
TSAR

Fire Ball
~6-10 mile radius

'And this shall be the plague with which the LORD will strike all the people who fought against Jerusalem: Their flesh shall dissolve while they stand on their feet, Their eyes shall dissolve in their sockets, And their tongues shall dissolve in their mouths.'
- Zechariah 14:12

50 MT
40 MT
30 MT
20 MT
10 MT

Hiroshima: 15KT (Little Boy)
Nagasaki: 21 KT (Fat Boy)
US Average: 25 MT (250 KT)
Russia Ave: 40 MT (400KT)

1000 KT = 1 MT

NUCLEAR FIRE POWER - ARSENALS

USA: ~9,000

Russia: ~14,000

BRavo 60 miles

TSU-SHIMA 12 miles

LICORON 3 miles

FAT BOY 15 miles

15 KT 1 MT

10 MT

15 MT

50 MT

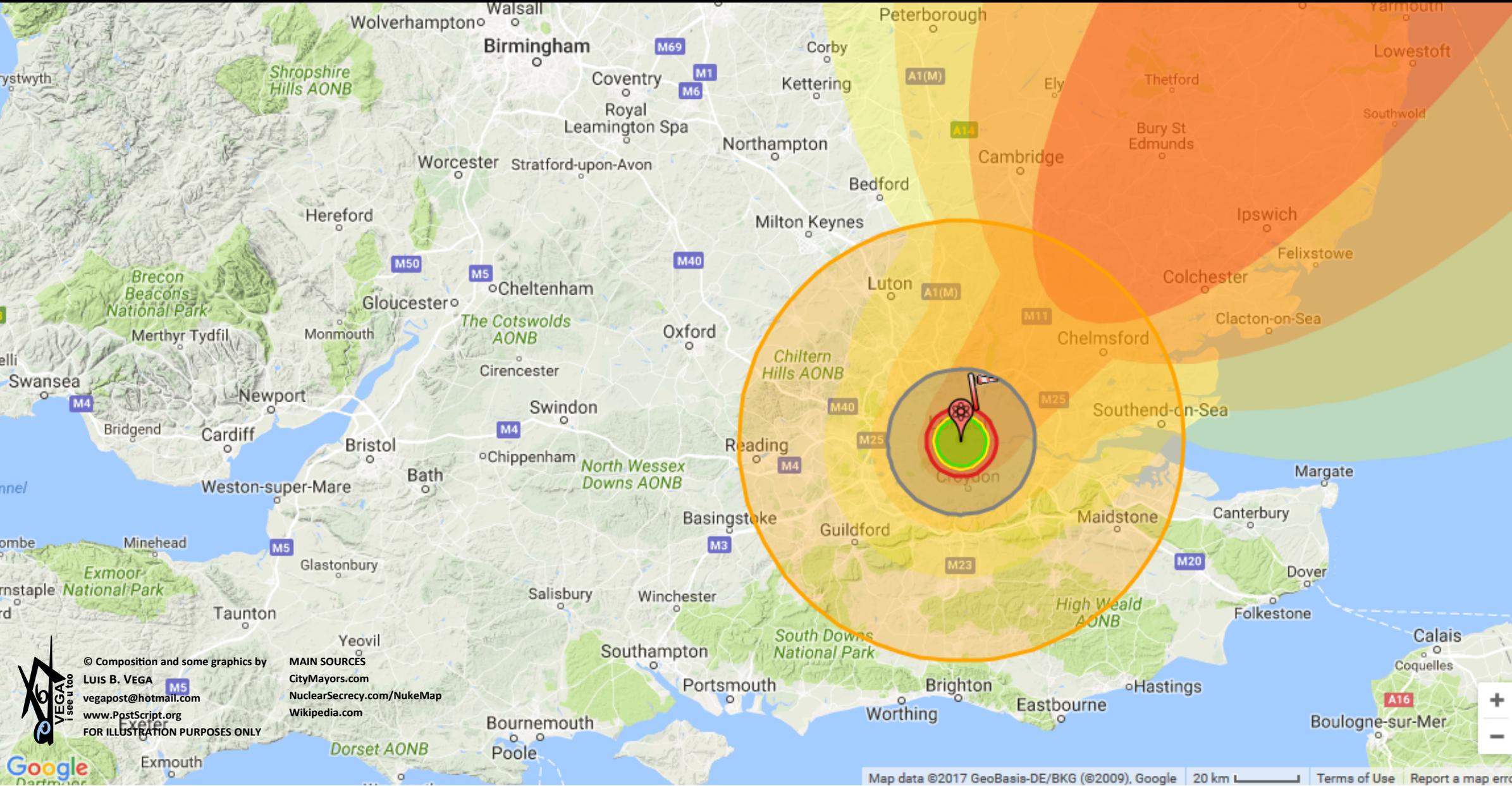
100 MT

Stratosphere
Troposphere

NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN LONDON, ENGLAND

Given a major urban city like London and its surroundings, it would be estimated that nearly 6 million people would instantaneously vaporize. As mentioned before, the fireball would be about 10 miles in diameter. The subsequent radius of around 30 miles would leave most surface structures flattened. Within a radius of 60 miles, people not projected in building would suffer 3rd degree burns. The flash from the blast would blind those that would see it from 30 miles away and it is estimated that the detonation would produce