May 14, 1964

Research Memorandum INR-16 from Thomas L. Hughes to the Secretary, 'Indian Nuclear Weapons Development'

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Summary:

An intelligence report that the fuel core of the Canadian-Indian Reactor (CIR) at Trombay was being changed every six months raised questions about India's nuclear objectives: a six-month period was quite short for "normal research reactor operations," but it was the optimum time for using the CIR's spent fuel for producing weapons grade plutonium. According to INR, India had taken the "first deliberate decision in the series leading to a nuclear weapon," which was to have "available, on demand, unsafeguarded weapons-grade plutonium or, at the least, the capacity to produce it."

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Research Memorandum
INR-16, May 14, 1964

To : The Secretary
Through : S/S
From : INR - Thomas L. Hughes TLH

Subject : Indian Nuclear Weapons Development

With the recent Indian announcement of the start-up of their plutonium separation plant at Trombay, attention again is focused on Indian capabilities to manufacture nuclear weapons and, equally, on their intentions. This subject was discussed in INR's Intelligence Note of 24 February 1964. The present memorandum, designed to supplement the earlier IN, grows out of a recent review of the evidence currently available to us.

ABSTRACT

There is an intelligence report that the core of the Canadian-Indian Reactor (CIR) at Trombay is being changed every six months. This six month cycle is unusually short for a research reactor of the CIR type. While training or some other technical reason may explain this short cycle, it is appropriate for production of weapons-grade plutonium.

There are no technical requirements in the Indian nuclear energy program that would demand a plutonium separation plant. They will not have a power reactor using plutonium for fuel for some years. Small quantities of plutonium for research can be obtained from a variety of sources at modest cost. Processing power reactor fuel rods for recovery and re-use of uranium is also not a current Indian problem since their first power reactor at Tarapur will use a US safeguarded uranium core that will probably be reprocessed in the US.

The Indians are now in a position to begin nuclear weapons development if they choose to do so. We have no evidence, however, of a weapons research and development program and would expect to see some if the program existed. It may be that in the series of decisions involved in such a weapons program, the Indians have deliberately taken the first -- to have available, on demand, unsafeguarded weapons grade plutonium, or at the least, the capacity to produce it. The next decision, to begin weapons R & D could conceivably be taken at any time. While this would involve a major political decision, the political environment in India for undertaking nuclear weapons development appears to be more favorable now than it was a year ago.

Discussion

Early this year the Indian director of project Phoenix, the plutonium separation plant at Trombay, stated that the plant would begin actual separation operations in May. He also is reported, in a sensitive intelligence report, to have said that the fuel core of the Canadian-Indian Reactor (CIR) -- a 40 MW research reactor not subject to Canadian inspection -- was being changed every six months. This is an exceptionally short period for normal research reactor operations. There may be other reasons for the quick change of cores -- personnel training for reactor operations being one -- but a six-months period is the cycle best suited to produce weapons grade plutonium for a reactor of the CIR specifications.

The separation plant itself is, in terms of the Indian nuclear energy program, an uneconomic investment. There are no clear-cut technical reasons, flowing out of India's currently planned nuclear power program, that would make a chemical separation plant essential. The Indians have no known requirements for plutonium in the quantities that the plant can produce, either as fuel for use in power reactors or for scientific research. Nor is there any reason to believe that they may be interested in using the fission products that would come out of the separation plant for radiological warfare purposes. Small quantities of plutonium for research purposes are readily available from a variety of sources at very modest cost; plutonium-burning reactors that would make desirable a domestic source of plutonium are well into the future, for India certainly not before the end of the decade.

While reprocessing of power reactor fuel rods for subsequent re-use of the uranium is standard practice, this is not a problem the Indians will have to face for some years. The US-Indian Tarapur power reactor, for example, will use a US supplied core of enriched uranium; its reprocessing therefore will undoubtedly be handled by the US, not India. Few countries have found it economic to build separation plants for this purpose, preferring to have the work done by the US, UK, France or the Soviet Union under bilateral agreements. In fact, India is the only non-weapons power with such a facility, if one exempts the multilateral European separation plant, Eurochemie, in Belgium and possibly also the Chinese Communists.

The motivation for India's constructing a separations plant may have been largely nationalistic in origin. Certainly it is in keeping with Indian dislike and suspicion of foreign controls and safeguards. In addition, it provides a prestige item at fairly small cost -- roughly $7.5 million. However, if India intended to develop nuclear weapons, then the construction of a plutonium separation plant would be a necessary capital investment.

It must be emphasized that we have no direct evidence that the Indians currently have a weapons program. India's Draft Defense Plan includes around $300 million equivalent for research and development over a five-year period, but no weapons laboratory has been identified and we have seen no Indian scientists doing the kind of research in instrumentation, electronics and nucleonics that would be necessary for weapons development. We would expect to see some evidence of such work through publication by the Indian scientists engaged in it. One might also anticipate Indian scientists' interest in weapons-related subjects expressed by them to western colleagues at international scientific gatherings or, for that matter, greater attendance by Indians at certain of these gatherings. No such indications have yet become apparent.

On balance, therefore, it seems unlikely that the Indians have yet decided to begin weapons development. At the same time, everything the Indians have done so far would be compatible with a weapons program if at some future date it appeared desirable to start one. This is probably no accident. One might fairly say that the first deliberate decision in the series leading to a nuclear weapon has already been taken; to have available, on demand, unsafeguarded weapons-grade plutonium or, at the least, the capacity to produce it. The next, to begin weapons R & D, could conceivably be taken at any time.

Nehru and other top leaders of the Government of India continue to state publicly that India will not attempt to develop atomic weapons. These protestations have come with less frequency and with a decreasing ring of conviction since India's defeat at the hands of the Chinese in the fall of 1962. Although India welcomed last year's nuclear test ban treaty, it did not de-emphasize or retrench its nuclear energy program.

Moreover, the Indians have manifested a continuing determination to achieve as quickly as possible the capability to produce their own military hardware, including such advanced weapons as tanks and supersonic planes. In sum, the political environment for undertaking nuclear weapons development in India appears to be more favorable now than it was a year ago.

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