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EXCISE

THE PAKISTANI NUCLEAR PROGRAM

INTRODUCTION/SUMMARY

There is unambiguous evidence that Pakistan is actively pursuing a nuclear weapons development program. Pakistan's near-term goal evidently is to have a nuclear test capability, enabling it to explode a nuclear device if Zia decides its appropriate for diplomatic and domestic political gains. Pakistan's long-term goal is to establish a nuclear deterrent to aggression by India, which remains Pakistan's greatest security concern.

The Government of Pakistan is pursuing both the reprocessing and uranium enrichment routes to obtain fissile material for their program. They are building a facility near PINSTECH capable of extracting small quantities of plutonium from KANUPP power reactor fuel. In addition, they are continuing to seek assistance from supplier countries to complete the larger reprocessing facility located at Chasma. We have no reason to believe, however, that Pakistan has yet produced the fissile material necessary for a nuclear explosive device or a nuclear weapon.

To produce sufficient quantities of plutonium for a test device for weapons Zia probably would have to abrogate or violate Pakistan's nuclear safeguards with Canada and the International Atomic Energy Agency. Pakistan is attempting to produce highly enriched uranium, which could support a test on weapons program without involving any safeguards agreements.

PAKISTAN'S FUEL CYCLE FACILITIES

Pakistan's major fuel cycle facilities include the Canadian-supplied, CANDU-type power reactor located on the coast near Karachi.

A uranium ore concentration plant and UF6 production plant are located Dera Ghazi Khan near deposits of uranium.

-- The ore concentration plant is in operation, processing Pakistani ore.

-- The UF6 plant is externally complete, and we believe that the plant is already in operation. The facility will probably produce more than enough for the Kahuta enrichment plants.

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There are two major fuel cycle facilities located at the Chasma Barrage on the Indus River:

-- A fuel fabrication plant has appeared to be externally complete for the last four years and is probably the source of fuel for KANUPP.

-- At that location, the Pakistanis are also endeavoring to complete a 100 metric ton per year commercial reprocessing plant. This was initially to be provided by the French, but work is now continuing without extensive foreign assistance. Civil works are externally complete. Pakistan may have difficulty in outfitting the interior of the plant with process equipment and operating it at or near design capacity.

-- This is also the site where Pakistan intends to construct a light-water power reactor. Pakistan is now in the process of soliciting bids.

On the outskirts of Islamabad is the Pakistani Institute of Nuclear Science and Technology, commonly called PINSTECH, which is Pakistan's chief nuclear research center. Among other facilities located here are a small research reactor and facilities for small-scale reprocessing.

Pakistan's uranium enrichment plant is located at Kahuta, also near Islamabad.

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SPENT FUEL REPROCESSING

We believe that facilities exist in the basement of the main building of PINSTECH in which would allow laboratory experiments with solvent extraction. A still larger, separately secured facility, the so-called New Laboratories (or New Labs for short), is nearing completion near the main building.

Technology obtained by Pakistan in Europe has provided the base for development of the New Labs. Construction of the New Labs began in about 1976, and it appears externally complete. However, we believe that it will be at least a year before it will be operational. In addition to European design assistance in the area of reprocessing, considerable reprocessing-related

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equipment has been received by Pakistan from various suppliers (e.g., specialized equipment such as manipulator's and a waste handling system).

A trilateral safeguards agreement (France, Pakistan, IAEA [INFCIRC/239]) should make any solvent extraction reprocessing in Pakistan subject to IAEA safeguards.

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Although externally complete, Pakistan is experiencing difficulties making New Labs operational. And even if it became operational in the next year or so and a decision were made to initiate reprocessing, Pakistan would not be able to separate enough plutonium for a single device for several years. The New Labs seem to be large enough, however, to allow for expansion of reprocessing capacity.

Spent fuel from KANUPP is the only source of suitable quantities of irradiated uranium to support a nuclear weapons program. To use this material, however, Pakistan would probably have to abrogate or violate Pakistan's safeguards.

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agreement with Canada and the IAEA. Pakistan, however, could "legally" initiate small-scale reprocessing at New Labs without violating safeguards or being required to submit the New Labs themselves to safeguards through the exemption clause of the the safeguards agreement with the IAEA covering the KANUPP fuel.