a wind gust up to 180 miles an hour. The seismic effect would model that of an 8.0 earthquake. Based on the simulation, the winds would take the radiation clouds with the prevailing winds to the northwest. This wind would contaminate the agricultural crops and water supply. Given the tonnage of explosives, window would shatter for 100s of miles.



Drag the marker to wherever you'd like to target.

Enter a yield (in kilotons):

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:

6,026,020



Estimated injuries:

3,260,670

In any given 24-hour period, there are approximately **16,375,708** people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- **Radiation radius (500 rem): 6.99 km (153 km²)**
500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.
- **Fireball radius: 7.92 km (197 km²)**
Maximum size of the nuclear fireball; relevance to lived effects depends on height of detonation. If it touches the ground, the amount of radioactive fallout is significantly increased.
- **Air blast radius (20 psi): 10.1 km (321 km²)**
At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%.
- **Air blast radius (5 psi): 21.2 km (1,420 km²)**
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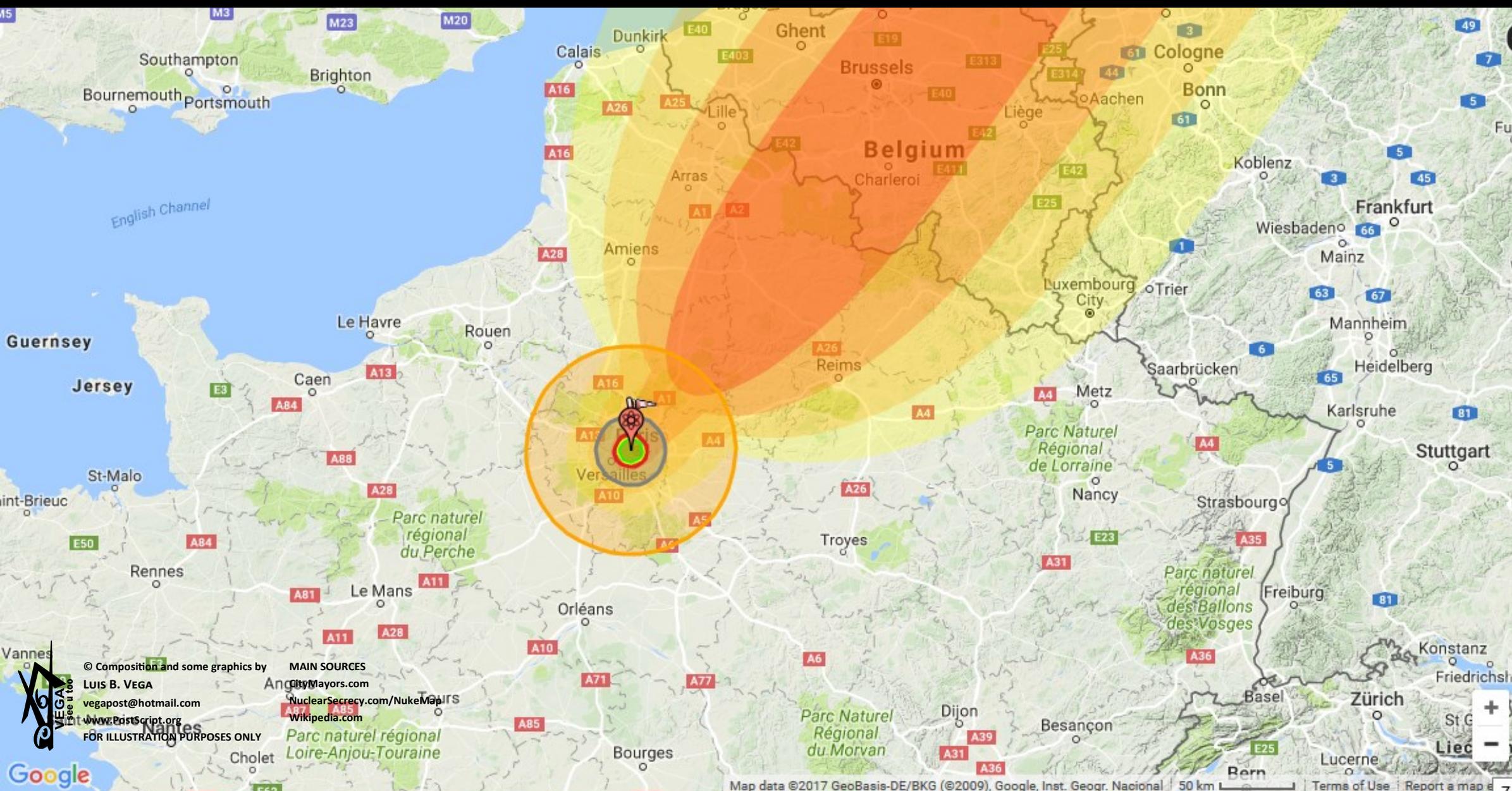
Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

