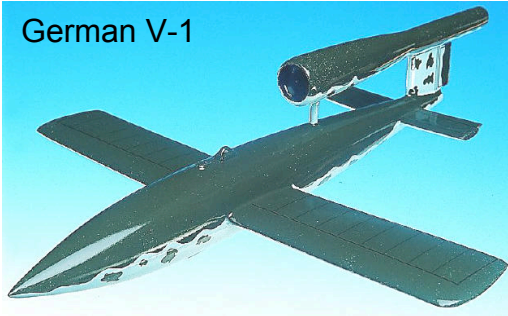


# Race for the rocket - not for space, for weapons delivery

German V-1

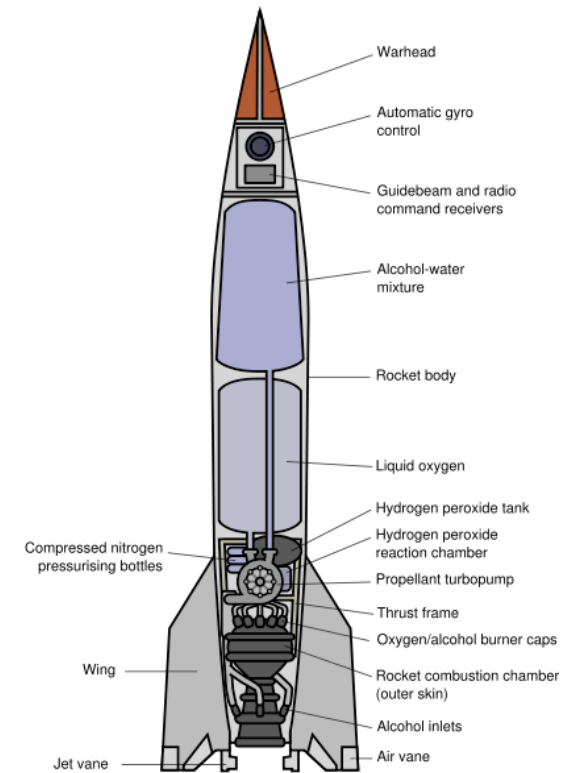


German V-2



First success: October 3, 1942

German V-2 Launch Sites / Targets



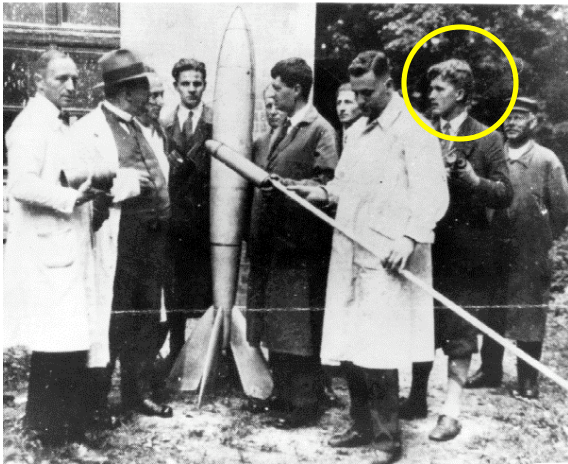


The V-2 rocket (German: *Vergeltungswaffe 2*, *retaliation weapon*), technical name *A4*, was a long range ballistic missile that was developed by the end of the Second World War in Nazi Germany.

The rocket was the world's first long-range combat-ballistic missile and first human artifact to achieve sub-orbital spaceflight. It was the progenitor of all modern rockets.

Over 3,000 V-2s were launched as military rockets by the German Wehrmacht against Allied targets during the war, mostly London.

- Wikipedia



Bundesarchiv, Bild 146-1978-Arh.02403  
Foto: o. Ang. | 1941 Frühling

# Operation Paperclip

Get the German technology,  
and scientists, and get them  
first.



The human booty. German rocket scientists, technicians... 1946 (Fort Bliss!)



