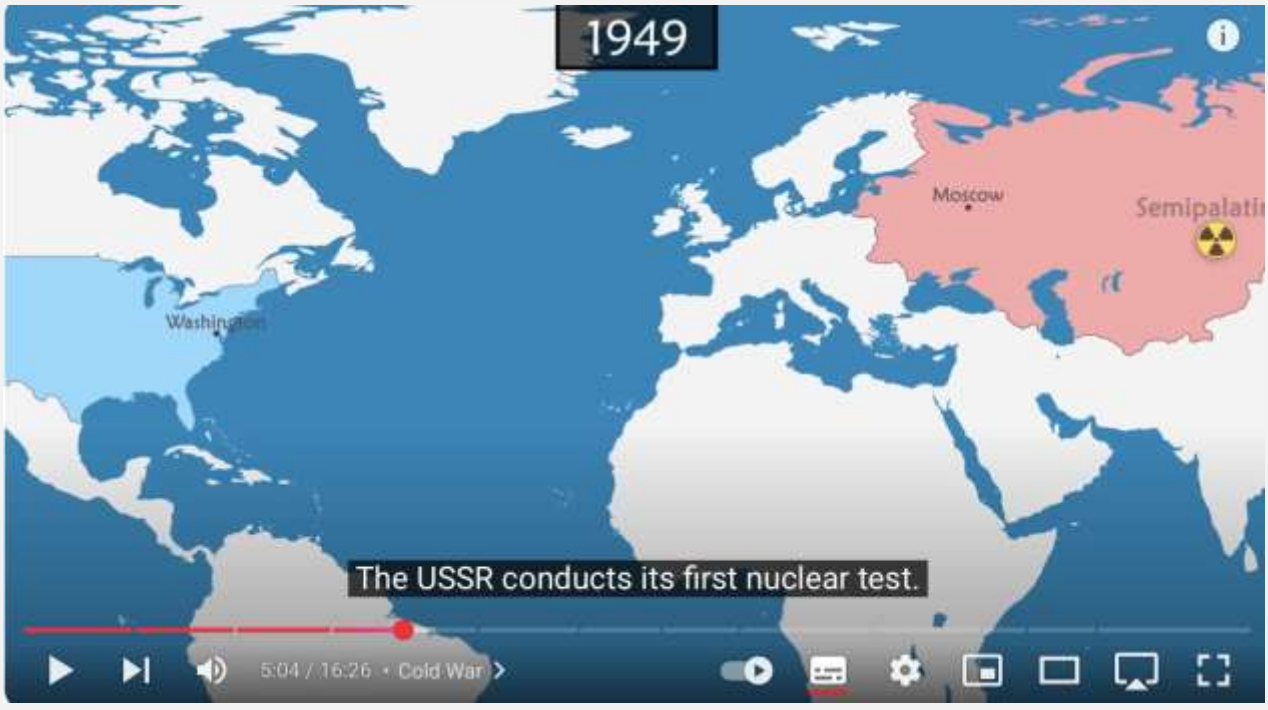
Sequence 6: Nuclear energy

Sommaire des activités ETLV :

ACTIVITY 3: History of nuclear energy (level 3)

Objective: Acquiring information on nuclear energy and its history



DOCUMENT 1: Geo history: History of nuclear power - Summary on a Map

https://www.youtube.com/watch?v=gGTEDH0SIdA

Source: Geo history
Let's retrace on a map a summary of the history of civilian and military nuclear power since the discovery of radioactivity.

Gathering information:

Watch to the video carefully from **5min to 9.5min**. Write down the keywords/expressions/definitions you heard on a piece of paper.

_____
_____
_____
_____
_____
_____

Going into details:

Watch to the video and find the missing words (numbered from 1 to 20):

Cold War

The USSR conducts its first nuclear test. During the Cold War, both powers engage in a frantic arms ***(1)***.
Large sums are spent to gain technological superiority and possess the world's largest nuclear arsenal with the ***(2)*** aim of deterring the enemy from attacking. While the United Kingdom tests its first atomic bomb,
the United States tests its first thermonuclear bomb, also known as the hydrogen or H-bomb. This is a fusion bomb, i.e. it reproduces the reaction ***(3)*** in stars by fusing two light atoms, deuterium and tritium, under high pressure and a temperature of several million degrees Celsius. To achieve these conditions, it is decided to use the atomic bomb as a trigger. The explosion of the plutonium bomb ***(4)*** the right conditions to trigger the fusion of atoms. The explosion that follows is far more powerful than nuclear fission.
The Soviets, in turn, develop the ***(5)***.

