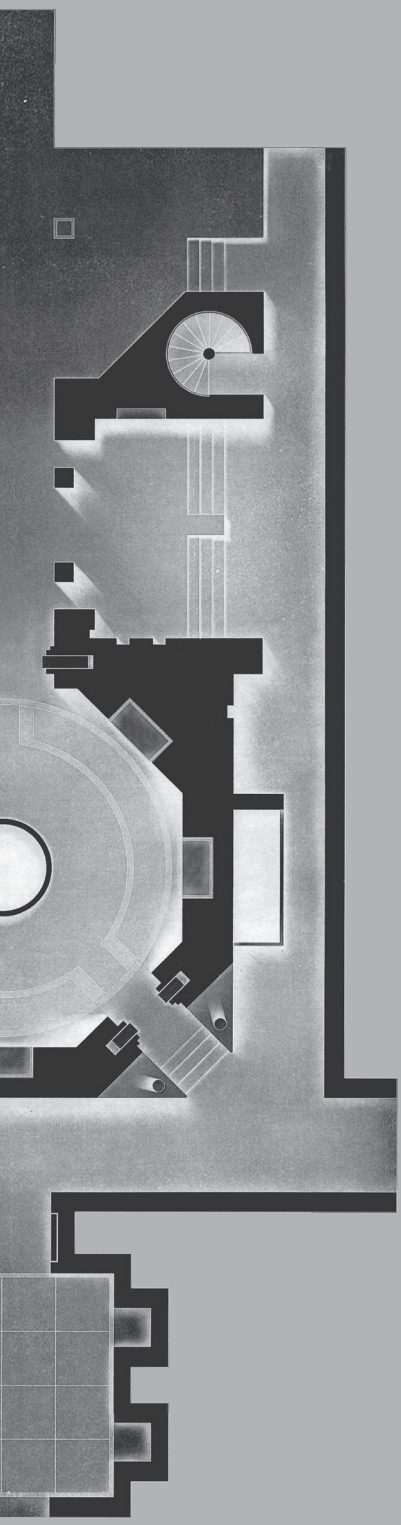

The Nuclear Sanctuary Archive Guide

The Nuclear Sanctuary
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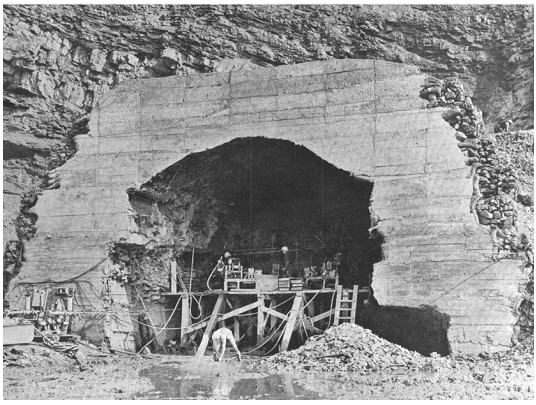
About the Archive

The Nuclear Sanctuary Archive aims to materialise the intangibility of radiation through a collection of radioactive paraphernalia which form a timeline spanning decades of French nuclear activity starting form 1900. Through the amassed objects, the material aims to provide an overview of state activity and cultural attitudes towards radiation across generations. The Sanctuary's archive physically exhibits and categorises the extent of France's radioactive footprint and changing perception of radiation.