Modified V2 launch tests -  
Whitesands Missile Range

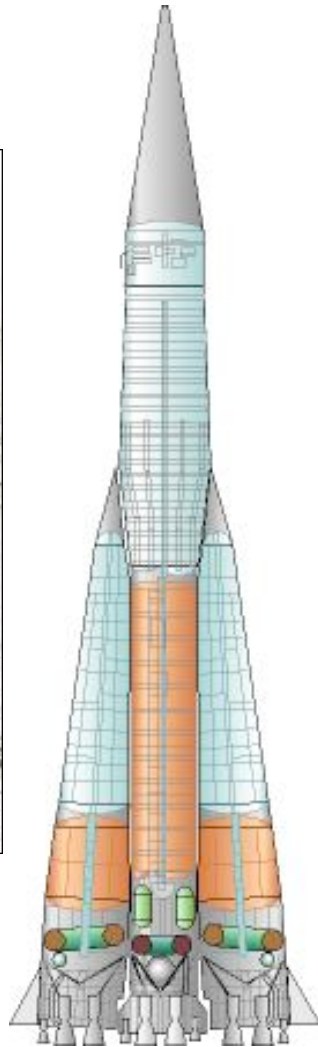


Germany sliced up!

# Sergei Korolev



Sergei Korolev at Kapustin Yar launch complex in 1953



R-7

1931 -founded the Group for Investigation of Reactive Motion (GIRD); developed the first Soviet liquid-fuelled rockets: the GIRD-9 and 10.

1938- GIRD taken over by the military and became known as RNII

1938 - Stalin purges attack rocket scientists; Valentin Glushko arrested, denounces Korolev;Korolev then arrest, sentence of ten years forced labor. The two men become bitter rivals

1944- (late), Korolev promoted to lead a team of rocket scientists; given three days to propose a Soviet equivalent to the German V2.

1945- Korolev sent to Germany to assess hardware and technicians left behind by operation 'Paperclip'.

1946 on ward - Still a political prisoner, Korolev promoted to chief engineer; charged to design and bulld Soviet equivalent to the V2. Builds the R1 rocket. NATO codename: Scud.

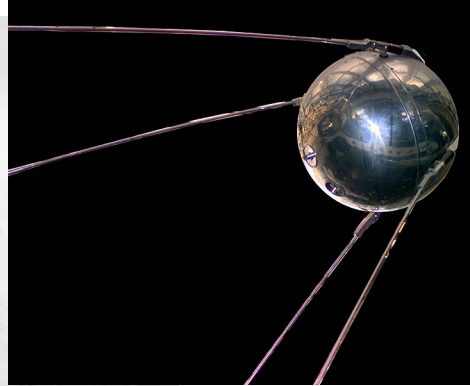
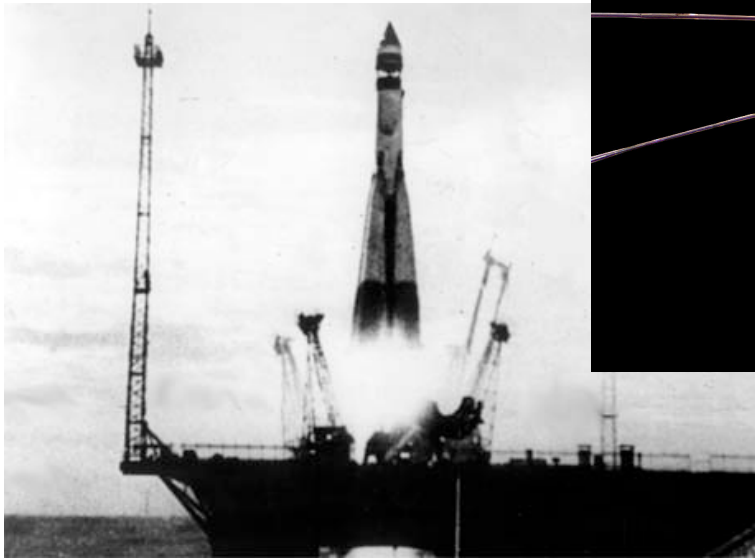
1953 - Korolev begins development of the world's first intercontinental ballistic missile (ICBM) with a 7000 km range (with nuclear payload!), the R-7 rocket. Based on a stacked stages.