Nuclear power

In parallel, research is made to develop nuclear power. The first nuclear power plants appear. The ***(6)*** of future reactors would be with pressurized water. In the core of the reactor is a ***(7)*** in which low-enriched uranium is placed and used as fuel. Chain reactions are controlled to last about 3 years. The heat emitted increases the temperature of pressurized water in the primary circuit. This circuit is brought into contact with the ***(8)*** circuit in which water heats to transform into ***(9)***. This is used to rotate the turbine which is linked to a generator that produces electricity. A cooling circuit pumps water from a river or sea to ***(10)*** the vapor in the secondary circuit. Sometimes cooling towers are built to cool the water in the last circuit. To encourage research in nuclear power, the International Atomic Energy Agency (IAEA) is created under the aegis of the ***(11)***. The organization is responsible for ensuring the safe and peaceful use of nuclear energy. In addition, nuclear would also be used in medicine, notably in medical imaging and the treatment of certain cancers.

Nuclear threat

While France tests its first atomic bomb, the arms race ***(12)*** between the USSR and the United States takes a turn for the worse. The two powers have already developed intercontinental missiles and nuclear submarines.
The USSR conducts the most powerful test of the Tsar Bomba, with a capacity of ***(13)*** megatons of TNT.
The following year, the US tests a hydrogen bomb at an altitude of 400 km. The explosion creates an artificial aurora ***(14)*** even from New Zealand; while the emitted radiation damages at least 8 satellites.
The same year, while the United States threatens Soviet territories with nuclear missiles installed in ***(15)*** and Italy, the USSR places in Cuba nuclear missiles pointed at the United States. Just as tensions build to a climax, negotiations take place between the two powers after which both parties ***(16)*** their missiles and the situation calms down.

Non-proliferation

China tests its first atomic bomb. The United States and Soviet Union takes a dim view of the arrival of new ***(17)***. Via the UN, they propose a Treaty on the Non-Proliferation of nuclear weapons. This differentiates the 5 so-called nuclear powers from the rest of the world. Existing nuclear powers cannot share knowledge or supply ***(18)***, while remaining countries cannot attempt to obtain the atomic bomb. In addition, nuclear powers are supposed to ***(19)*** as much as

possible. This treaty would gradually be signed by all countries of the world with the exception of India, Pakistan and Israel, which denies having atomic weapons despite heavy suspicion of the contrary. Latin America goes ***(20)*** by creating the first populated area free of nuclear weapons.
Finally, the United States and Soviet Union agree to limit the production of strategic weapons.

- **Write your answers in a Google Form or below:**

1. _____	**2.** _____
3. _____	**4.** _____
5. _____	**6.** _____
7. _____	**8.** _____
9. _____	**10.** _____
11. _____	**12.** _____
13. _____	**14.** _____
15. _____	**16.** _____
17. _____	**18.** _____
19. _____	**20.** _____

Activities summary

What you must remember:

- **nuclear power**
- **chain reaction**
- **weapon**

Skills linked to the curriculum**:**

Compétences	Capacités à maîtriser	Où dans cette séquence ?
APP	Utiliser du vocabulaire spécifique	Activités 1 à 6
	Lire et comprendre des documents scientifiques	Activités 1 à 6
COM	S'exprimer à l'écrit et à l'oral en utilisant le vocabulaire adapté	Activités 1 à 6

Objectifs de la séance :

- *Compétences linguistiques* : Améliorer la capacité des élèves à parler en anglais sur un sujet technique.
- *Compétences techniques* : Renforcer les connaissances sur l'énergie nucléaire.
- *Compétences de présentation* : Développer les compétences en communication et présentation en anglais.

Durée de la séance : 30min

Matériel nécessaire :

- Support visuel (vidéo courte).
- Accès à internet (pour recherches rapides si nécessaire notamment un Google form)