1966 Construction of Chooz A



2000BC
Kaaba

1200
Bible (O.T)

0

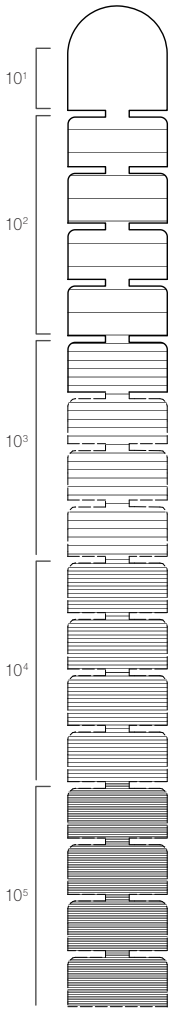
519AD
Mother of pearl Menorah

1260
Shroud of Turin

1959
Commercial production of nuclear waste begins

1967
Chooz A

2020
The Nuclear Sanctuary



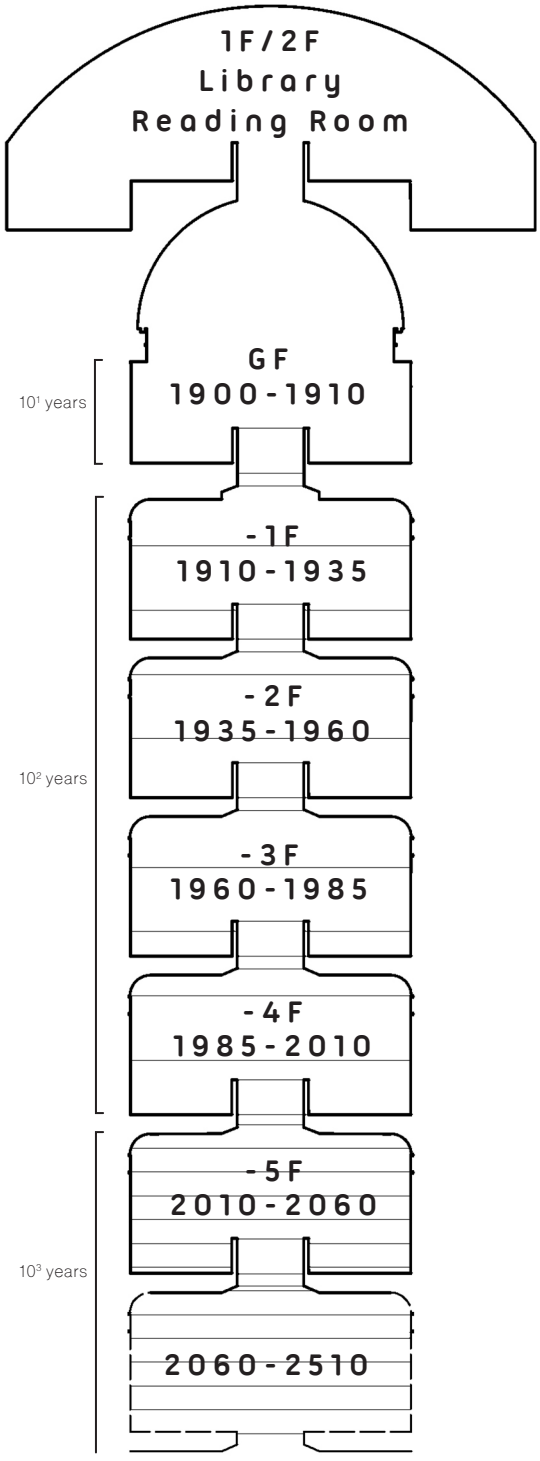
102,020AD+
Radioactive waste artefacts

Nuclear Time

The 21st century's nuclear waste will long outlive future generations. With high-level radioactive waste remaining hazardous for up to 100,000 years – the scale of nuclear time is thus something which we, in the present day can hardly begin to comprehend. As a nuclear civilisation the waste artefacts we have created for the future hold a magnitude of time far greater than some of histories most sacred artefacts.

Floor Guide

The archive itself aims to grapple with the notion of nuclear time, by using a logarithmic scale to contain the extent of France's nuclear time and spatialise such magnitude. The logarithmic scale is introduced to excavate further floors to extend down into the mountain for future years, facilitating the collections growth. After the initial introductory floor (1900–1910), each of the subsequent $\log^{10}$ years is split across four floors – resulting in a spatial representation of nuclear time whereby the further the archive extends into the future the more condensed its archive becomes.