Created by **Alex Wellerstein**, 2012-2017.

NUCLEAR DETONATIONS

100 MEGATON NUKE 'TSAR' STRIKE IN PARIS, FRANCE

Given a major urban city like Paris and its surroundings, it would be estimated that nearly 6 million people would instantaneously vaporize. As mentioned before, the fireball would be about 10 miles in diameter. The subsequent radius of around 30 miles would leave most surface structures flattened. Within a radius of 60 miles, people not projected in building would suffer 3rd degree burns. The flash from the blast would blind those that would see it from 30 miles away and it is estimated that the detonation would produce a wind gust up to 180 miles an hour. The seismic effect would model that of an 8.0 earthquake. Based on the simulation, the winds would take the radiation clouds with the prevailing winds to the northwest. This wind would contaminate the agricultural crops and water supply. Given the tonnage of explosives, window would shatter for 100s of miles.



NUKEMAP

2.42 : FAQ

Drag the marker to wherever you'd like to target.

Paris, France

Enter a yield (in kilotons):

'Tsar Bomba' - largest USSR bomb designed (100 MT)

Estimated fatalities:
7,123,570



Estimated injuries:
2,435,050

In any given 24-hour period, there are approximately **16,375,708** people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- **Radiation radius (500 rem): 6.99 km (153 km²)**
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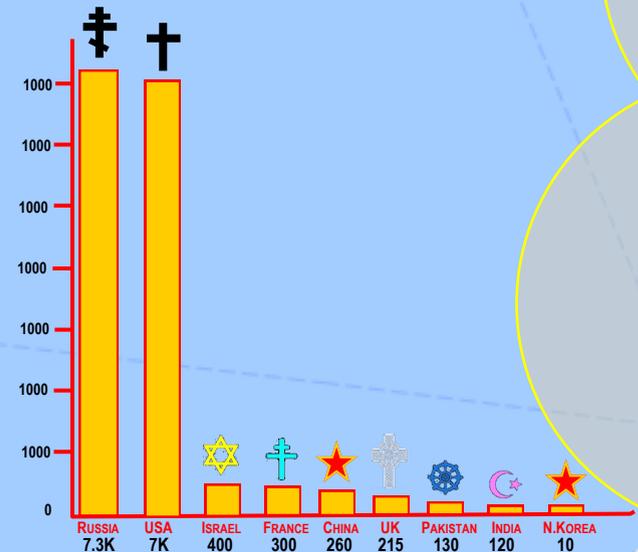
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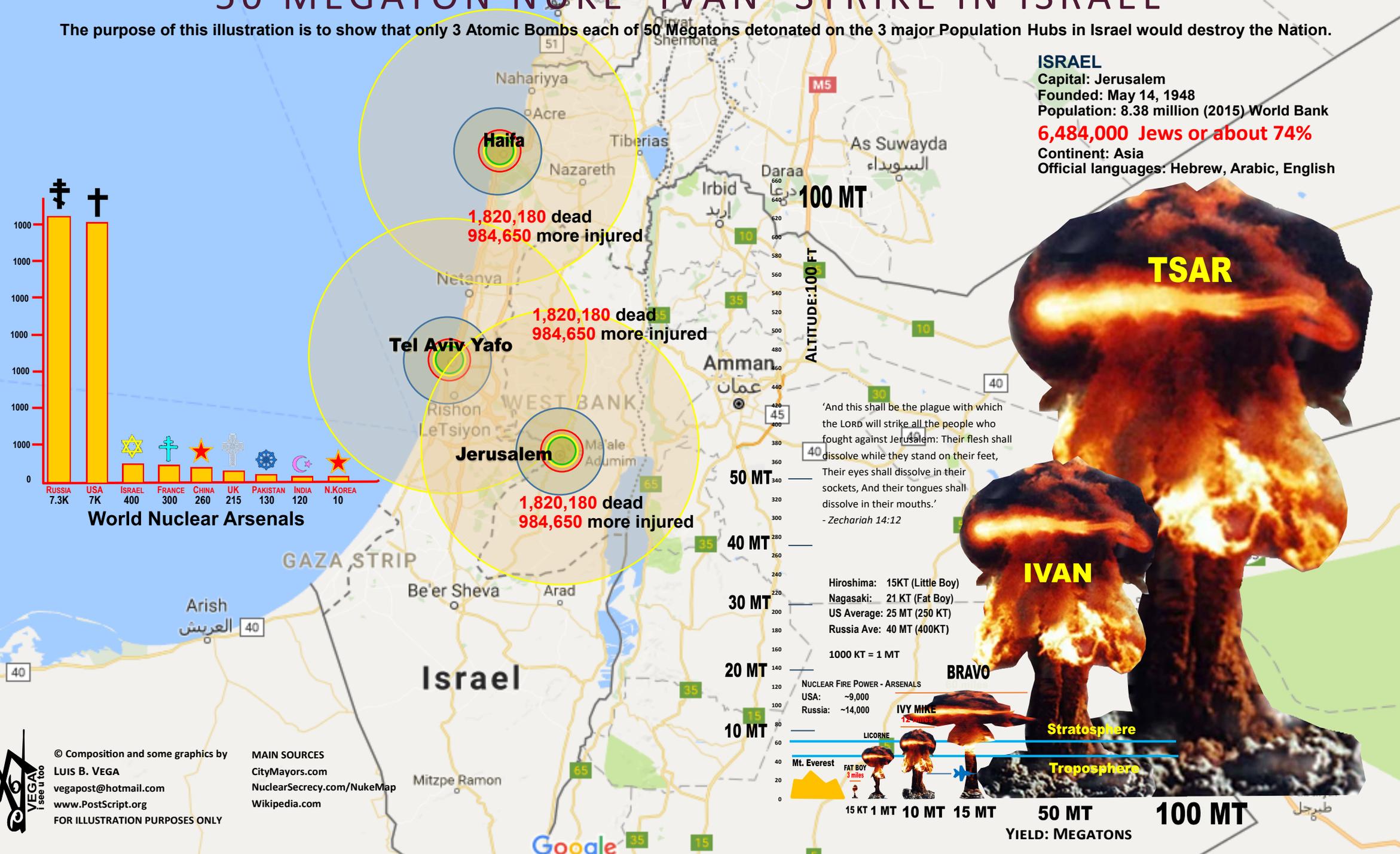
NUCLEAR DETONATIONS

50 MEGATON NUKE 'IVAN' STRIKE IN ISRAEL

The purpose of this illustration is to show that only 3 Atomic Bombs each of 50 Megatons detonated on the 3 major Population Hubs in Israel would destroy the Nation.



