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THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON, D.C. 20505

Deputy Director for National Foreign Assessment

7 July 1981

NOTE FOR:




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FROM:

Special Assistant for Nuclear Proliferation Intelligence

SUBJECT: Van Doren Paper on Proliferation in the Middle East

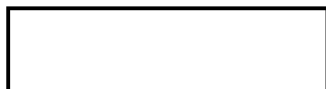
 passed the attached paper on the subject to me. I'd be interested in your reactions. Of particular interest is Van Doren's argument concerning preemptive strikes as a means of dealing with proliferation:

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- they could reinforce a determination to proceed with a weapons program;
- they materially increase the risk of international chaos; and
- they undermine efforts to deal with the proliferation problem through international law and diplomacy.

Van Doren concludes with a hope that the Israeli bombing of the Iraqi reactor will result in a renewed determination to prevent further nuclear proliferation by more effective international efforts (vitality of NPT regime, full-scope safeguards, strengthened common export policies, restrictions on nuclear testing, and nuclear weapons free zones).

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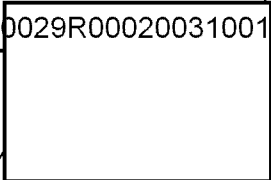


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(2)

You will be interested in these thoughtful pages by Charles Van Doren.



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IRAQ, ISRAEL AND THE MIDDLE EAST PROLIFERATION PROBLEM

A report prepared for the Arms Control Association

by

Charles N. Van Doren

(Former Assistant Director for Non-Proliferation,
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June 25, 1981

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IRAQ, ISRAEL AND THE MIDDLE EAST PROLIFERATION PROBLEM

INTRODUCTION

The bombing of the large Iraqi research reactor by Israel has led to many confusing reports on the facts and fragmentary comments on its implications for non-proliferation efforts. It is the purpose of this report to provide a clear, objective summation of published information on the nuclear capabilities and undertakings of Iraq, Israel and other relevant countries, and to discuss the various approaches to dealing with proliferation in the light of such information.

Before turning to specific countries, it should be recalled that the following are necessary to make a nuclear weapon:

- (a) a decision to do so, and either the absence of international commitments not to do so or a willingness to break or terminate such international commitments;
- (b) the knowledge, skill and manufacturing capabilities needed to make a nuclear explosive device; and
- (c) access to sufficient quantities of highly enriched uranium (HEU) or separated plutonium.

Since item (c) is usually considered the pacing item, it is the principal focus of Part I of this study. Existing and proposed international commitments designed to affect item (a) are touched on in Part I and discussed at greater length in Part III. Part II offers some brief observations on preemptive strikes.

I. Existing Commitments and Access to Weapons-Usable Material

A. IRAQ

Iraq is a party to the Non-Proliferation Treaty (NPT), which constitutes a binding international obligation not to manufacture or acquire nuclear weapons or other nuclear explosive devices. It is also a party to the Limited Test Ban Treaty and has in effect an agreement with the International Atomic Energy Agency (IAEA) providing for safeguards on all its peaceful nuclear activities.* My research has uncovered no evidence of actual Iraqi efforts to develop or manufacture a nuclear explosive device, as distinguished from its acquisition of materials and equipment that would in time have been capable of yielding enough special nuclear material to do so. It is these capabilities that are analyzed in the answers to the questions below. Such answers do not attempt to draw any conclusions as to the intentions of Iraq, which is by no means the only country having such capabilities.** But since the bombing, Iraqi President Saddam Hussein has expressed the belief that "irrespective of Iraq's intentions

* Its bilateral agreement with France is believed to include a guaranty independent of the NPT that the nuclear materials and equipment acquired from France, and any special nuclear material derived from their use, will be used for peaceful, non-explosive purposes, and Iraq has agreed to accept IAEA safeguards to verify compliance with this bilateral guaranty. (IAEA-INFCIRC/172/Add. 1).