Pakistan's introducing indigenously produced fuel rods into KANUPP and the resultant inability of the IAEA to monitor the amount of fuel flowing through the reactor, as well as the IAEA's determination that other safeguards measures were inadequate over the last year and a half raised concerns regarding the possible diversion of spent fuel from the reactor to unsafeguarded nuclear facilities. Although the safeguards situation has improved of late, further improvements must be agreed to. A diversion at some past time, however, cannot be completely ruled out.

URANIUM ENRICHMENT

In enrichment Pakistan is embarked on an effort to build a gas centrifuge facility capable of producing high enriched uranium. Development of a centrifuge enrichment capability in Pakistan was begun in earnest in 1975 and is now centered at Kahuta near Islamabad. The plant is eventually to house several thousand machines.

The program uses European technology (the designs for the machines were stolen by a Pakistani national) and has involved energetic procurement activities in various countries. The Engineering Research Laboratories (ERL), the organization responsible for Pakistan's unsafeguarded enrichment program, has long relied on an international network of procurement agents and front organizations to purchase the equipment for use in its gas centrifuge enrichment plant. The Pakistanis have been actively purchasing parts and equipment for their centrifuge program in these various countries, sometimes disguising their activities by providing false end-use statements information. Considerable outside assistance will likely continue to be required.

We believe that the Pakistanis have experienced difficulty in making their centrifuge machines work and that the Pakistanis have not yet produced any significant quantities of enriched uranium. Because of these operational problems, the Pakistanis in the recent past sought help from the Chinese. We do not know what the present status of that cooperation is.

Once the operational difficulties are overcome, and only part of the plant were put into sustained operation, it could produce sufficient fissile material for a single device within two to three years of start-up. When completely operational the plant could probably produce enough highly enriched uranium for several devices per year.

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Despite claims that their enrichment effort is only a research and development program aimed at civil nuclear energy development (i.e., a planned light water reactor program, we believe the capacity of the production facility under construction at Kahuta is too large to be purely for research and development. At the same time, we do not believe the capacity of it would meet the requirements for low enriched fuel for even one light water reactor.

We believe the ultimate application of the enriched uranium produced at Kahuta, which is unsafeguarded, is clearly nuclear weapons.

NUCLEAR EXPLOSIVES

We believe that a nuclear weapons design program was started under Prime Minister Bhutto and that this program has continued.

We have information that nuclear explosive design and development work began in Pakistan soon after the 1974 Indian nuclear test. The work was given to an organization within the Pakistani Atomic Energy Commission, which handled such topics as implosion hydrodynamics, neutronics, high explosives testing, and metallurgy, including packaging of high explosives. Subsequently, work was done on an electronic triggering circuit for nuclear device detonation, as well as experiments on conventional as well as shaped charges. This work complemented the acquisition of reprocessing and enrichment capability.

We believe that Pakistan has already undertaken a substantial amount of the necessary design and high explosives testing of the explosive triggering package for a nuclear explosive device and we believe Pakistan is now capable of producing a workable package of this kind. The nuclear explosive development program has attempted to purchase cameras and camera equipment specifically for nuclear-related explosives work.

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More importantly, in addition to efforts to secure parts and equipment for the unsafeguarded reprocessing and enrichment efforts, Pakistan's procurement agents are also seeking from commercial companies items which are unambiguously identified as major components of a nuclear explosive device.

ERL is now involved in the acquisition and production of nuclear weapons components. In late 1981 through to 1982 procurement agents, who have long been associated with ERL, ordered from European companies metal components which from the design drawings provided the agents, have been unambiguously identified as those of a nuclear explosive device. Further specification in the drawings matched precisely the specifications for metal parts ordered by ERL's procurement agents. The Pakistanis are also seeking to acquire metal working equipment (precision lathes and associated equipment) intended specifically for the manufacture of these components.

In response to these developments, the United States approached the Pakistani government at the highest levels to communicate its extreme concern over these procurement activities. After the initial discussion with the Pakistanis, we noted a shift in emphasis from procurement of weapons components themselves to procurement of machinery necessary for their manufacture.

Nuclear Cooperation with China

We have concluded that China has provided assistance to Pakistan's program to develop a nuclear weapons capability. Over the past several years, China and Pakistan have maintained contacts in the nuclear field. For some time, China's involvement was limited to operational aspects of the KANUPP power reactor at Karachi. We now believe cooperation has taken place in the area of fissile material production and possibly also nuclear device design.

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