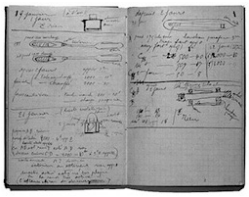

1F/2F
Library
Reading Room
GF
1900-1910
-1F
1910-1935
-2F
1935-1960
-3F
1960-1985
-4F
1985-2010
-5F
2010-2060
2060-2510
10¹ years
10² years
10³ years

1F: Library

2F: Reading Room

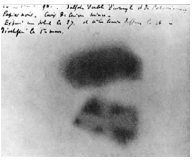
GF: 1900-1910

1902 Marie Curie's 'radioactive papers'



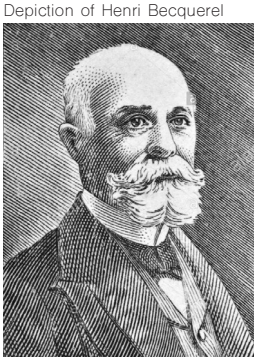
1900 X-ray technician's hand – unaware of radiation dangers

1903 Henry Becquerel's first recording of 'radiation'



With Henri Becquerel's serendipitous discovery of radiation, France's nuclear legacy was born. His subsequent Nobel Prize speech introduced radiation as 'a new property of matter'. The period following the phenomenon of radioactivity was of great intrigue, scientists strived to capture a better understanding of this 'strange' energy by observing changes in objects. Becquerel's doctoral student Marie Curie went on to further research the emission of energy from certain chemical elements – coining the term 'radioactivity'. Later on the International Systems unit for radioactivity would be called the becquerel (Bq).

Depiction of Henri Becquerel

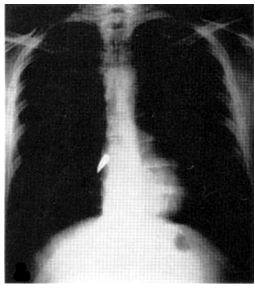


1911 Marie Curie awarded Nobel Prize for work on measuring radioactivity

1914 Marie Curie's Radiology Vehicle

1917 Advertisement for French radium beauty cream

1914 Early WWI Battlefront X-ray



1933 Tho-Radia, radioactive beauty range

1934 Stamp depicting Marie Curie

The German invasion of France put a hold on research, with supplies of heavy water and uranium having to be hidden from enemy forces. To the few French scientists that remained, their research on the nuclear was seen as a form of patriotism – the nation's scientific strength upheld as a great post-war prospect. With the arrival of German troops, Marie Curie carefully hid her stockpile of radium in a safety deposit box and focused on using her scientific research to help French soldiers, this resulted in her inventing the first 'radiological vehicle' enabling x-rays to be used on the battlefield.

-2F: 1935-1960

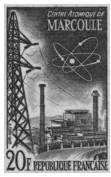
1935 Irène Joliot-Curie and Frédéric Joliot-Curie awarded Nobel Prize "in recognition of their synthesis of new radioactive elements"