** For example, several of the major industrial countries have ready access to large quantities of HEU and separated plutonium.

and of its present or future capabilities, countries should help the Arabs in one way or another to acquire atomic bombs to confront the actual Israeli atomic bombs, not to champion the Arabs and not to fuel war, but to safeguard and achieve peace."* (See Appendix A hereto)

Iraq's nuclear facilities are located at the Tuwaitha Research Center, about 10 miles from Baghdad. The largest facility (the French-supplied 40 MW_{th} OSIRAK research reactor, also known as TAMUZ-1), which had not yet become operational, was destroyed by the bombing. The other principal facilities at the site are:

- a very small (approximately .5MW_{th} French-supplied ISIS research reactor (also known as TAMUZ-2) associated with the OSIRAK reactor
- a small (2-5 MW_{th}) research reactor supplied by the Soviet Union in 1967
- separate storage where natural and depleted uranium are stored
- some large hot cells and other research facilities supplied by Italy

None of these appears to have been seriously damaged. In addition to the fuel for the reactors, the Iraqis had procured 100 tons of natural uranium (U₃O₈) from Portugal, and another

* Statement to Iraqi Cabinet meeting June 23, 1981 (as reported and translated by the Foreign Broadcast Information Service), the most pertinent portion of which is set forth in Appendix A.

100 tons from Niger*, the intended use of which is not clear. Under Iraq's safeguards agreement with the IAEA, notification of receipt of this material was required to be given to the IAEA, and there appears to be no indication that this was not done.

The following questions and answers bring out the other facts pertinent to the capabilities of these facilities to yield weapons-usable material, as well as a few other issues that have been raised in the public discussion of the bombing.

- (1) Could the Iraqis have obtained enough HEU for a nuclear weapon from the HEU fuel that they received for the ISIS and OSIRAK reactors?

The amount of HEU that had been delivered to date (12 kgs) would not have been enough to enable Iraq to make a nuclear explosive. Moreover, it had been irradiated in the ISIS reactor as soon as it arrived in Iraq, and thus would not be usable in a nuclear explosive without first being reprocessed. While the large hot cells at the facility were large enough to permit reprocessing, there appears to be no evidence that they contained all the requisite reprocessing equipment (mixer-settlers, etc.).**

* As reported in Niger's Journal Officiel.

** In his June 19 testimony before the Senate Foreign Relations Committee, Mr. Roger Richter asserted that they did contain such equipment, but the basis on which he reached this conclusion is not known. He also testified that he had not seen the hot cells.

After the reactor had been operated for some time, the total inventory of HEU on site could have been as high as 35-60 kg, consisting of some fuel awaiting insertion in the reactor, some in the reactor, and some in the form of discharged fuel (which would have contained somewhat less uranium than when it was fresh and have an enrichment of about 80% - still usable in weapons if reprocessed). The aggregate of these three quantities would be more than sufficient to make a bomb, but the following observations deal with each of the three components of this aggregate:

- If any fresh fuel were left unirradiated, it could be quickly and readily put into a form usable for nuclear weapons without reprocessing. If, however, it were irradiated on arrival, its accessibility would be reduced as noted with respect to the initial shipment of 12 kgs.
- While in the reactor, the HEU would not be accessible.
- After removal from the reactor, the HEU could be separated only by reprocessing (though this could be done more readily and require less throughput than the reprocessing of plutonium).

If arrangements had been made for the prompt return to France of the HEU in the third category, (which remained a distinct possibility) it would not have been available for reprocessing.

The location and form of the HEU was physically verified by the IAEA in January, 1981, and had been scheduled for

reverification by an IAEA inspection in June (which I understand was carried out after the bombing) and was clearly known by the French technicians who, under an arrangement recently revealed by the French* were to be intimately involved in the operation of the research reactor until 1989.

Reprocessing of the HEU could not legally be pursued without notice to the IAEA, with an opportunity for the IAEA to review the design of the reprocessing facility in advance, and the continuation of safeguards on any HEU or plutonium recovered therefrom.** Moreover, the removal of the HEU from the reactor would quickly have become known to the French technicians.

(2) Could the Iraqis have obtained enough plutonium for a bomb through the operation of the reactor?

Plutonium production of three kinds would be at least theoretically possible after the reactor had become operational (which had not yet occurred):

- First, tiny quantities of plutonium would be produced in the fuel itself, but this would be only a small fraction of a kilogram per year (as contrasted with the 5-10 kgs required for a bomb).

- Second, the empty channels in the reactor core could be filled with natural uranium (after conversion to UO₂ or other suitable form, and fabrication) and plutonium produced through its bombardment with the reactor's neutrons. Theoretically,

*As reported in The Energy Daily, June 19, 1981.

**See Iraq's NPT Safeguards Agreement (IAEA-INFCIRC/172).

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this technique might have produced enough material for a bomb in 1-3 years, but it would affect the operation of the reactor, require the use of tons of uranium* in hundreds of specially prepared targets (only relatively small numbers of which could be inserted during any given period), the cooling of the plutonium in the spent fuel pond where it could be readily observed, the use of special casks for its removal from the cooling pond, and reprocessing. It is highly improbable that all this could escape the notice of both the IAEA inspectors and the French technicians. In addition to the need for reprocessing equipment, this scenario would bring into play the legal obligations to the IAEA described in the final paragraph of the answer to question (1) above.