1957 August - R-7 was successfully launched

1957 October - Sputnik launched (much lighter payload than nuclear bomb - so can reach orbit)

... USA freaks out ...

# Sputnik (October 4, 1957) - first man made orbiting object



Orbit: 134-583 mi  
96.2 min  
1440 orbits  
3 months

Weight: 183 lbs  
Size: 1 ft diameter  
Payload: radio xmitter



—Dallas News-Staff Photo.

## ***SIGNALS FROM THE SATELLITE***

Ham operator Roy Welch of Dallas, seated, plays a tape-recorded signal from the Russian space satellite for fellow hams at the State Fair of Texas. Welch recorded the signals on a receiver at his home.

Eisenhower



## Sputnik freaked the USA...

USA had strong missile program, but not heavy lift capability; why? Our nuclear bombs were much lighter than the Soviet bombs

Soviets had heavy lift capability because their nukes were bulky and heavy- thus they developed more powerful rockets and got to orbit

Next: Soviets orbit a dog in Sputnik 2 (1300 lbs!). This was seen as a step to putting a man in orbit!

Kruschev

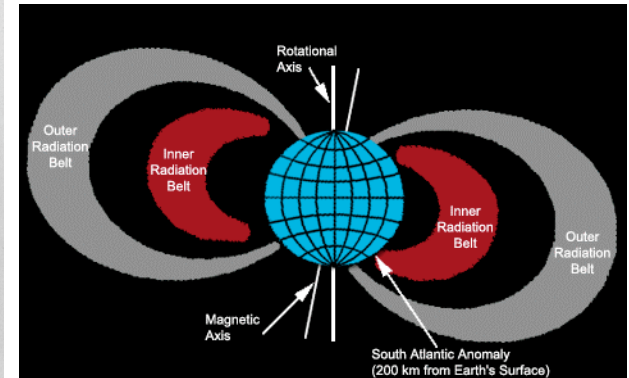
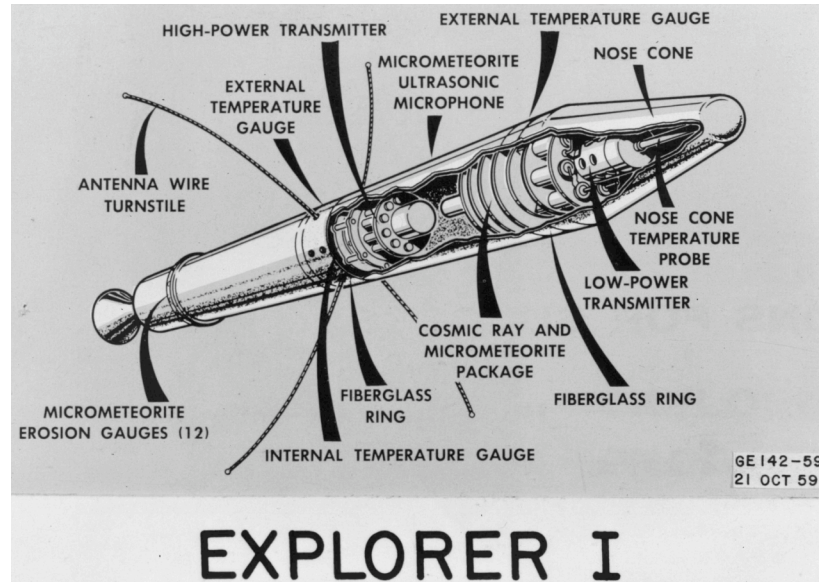


Eisenhower saw Sputnik as a stunt and did not want to start a military space race with Soviets (Kruschev). Thus, he formed NASA from NACA (civilian agency) with the goal of putting a man in space first.