1948 First nuclear reactor. Zoe control room

1952 Charles de Gaulle opening Centre for Science Research, Saclay

1958 Prospecting for Uranium in Gabon

1959 Stamp depicting Marcoule Atomic Centre

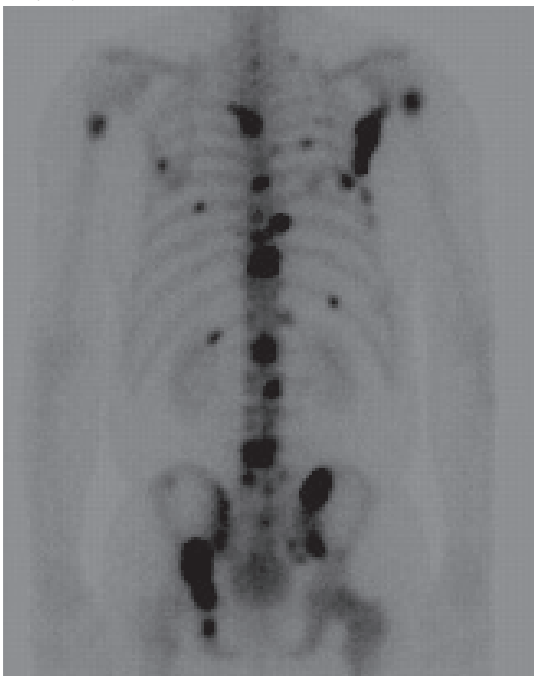


Following the war, scientists internationally sought to better understand the structure of the atom. Such research was the first towards understanding how nuclear reactions occur. Through advances in particle physics scientists become able to manipulate atomic structures. The splitting of uranium atoms is made possible via a process named 'nuclear fission', which in turn results in large quantities of energy being released. This discovery and its seemingly endless potential – would go on to revolutionise nuclear physics. Harnessing and utilising such energy became a focal point at the

heart of international science and positioned the nuclear as a glowing prospect for the French state.

To further spearhead the nation's nuclear programme, the CEA (Commissariat à l'énergie atomique et aux énergies alternatives) were formed in order to carry out research for both domestic and military purposes – thus fully nuclearizing the nation of France. Soon after the first atomic reactor, Zoé, was achieved, described as a starting point for what would become the 'radiance of France'. However at the end of this period initial fears towards radiation began to surface. Concerns over bone-seeking radionuclides and it's affects on mother's milk/ babies teeth started murmurs of an 'anti-nuclear' rhetoric.

X-ray depicting bone-seeking radionuclides



-3F: 1960-1985

1960 France's First Nuclear Weapons Test, Algeria

1960 France opens its first uranium mine in Mounana, Gabon

1966 President De Gaule visiting French Polynesian Test Sites

1968 Thermonuclear Bomb Fangataufa, French Polynesia

1975 Claude Parent Nuclear Power Plant Model

1982 Anti Nuclaer March, Chooz

France's militarisation of the nuclear became increasingly visible. With the success of Gerboise Bleue, France's first nuclear test which took place in the Algerian Sahara, testing was expanded to include various territories in the French Polynesia. The nation's belligerent refusal to sign the Partial Test Ban Treaty (PTBT) highlighted the country's desire to succeed as it continued testing in the open atmosphere until the middle of this period.

At the same time the 1974 oil crisis led President Messmer to outline huge plans for France's nuclear vision. Targeting 170 reactors to be constructed by the

turn of the century, France positioned the nuclear at the forefront in its strive for modernity. The nation's domestic nuclear programme was now seen as key towards economic success and state independence – becoming an evermore integral part of the nation's identity.

To cope with the growth of the industry, uranium mining in former colonial territories was greatly expanded, with Niger and Gabon most heavily impacted. During this same period France prolifically used ocean disposal for its radioactive waste – as the 'green atom' rhetoric started to emerge tainted. Radiation overexposure gained a spotlight leading to further 'fear' of the nuclear as cases from within the industry began to surface. The nuclear's clean energy image became increasingly under threat as anti-nuclear and environmental activists formed organised resistance movements in efforts to stop France's nuclear expansion.

1974 President Mesmer interview

-4F: 1985-2010

1986 Chernobyl Disaster

1993 Banning of ocean disposal of radioactive waste

1996 Chooz B opens

1999 Mounana uranium mine is closed

2000 France announce nuclear decommissioning program

2008 Chooz A decomissioning begins.

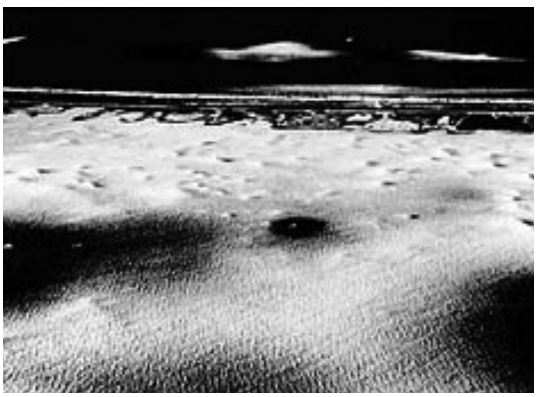
Despite the Chenobyl disaster, France's nuclear energy programme was at a point of no return, with 65% of the nations electricity generated by nuclear. Whilst other countries were announcing a downscaling in their nuclear industries, France remained resolute in its reliance – keen to remain at the head of the world nuclear stage.