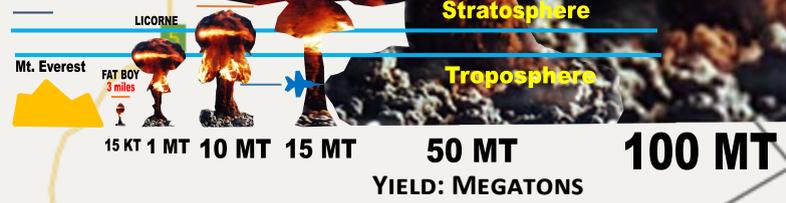
ISRAEL
 Capital: Jerusalem
 Founded: May 14, 1948
 Population: 8.38 million (2015) World Bank
6,484,000 Jews or about 74%
 Continent: Asia
 Official languages: Hebrew, Arabic, English



'And this shall be the plague with which the LORD will strike all the people who fought against Jerusalem: Their flesh shall dissolve while they stand on their feet, Their eyes shall dissolve in their sockets, And their tongues shall dissolve in their mouths.'
 - Zechariah 14:12

Hiroshima: 15KT (Little Boy)
 Nagasaki: 21 KT (Fat Boy)
 US Average: 25 MT (250 KT)
 Russia Ave: 40 MT (400KT)

1000 KT = 1 MT
 NUCLEAR FIRE POWER - ARSENALS
 USA: ~9,000
 Russia: ~14,000



NUKEMAP 2.42 : FAQ

Drag the marker to wherever you'd like to target.

Tel Aviv + Haifa + Jerusalem, Israel

Enter a yield (in kilotons):

'Ivan Bomba' - largest USSR bomb designed (50 MT)

Total initial estimated fatalities:

5,460,540

Total Estimated injuries:

2,953,950



In any given 24-hour period, there are approximately **~13,000,000** people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

Radiation radius (500 rem): 6.99 km (153 km²)
 500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.

Fireball radius: 7.92 km (197 km²)
 Maximum size of the nuclear fireball; relevance to lived effects depends on height of detonation. If it touches the ground, the amount of radioactive fallout is significantly increased.

Air blast radius (20 psi): 10.1 km (321 km²)
 At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%.

Air blast radius (5 psi): 21.2 km (1,420 km²)
 At 5 psi overpressure, most residential buildings collapse, injuries are universal, fatalities are widespread.

Radiation radius (3rd degree burns): 64.2 km (12,960 km²)
 Third degree burns extend throughout the layers of skin, and are often painless because they destroy the pain nerves. They can cause severe scarring or disablement, and can require amputation. 100% probability for 3rd degree burns at this yield is 13.9 cal/cm².

Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

Created by Alex Wellerstein, 2012-2017.

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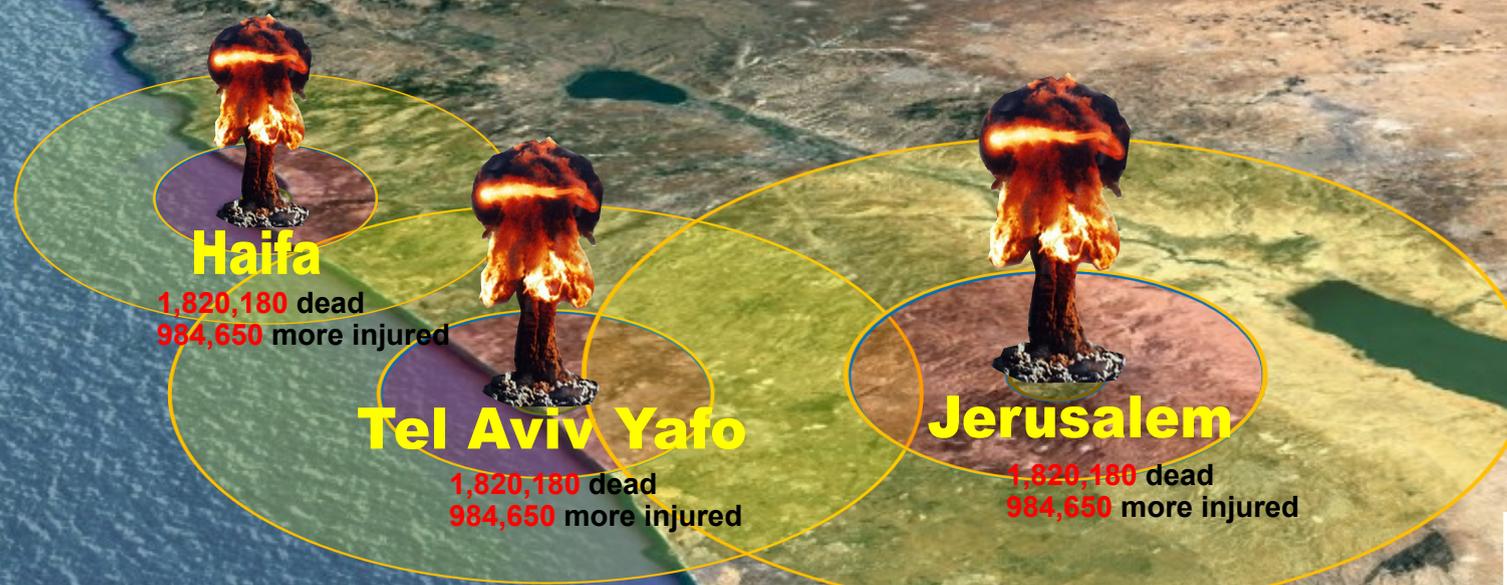
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MAIN SOURCES
 CityMayors.com
 NuclearSecrecy.com/NukeMap
 Wikipedia.com