The National Advisory Committee for Aeronautics (NACA) was a U.S. federal agency founded on March 3, 1915 to undertake, promote, and institutionalize aeronautical research. On October 1, 1958 the agency was dissolved, and its assets and personnel transferred to the newly created National Aeronautics and Space Administration (NASA).

# US First Satellite January 1958



Actually had scientific instruments, discovers Van Allen Belts around Earth!



# NATO / WARSAW PACT

1973



1949 - North Atlantic Treaty Organization, known as **NATO**

1955 - Treaty of Friendship, Cooperation and Mutual Assistance, known as **Warsaw Pact**

NATO and the Warsaw Treaty never directly waged war against each other in Europe; but the United States and the Soviet Union and their respective allies did confront each other in Europe, and they did fight proxy wars within the wider Cold War (1945–91) outside Europe. - Wikipedia



Truman  
1945-53



Eisenhower  
1953-61



Kennedy  
1961-63



Johnson  
1963-68



Nixon  
1968-74



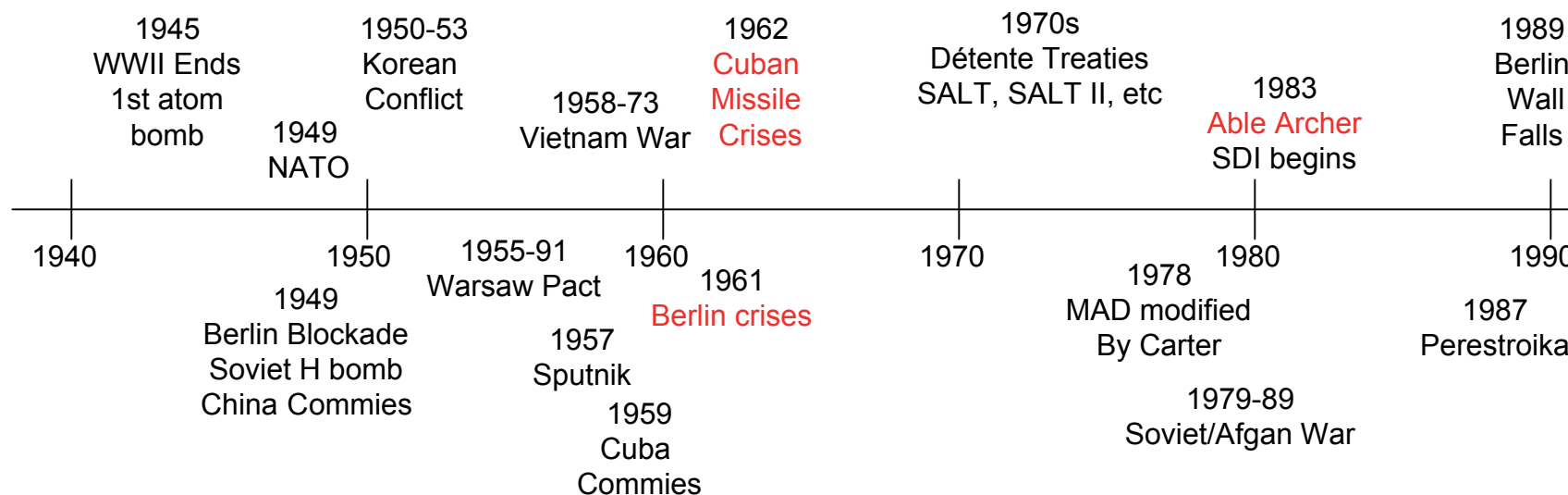
Ford  
1974-76



Carter  
1976-80



Reagan  
1980-88



Stalin  
1922-53



Krushev  
1953-64



Breshnev  
1964-82



Andropov  