In the aftermath of France's nuclear testing overseas, the lasting effects started to become apparent. Reports of large

amounts of radionuclides released into the atmosphere emerged alongside an increased understanding in the dangers of radiation exposure. As a result of growing pressures and continued protests towards nuclear military, the French testing programme was officially halted.

At the turn of the century France laid out its plans for a state-wide decommissioning of it's 'shutdown' plants – this included Chooz A. The nation sought the opportunity to lead expertise in nuclear decommissioning – whilst highlighting the nation's ability to safely deal with the industries radioactive sites.

1996 France Holts Nuclear Testing



-5F: 2010-2060

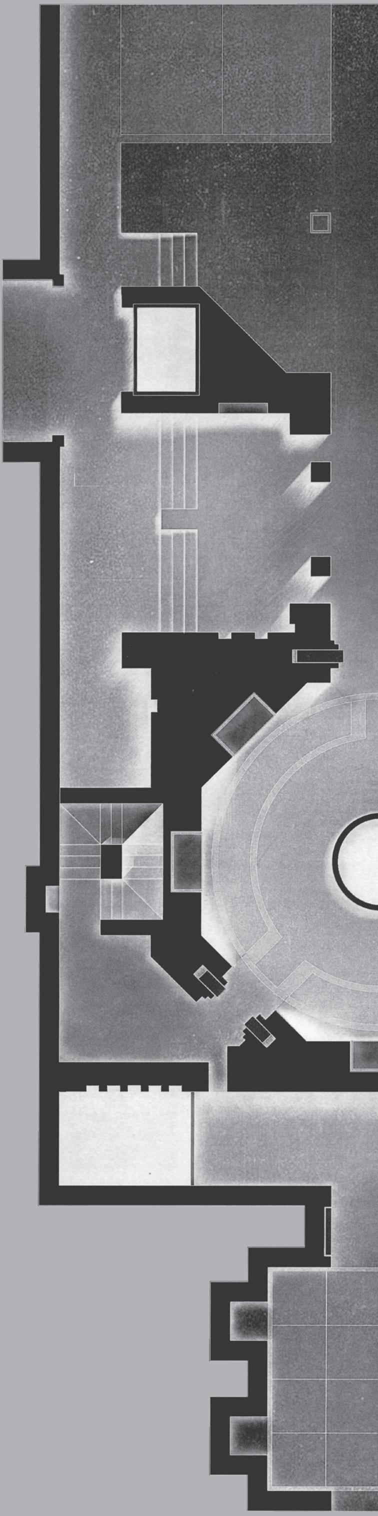
2011 Fukashima Diachi Disaster

2011 Marcoule Plant Accident

2019 Anti Nuclear Protests, Bure

2020 Unit 1 of the construction of UAE's first nuclear plant completed

With the Fukushima disaster, political unrest surrounding the topic of the nuclear was only heightened by an ageing nuclear fleet in France's state. The iodine pill, as supplement given to help combat radiation absorption, was prescribed by the government to communities in close proximity to aged nuclear reactors. Despite talks of down-scaling the nation's nuclear reliance, France stood at a crossroads whether to re-invest in a renewed nuclear fleet. In efforts to manage long-term unresolved issues surrounding the nation's nuclear waste, France completed construction of the Cigeo project in Bure. An underground facility 500m beneath the surface, the repository began being loaded with the nation's highest-level nuclear. Necessary to remain undisturbed for thousands of years, complications around safeguarding the site and ensuring future generations' safety gave wave to further protest and fresh fears.



GF Archive Floorplan