NUCLEAR DETONATIONS

50 MEGATON NUKE 'IVAN' STRIKE IN ISRAEL

The purpose of this illustration is to show that only 3 Atomic Bombs, each 50 Megatons detonated on the 3 major Population Hubs in Israel would destroy the Nation. Over 60% of the Jewish Population would die.



Haifa

1,820,180 dead
984,650 more injured

Tel Aviv Yafo

1,820,180 dead
984,650 more injured

Jerusalem

1,820,180 dead
984,650 more injured

ISRAEL

Capital: Jerusalem
Founded: May 14, 1948
Population: 9.5 million (2021) World Bank
7,484,000 Jews or about 74%

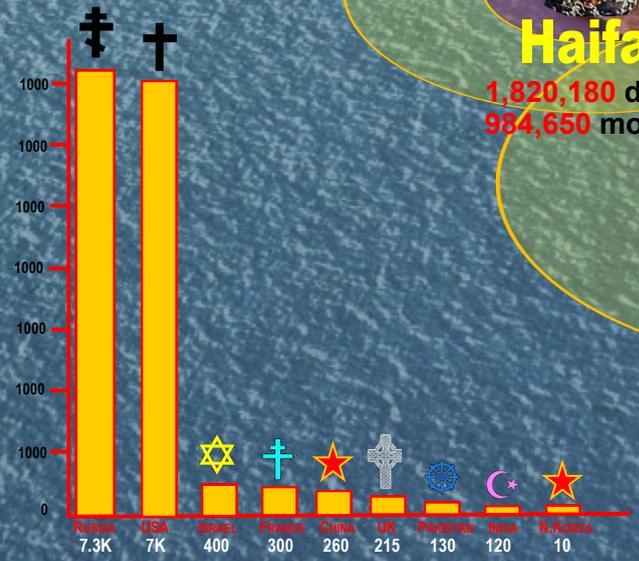
Continent: Asia
Official languages:
Hebrew, Arabic, English

The 50 MT fireball was about 6 miles across and did not touch the ground.



The 50 MT detonation created an 8.0 earthquake.

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus



NUKEMAP 2.42 : FAQ

Drag the marker to wherever you'd like to target.

Tel Aviv + Haifa + Jerusalem, Israel

Enter a yield (in kilotons):

'Ivan Bomba' - largest USSR bomb designed (50 MT)

Total initial estimated fatalities:

5,460,540

Total Estimated injuries:

2,953,950



In any given 24-hour period, there are approximately ~13,000,000 people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- Radiation radius (500 rem): 6.99 km (153 km²)**
500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.
- Fireball radius: 7.92 km (197 km²)**
Maximum size of the nuclear fireball; relevance to lived effects depends on height of detonation. If it touches the ground, the amount of radioactive fallout is significantly increased.
- Air blast radius (20 psi): 10.1 km (321 km²)**
At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%.
- Air blast radius (5 psi): 21.2 km (1,420 km²)**
At 5 psi overpressure, most residential buildings collapse, injuries are universal, fatalities are widespread.
- Radiation radius (3rd degree burns): 64.2 km (12,960 km²)**
Third degree burns extend throughout the layers of skin, and are often painless because they destroy the pain nerves. They can cause severe scarring or disablement, and can require amputation. 100% probability for 3rd degree burns at this yield is 13.9 cal/cm².

Estimated total-dose fallout contours for a 100 megaton surface burst (52% fission) with a 15 mph wind.

Created by Alex Wellerstein, 2012-2017.