- Third, a "blanket" of natural uranium oxide could be placed around the reactor core to produce plutonium in the blanket. While this approach could theoretically produce as much plutonium as the second method, it would produce considerable heat, and special measures -- highly visible both to the IAEA inspectors and to the French technicians -- would have to be taken to provide for the removal of this heat. Moreover, the plutonium produced in the blanket would have to be reprocessed, presenting the same problems as under the second method.

If misuse of the reactor became known to the French, they could cease further fuel deliveries, thus shutting down the reactor and precluding its further misuse.

*See testimony of Albert Carnesale before the Subcommittees of the House Committee on Foreign Affairs on June 25, 1981. The opening statement of this witness gave an incisive analysis of the central issues involved in assessing the bombing of Osirak.

(3) What was the nature of the "secret room" under the reactor?

The IAEA has stated that "The production of plutonium in fertile elements located underneath the reactor is practically impossible since the core is placed on a thick concrete slab which in turn is lined with a heavy steel plate. These provide shielding to permit maintenance work on control element drives located in a vault below the reactor to be carried out."* There appears to be no evidence that either the vault below the reactor or any other shielded, enclosed space in it was equipped or intended for reprocessing or other clandestine purposes, and the French technicians would undoubtedly be aware of the nature of their use.

(4) Could lower enriched uranium fuel be used in the reactor?

Yes; the reactor was designed to accommodate the "caramel" fuel, which the French have been developing. This fuel is enriched to less than 10% and could not be used for nuclear explosives. While the first few scheduled fuel shipments were not of this type (in part because the fuel had not yet been fully tested) it remained a possibility for later shipments, and the negotiations for the reconstruction of the reactor may provide that any further fuel shipments will be of caramel fuel.

(5) What about the two other small reactors on the site?

The ISIS reactor supplied by the French was very small

*IAEA Press Release PR81/10 - June 12, 1981.

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(about .5 MW_{th}) and incapable of producing significant quantities of plutonium over many decades. Its fuel load was 12 kg of 93% enriched uranium -- interchangeable with the fuel for OSIRAK. In fact, the ISIS reactor was used to irradiate the initial fuel shipment for the OSIRAK reactor.

The research reactor supplied by the Soviets, which became operational in 1967, is a 2 MW_{th} pool-type reactor, using fuel with 10%, 36% and 80% enriched uranium. The recovery of HEU from the first two types of fuel would be impossible, and the quantities of 80% enriched uranium involved are understood to be quite small. Moreover, after use in the reactor the enrichment level would be lower, and the uranium could only be recovered through reprocessing. The use of this reactor to produce plutonium would yield less than a kilogram per year. To recover either the plutonium or the relatively high enriched uranium that might be left in part of the spent fuel, reprocessing would be necessary, which would present the problems cited in the answer to question (1) above. Moreover, reprocessing would be precluded if the Soviets followed their usual practice of requiring the return of spent fuel.

The Soviet reactor continues to be under IAEA safeguards, and a facility attachment spelling out in detail the reports, records and access required has been negotiated and is in force.

(6) What about the 200 tons of U₃O₈?

As stated above, the intended use of these imports is not clear. It is conceivable that some of it could be for the

purposes described in the answer to question (2) above, which would require its fabrication into forms suitable for insertion in the reactor.* It is under IAEA safeguards in the sense that its receipt was required to be reported to the IAEA, which was also required to be notified if it was upgraded in form. But it was not subject to routine safeguards inspections before such upgrading.

(7) What would have been the effect of bombing the reactor after it had commenced operating?

If the reactor had become operational and was hit in such a way as to cause the release to the atmosphere of radioactive materials and gases, the environmental and health and safety consequences would clearly have been worse and a source of some concern. The number of assumptions required to quantify the likely impact on Baghdad, and the number of uncertainties involved, are illustrated in the Congressional Research Service paper on the subject made a part of the record of the Senate Foreign Relations Committee hearings on June 19. That paper concluded that it would be most unlikely for an attack with conventional bombs upon the reactor to have caused lethal exposures to radioactivity in Baghdad, although some people at the reactor site might receive some exposure.

(8) Does Iraq have delivery capabilities for nuclear weapons?