1982-84

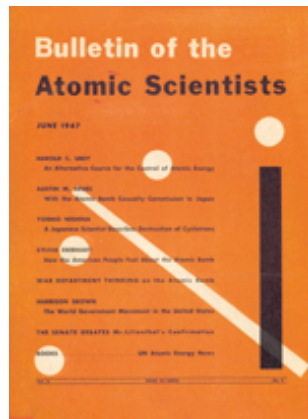


Chernenko  
1984-85



Gorbachev  
1985-91

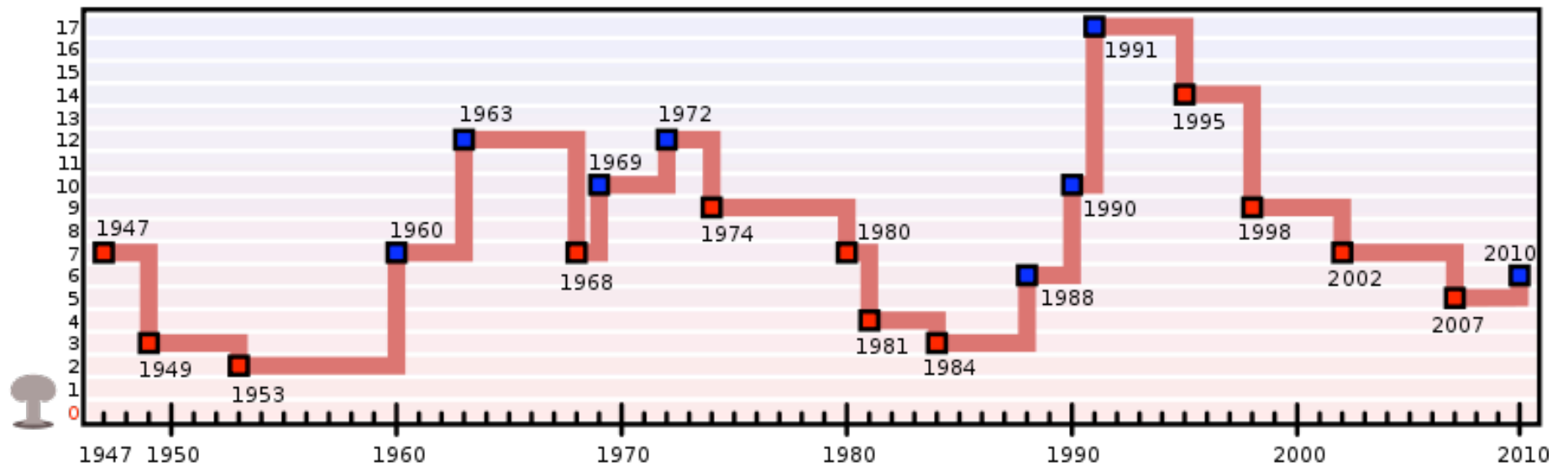
# Doomsday Clock!



Today's Time

11:54 PM

Doomsday Clock: Minutes to Midnight, 1947-2010



1918 - [Rocket Society of the American Academy of Sciences](#): the very first known rocket society (USA)

1927 - [German Rocket Society, or Verein fur Raumschiffahrt, \("VfR"\)](#) (Berlin, Germany). Tried to raise money to finance [Hermann Oberth's](#) rocket experiments. the club, dedicated to conducting rocket research Hermann Oberth, Dr. Walter Hohman, and [Dr. Wernher von Braun](#) were members. Von Braun later began rocket experimentation for the German government.

1930 - [American Interplanetary Society](#) (NYC, USA). In 1934, the AIS changed its name to the [American Rocket Society](#). The ARS conducted rocket research. In 1963, the ARS merged with the Institute of Aerospace Sciences to become the [American Institute of Aeronautics and Astronautics](#).

1933 - [Group for the Study of Reaction Motion in Moscow \("GIRD", Russia\)](#). One founding member was [Sergei Korolev](#), who later became the "Chief Designer" of the Soviet space program.