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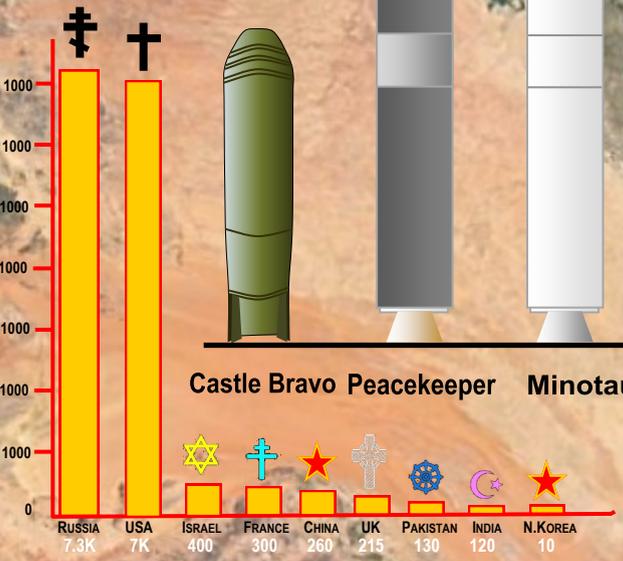
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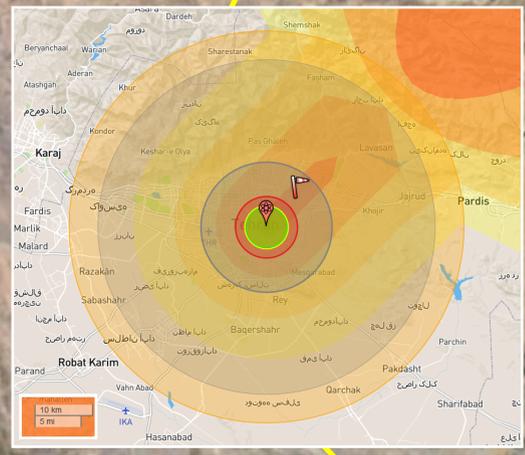
IRAN NUCLEAR DETONATIONS

15-17 MEGATON NUKE USA STRIKES ON IRAN'S NUCLEAR SITES

Only (5) 15-17 megaton nukes on the 5 major nuclear sites would destroy facilities and radiate .33 of the nation, and kill approximately 10% of the total population.



Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus



STATS
 Capital: Teheran
 Religion: Shi'ite Islam, others
 Population: 80 million (2016)
 World Bank: NONE
 Continent: Asia
 Official languages: Farsi, Arabic

NUKEMAP 2.42 : FAQ

Drag the marker to wherever you'd like to target.

Nuclear Sites: Islamic Republic of Iran (Persia)

Enter a yield (in kilotons):

Castle Bravo - Largest USA Bombs (15-17 MT)

Total initial estimated fatalities:

~9,000,000

Total Estimated injuries:

~5,000,000



At 80 million, nearly 10% of the total population of Iran would be died with just 5 Castle Bravo USA type of nuclear weapons. In any given 24-hour period, there are approximately ~10,000,000 people in the 1 psi range of the most recent detonation.

Effects radii for 100 megaton airburst* (smallest to largest):

- Radiation radius (500 rem): 3.63 km (41.4 km²)**
500 rem radiation dose; without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks.
- Fireball radius: 3.71 km (43.2 km²)**
Maximum size of the nuclear fireball; relevance to lived effects depends on height of detonation. If it touches the ground, the amount of radioactive fallout is significantly increased.
- Air blast radius (20 psi): 5.37 km (90.5 km²)**
At 20 psi overpressure, heavily built concrete buildings are severely damaged or demolished; fatalities approach 100%.
- Air blast radius (5 psi): 11.3 km (400 km²)**
At 5 psi overpressure, most residential buildings collapse, injuries are universal, fatalities are widespread.
- Radiation radius (3rd degree burns): 34.2 km (3,660 km²)**
Third degree burns extend throughout the layers of skin, and are often painless because they destroy the pain nerves. They can cause severe scarring or disablement, and can require amputation. 100% probability for 3rd degree burns at this yield is 13.9 cal/cm².

Estimated total-dose fallout contours for a 15 megaton surface burst (68% fission) with a 15 mph wind:

Created by Alex Wellerstein, 2012-2017.

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