It does not currently have nuclear-capable missiles, but may have some Soviet and French supplied aircraft that could be made capable of delivering nuclear weapons.

*Or it might have been acquired with a view to subsequent use for fuel in a power reactor, which Iraq reportedly has shown interest in acquiring.

General Comments - The OSIRAK reactor, its fuel, the import of large quantities of U_3O_8 , the large hot cells at the site, and reports that Iraq was considering acquisition of a natural-uranium-fueled reactor capable of producing substantial quantities of plutonium, provided some basis for concern. Precautions such as the irradiation of the fresh fuel on its arrival and the arrangement for the intimate involvement of French technicians in the operation of the OSIRAK reactor until 1989, as well as the obligations of Iraq under the NPT and its NPT safeguards agreement and the back-up agreement on safeguards, were factors tending to alleviate such concerns. But at least a theoretical risk remained that these legal obligations could be violated, abrogated or terminated and the IAEA inspectors and French technicians denied access to the facility at some point after it becomes operational.*

B. ISRAEL

Israel is a non-party to the NPT, has not accepted IAEA

* After the outbreak of the war with Iran, there was a period when the Iraqis made clear to the IAEA that it would not be feasible for IAEA inspectors to visit the facility (although no visit had been planned for that period); and it is also understood that at least some of the French technicians withdrew to Baghdad for a while but kept in touch with the facility operators. But the French technicians soon returned to the site, and the IAEA carried out a safeguards inspection in January 1981. Another safeguards inspection was scheduled for June 1981, and was in fact carried out after the bombing.

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safeguards on some of its principal nuclear activities,^{*} but is a party to the Limited Test Ban Treaty. It has for many years had a number of highly trained nuclear physicists and engineers. Its nuclear facilities consist of a safeguarded U.S.-supplied research reactor (IRR-1) and the unsafeguarded facilities at Dimona, including a French-supplied research reactor (IRR-2). These facilities are more fully discussed below, and illustrate the difference between a nuclear facility that is subject to international commitments and safeguards and those that are not.

In 1968, Mr. Levi Eshkol is reported to have said that Israel knew how to make a nuclear weapon but from there it was a long way to an application.^{**} In an interview in 1969, Prime Minister Golda Meir said "Israel has no bomb, Israel has no intention of using nuclear bombs."^{***} The official declaratory policy of Israel for many years has been that it will

* Israel has complained that it cannot expect non-discriminatory treatment by the IAEA. No Israelis are on the IAEA staff. At the June 1981 meeting of the IAEA Board of Governors a resolution was passed recommending the termination of technical assistance to Israel by the IAEA and further recommending that the General Conference of the IAEA (which meets in September) consider the implications of Israel's bombing of the Iraqi reactor, including the question of whether Israel should be suspended from the rights and privileges of IAEA membership. Even if the General Conference took such action, the rights of the Agency under its existing safeguards agreement with Israel would continue in force.

** SIPRI, The Near-Nuclear Countries and the NPT, p. 30, citing Neue Zurcher Zeitung, 5 October 1968.

*** Id. at pp. 29-30, citing International Herald Tribune, 10-11 May, 1969.

not be the first to introduce nuclear weapons into the Middle East. Most recently, former Israeli Defense Minister Moshe Dayan is reported to have said "We don't have any atomic bomb now. But we have the capacity, we can do that in a short time. We are not going to be the first ones to introduce nuclear weapons, and if the Arabs are willing to introduce nuclear weapons into the Middle East, then Israel should not be too late in having nuclear weapons too."* He is also reported by the same source to have said that he did not think Israel should exploit its capacity to produce nuclear weapons unless its enemies did so, saying "We should not be the first one, but we shouldn't be too late." For Israel's proposal of a Middle East Nuclear Free Zone, see Part III.E. below. A pending United Nations study of Israel's nuclear program is scheduled to be submitted to the General Assembly in the fall of 1981.

The IRR-1 Reactor - This 5 MW_{th} reactor became operational in 1960. It uses highly enriched uranium fuel, the last delivery of which took place before 1977, when the agreement for cooperation with the United States expired. The aggregate amount of fuel that had been delivered as of December 31, 1980 was 31.57 kg of uranium enriched to 89.4%.* While this amount would theoretically be sufficient to make one or even two bombs,

- most (if not all) of it has been irradiated in the reactor, thus lowering its enrichment somewhat, increasing the quantity necessary to make a bomb,

* New York Times, June 25, 1981, p. 1.

