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DEPARTMENT OF STATE

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A-253
NO.

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HANDLING INDICATOR

TO : DEPARTMENT OF STATE

INFO : NEW DELHI

FROM : Amconsul BOMBAY

DATE: April 29, 1964

SUBJECT : Inauguration of Indian Plutonium Separation Plant

REF : Bombay A-249 of April 22, 1964.

It has been noted that the five copies of the press release which were to have been forwarded with the airgram under reference were inadvertently not sent forward. They are enclosed herewith.

For the Consul General:

This document released to public per L.V. NOSENKO

8/23/79 840635

Jack C. Miklos
American Consul

Enclosure:

Five copies of press release

DEPARTMENT OF STATE A/CDC/MR

REVIEWED by BLUB

DATE 8/2/91

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In Out

Drafted by: JCMiklos:lds 4/27/63

Clearances: _____

8/3, 1964
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Plutonium Plant at Trombay

Enclosure No. 1.....

Bombay A-253 dated 4/29/64

Project Phoenix, the construction of a plant at Trombay for the extraction of plutonium, has been completed. The plant was designed and built entirely by the staff of the Atomic Energy Establishment at Trombay and Rs. 50 lakhs worth of equipment was fabricated in a workshop at the plant site.

2. The purpose of the plant is to treat waste fuel elements from atomic reactors, to separate off the highly radioactive fission products and to extract plutonium, an extremely valuable fissionable material and atomic fuel for future reactors. The plant is one of the most sophisticated and advanced type of chemical plants, using techniques at the frontiers of chemical technology, and has several unusual features. As the fuel to be treated is highly radioactive, with an activity equivalent in many cases to a million curies (radioactivity equivalent to a million grams of radium), all its operations are remote controlled from the moment the fuel element is moved from its lead flask into the dissolver to the stage at which the purified plutonium and residual uranium are separated. All this treatment takes place in equipment placed in eight cells ~~made of high density reinforced concrete~~ with a wall thickness of five feet of high density concrete, equal to about seven feet of ordinary concrete, and lined with stainless steel. All operations are controlled and monitored pneumatically from an operating gallery.

3. The plant has also been designed to be foolproof against another danger, accidental criticality. Plutonium is a fissionable material and if a certain minimum quantity of it accumulated in any place, a chain reaction would automatically start leading to an

excursion and the emission of dangerous radiation. The plant has therefore to be devised using geometry in the design of its pipes and vessels and other safety measures so as to ensure that the accidental criticality does not take place even through faulty operation.

4. Plutonium has another hazard. It is an alpha emitter and is therefore highly toxic for ingestion into the system. The safe dose laid down for ingestion into a human being in the entire course of his life is a millionth part of a gram, whereas the plant will handle kilogram quantities of plutonium. The handling of plutonium has therefore to be done in glove boxes.
5. The plant has attached to it a waste treatment plant for treating the highly radioactive waste and bringing it into a form suitable for storage. Some of the highly radioactive fission products, such as Caesium 137, are very valuable radio-isotopes and provision has been made for extracting them at a later date.
6. The first inactive uranium rod was pushed into the plant at 5.00 p.m. on Tuesday, March 31, 1964, by Dr H.J.Bhabha at an informal ceremony at which Shri H.N.Sethna, Chief Engineer of the project and Director of the Chemical Group of the Trombay Establishment, and other scientists and engineers of the project were present. The plant will be run on inactive and slightly active fuel elements during the month of April. It will be possible to visit the plant during this period, including the hot cells, which will hardly have any radioactivity by then. It is expected that highly active fuel will be put into the plant in May and the hot cells will then become

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inaccessible even to the project staff.

7. Only four other countries in the world have operating plutonium plants at present, namely, U.S.A., U.S.S.R., U.K. and France, while Norway has a small pilot plant. Euro-Chemie, a company formed by the governments of 12 West European countries, including Belgium, France, Italy, Sweden, Switzerland and West Germany and 22 leading chemical firms in them, has been constructing a plutonium plant at Mol in Belgium of about the same capacity as the plant at Trombay. The Trombay plant has cost approximately Rs 3.6 crores, less than half of the estimated cost of the plant at Mol. The completion of the plutonium plant at Trombay places India among the first half of a dozen countries in the world in the utilisation of atomic energy.

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