



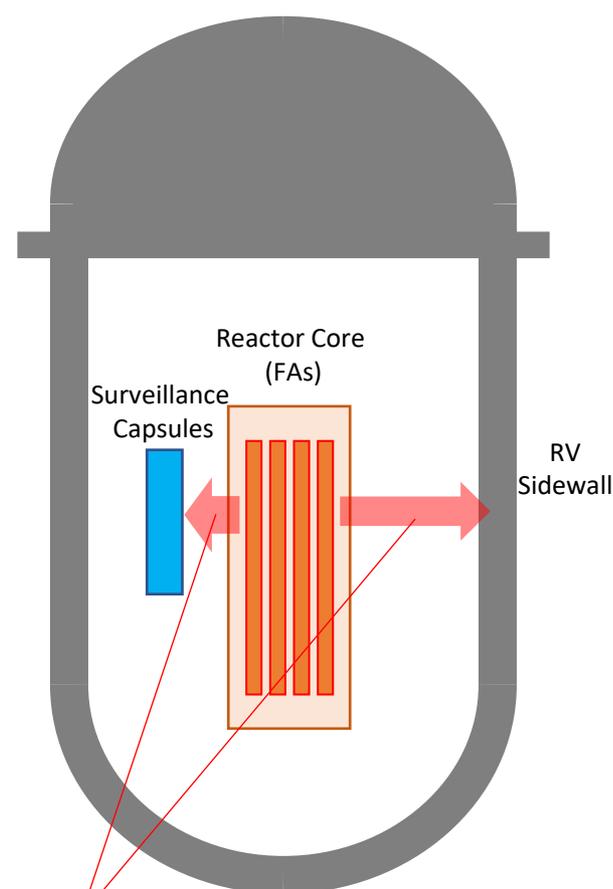
Physical Ageing 【Evaluation for Operation over 60 years】

- ◆ Current regulatory system on physical ageing management is developed for safe long term operation for nuclear power plants up to the statutory limit of 60 years. In response to the bill enabling further extension of the operation period, has been under discussion in the National Diet, it is necessary to establish a regulatory framework of physical ageing for operation of nuclear power plants beyond the time frame originally anticipated for their operation of 60 years.
- ◆ The NRA considers that it is possible to conduct rigorous review on the assesment for physical ageing of over 60 years based on past review results and scientific knowledge.
- ◆ It is the responsibility of licensees to verify the conformity to the regulatory requirements upon application of long-term facility management plan. Unless the verification of licensee is considered as adequate by the NRA, an approval of further extended period of operation will not be granted.
- ◆ A point to consider in the regulatory review is whether sufficient knowledge/information/data has been collected by licensee regarding long term operation of over 60 years on the following. 1) forecasts of known ageing phenomena (e.g., neutron embrittlement, degradation of electric components, concrete structure) over 60 years, and 2) existence of unknown ageing phenomena which should be additionally focused on.
- ◆ At present, any NPPs with over 60 years of operation does not exist, however it is possible to make a forecast based on accelerated ageing data such as RV neutron embrittlement, and it is expected that knowledge/information/data will be collected through further operation of any reactors.
- ◆ The NRA will conduct regulatory review on ageing management plan, especially on aforementioned point.

List of reactors with over 50 years of operation
(as of end of March 2023)

	Name of NPP	Country	Date	Years
1	Tarapur 1	India	1969.10.28	53
2	Tarapur 2	India	1969.10.28	53
3	Nine Mile Point 1	U.S.A.	1969.12.01	53
4	Beznau 1	Switzerland	1969.12.09	53
5	Robert E. Ginney	U.S.A.	1970.07.01	52
6	Dresden 2	U.S.A.	1970.08.11	52
7	Point Beach 1	U.S.A.	1970.12.21	52
8	H. B. Robinson 2	U.S.A.	1971.03.07	52
9	Monticello	U.S.A.	1971.06.30	51
10	Pickering 1	Canada	1971.07.29	51
11	Dresden 3	U.S.A.	1971.10.30	51
12	Beznau 2	Switzerland	1972.03.04	51
13	Point Beach 2	U.S.A.	1972.10.01	50
14	Turkey Point 3	U.S.A.	1972.12.14	50
15	Surry 1	U.S.A.	1972.12.22	50
16	Quad Cities 1	U.S.A.	1973.02.18	50
17	Quad Cities 2	U.S.A.	1973.03.10	50
18	Novovoronezh 4	Russia	1973.03.24	50
(Reference : Oldest operating NPP in Japan)				
-	Takahama 1	Japan	1974.11.14	48

Example of accelerated ageing data
(RV neutron embrittlement)



Surveillance capsules are installed inside the reactor vessel to be neutron-irradiated severer than the side wall of RV so that the accelerated ageing data can be obtained.