** Department of Energy, NMIS Report I-29, page 19.

- and making it recoverable only by reprocessing.
- Israel is also obligated by a continuing guaranty, explicitly surviving the expiration of the agreement for cooperation, that it will not use the material or equipment supplied under the agreement for cooperation, or any special nuclear material produced through the use thereof, "for atomic weapons, or for research on or development of atomic weapons, or for any other military purpose,"* and has confirmed that this precludes its use in so-called "peaceful" nuclear explosives.**
 - All material or equipment supplied under the agreement, and any special nuclear material produced through its use, is also covered by a trilateral safeguards agreement between the United States, Israel and the IAEA, under which Israel has agreed not to use them in such a way as to further any military purpose and has agreed that this precludes its use for the manufacture of any nuclear explosive device.***
 - The agreement with the United States under which the fuel was furnished provided that it would not be reprocessed or otherwise altered in form or content without U.S. consent.****

* TIAS 3311, as amended and as extended by TIAS 8557 (1977).

** Note from the Embassy of Israel dated 13 January, 1975, appended to TIAS 8019.

*** TIAS 8051, as extended by TIAS 8554 (1977).

**** TIAS 4407, ART. II.E.

- The IAEA has periodically checked on the continued presence of this material in the form of spent fuel elements at the reactor site. Under the applicable Agency guidelines, the inventory cited above would permit a maximum frequency of 5 or 6 routine inspections per year, and the Agency has the additional right to carry out special inspections if (a) the study of a report indicates that such inspection is desirable or (b) any unforeseen circumstance requires immediate action.* In practice the Agency does not inspect the facility as frequently as the maximum stated above.

The Dimona Reactor - This 26 MW_{th} research reactor became operational at the end of 1963. Since it is not under safeguards, there is no definitive information on whether the reactor has or has not been upgraded, at what rate and in what manner it has been operated, and consequently how much plutonium may have been produced in its spent fuel or otherwise. Unclassified estimates of how much plutonium it may have produced range up to 10 kg per year.**

* IAEA-INFCIRC/66/Rev.2, secs. 57, 53, made applicable to this reactor and its fuel by TIAS 8051.

** Nuclear Proliferation Factbook, Joint Committee Print 96th Cong., 2d. Sess (1980), p. 412

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To be used in a nuclear explosive, the plutonium would have to be reprocessed. If all the spent fuel in the maximum estimate were reprocessed, it would yield enough material for over 20 weapons.

Reprocessing Capability - As of December 31, 1978, SIPRI listed among the world's small scale reprocessing plants and laboratory scale reprocessing facilities, a facility at Dimona, Israel, the status of which it reported as unknown.* The existence of an unsafeguarded pilot reprocessing facility in Israel is also reported in IAEA Bulletin, Vol. 19, Oct. 1977, p. 4.

Other Possible Nuclear Materials - Despite a number of investigations, it has never been definitively established what became of over 200 pounds of weapons-grade HEU that could not be accounted for at a fuel fabrication facility in Appollo, Pennsylvania, in the mid-sixties. But some believe that it ended up in Israel (e.g., April 27 ABC TV documentary entitled "Near Armageddon", which also evidenced a belief that a missing ship-load of U_3O_8 from Western Europe may have ended up in Israel). In either case, if the material is in Israel it is not under safeguards.

Delivery Capabilities - Israel has missiles that are dual capable -- meaning that it would be physically possible to substitute

* SIPRI, Nuclear Energy and Nuclear Weapons Proliferation (1979), p. 319; reprinted in Nuclear Proliferation Fact-book (Joint Committee Print, 96th Cong. 2d Sess. (1980).

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a nuclear warhead for the conventional explosive payload which they currently carry. It also has aircraft that could be made capable of delivering nuclear weapons.

General Comment - It is generally believed that if Israel does not now possess a small arsenal of nuclear weapons,* it could quickly make them.

C. Other Relevant Countries

In a letter to the U.N. Secretary - General dated May 27, 1981, the Government of Israel pointed out its perception of the proliferation risks posed by Pakistan, which (like Israel) is not a party to the NPT and has not accepted IAEA safeguards on some of its principal nuclear activities and (unlike Israel) has not ratified the Limited Test Ban Treaty. The pertinent portion of this letter is attached as Appendix B hereto. Public testimony by U.S. Government officials has made clear that Pakistan is building an unsafeguarded uranium enrichment facility that bears no relationship to the present needs of its civil nuclear program; that it is building a chemical reprocessing facility that is currently unsafeguarded; and that there is a substantial risk that it might make and test a nuclear explosive device within the next year or two. In connection with

* There was a widely reported unofficial statement in the mid-seventies by Mr. Carl Duckett, then a Deputy Director of the CIA, expressing his belief that Israel had 10-20 weapons. Mr. Duckett was questioned on this subject in the April 27, 1981 ABC TV News Closeup "Near Armageddon: The Spread of Nuclear Weapons in the Middle East." But see recent statement by Moshe Dayan quoted in the text above. The present author does not know which is correct.

the acquisition of the enrichment facility, the United States cut off economic and military aid to Pakistan several years ago, as required by Section 670 of the Foreign Assistance Act unless the President certifies that he has "received reliable assurances that the country in question will not acquire or develop nuclear weapons or assist other nations in doing so." (This section is currently in the process of revision, but not the related Section 669 providing for such a cut-off upon import of a reprocessing plant or detonation of a nuclear explosive device).*

But the Pakistani program cannot be fairly considered in isolation from the Indian program. India, which is also a non-party to the NPT and has refused to accept IAEA safeguards on major parts of its program, (though it is a party to the Limited Test Ban Treaty) is the only state discussed in this report that is known to have detonated a nuclear explosive device. While former Prime Minister Desai appears to have terminated India's nuclear explosive program and no further explosions have been carried out, it is by no means clear that Prime Minister Gandhi (who ordered the 1974 test) will not revive it, especially in light of the developments in Pakistan. India not only has unsafeguarded research reactors capable of producing plutonium, but also two reprocessing

* It is important not to weaken statutory criteria for Presidential overrides in the case of nuclear detonations.

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plants -- one wholly unsafeguarded at Trombay (which was the facility that produced the initial Indian bomb from research reactor fuel), and another near the site of the Tarapur reactors, which would be safeguarded only when processing safeguarded spent fuel. Thus there is no question that India has enough unsafeguarded weapons-usable material to make several more nuclear explosives, and has a demonstrated capability to do so.

The Indians do not view their nuclear status only in relation to Pakistan. They point out that the People's Republic of China, a contiguous state with which they have had hostilities, is already a nuclear weapon state.

For discussion of proposals for a South Asian Nuclear Free Zone, see Sect. III.E. below.

Another relevant country is Libya, which is a party to the NPT and the Limited Test Ban Treaty and has entered into a safeguards agreement with the IAEA providing for safeguards on all its peaceful nuclear activities.* Yet Libya's current leader, Col. Qaddafi, has nevertheless made no secret of his desire to acquire nuclear weapons. His efforts to date have been unsuccessful. But ~~it~~ is a sobering fact that other

*This means in effect all of its nuclear activities, since (1) the NPT precludes explosive military uses, (2) Libya is entirely dependent on imports for its nuclear program, and (3) no exporter has, or seems likely to, supply it with materials or equipment for non-explosive military uses (such as naval propulsion).

countries in this study that are not parties to the NPT would be under no legal inhibitions against selling him weapons-usable materials. (NPT parties would at least have to consider whether such a sale, in the circumstances, would be consistent with the objectives of the NPT and would have a duty to ensure that any nuclear exports they made to Libya were in fact subjected to safeguards under Libya's NPT safeguards agreement). For non-NPT parties, reliance must be placed on their interests and good judgment. With respect to Libya's own nuclear program, it has acquired natural uranium from Niger (some of which may have been shipped to Pakistan); it has acquired a small research reactor from the Soviet Union (a 5 MW_{th} reactor involving a total on-site inventory of about 10 kg of 80% enriched uranium, which would not be sufficient to make a bomb; this reactor would be incapable of producing significant amounts of plutonium in decades); and it has been negotiating with the Soviet Union for some time with respect to the acquisition of a nuclear power reactor. It is not known to have any reprocessing facilities of its own, and it is to be hoped that the Soviets will follow their usual practice of insisting upon the return of any spent fuel, at least from the power reactor if it is built.

Yet another relevant state is Iran (currently at war with Iraq), which is also a party to the Non-Proliferation Treaty and the Limited Test Ban Treaty and has concluded an IAEA safeguards agreement covering

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all its peaceful nuclear activities. Nevertheless, had it proceeded with the former Shah's extremely ambitious nuclear program (under which four power reactors were actually being constructed), it might have become of some proliferation concern. But Iran did not acquire a reprocessing plant, none of the power reactors is being completed, and the current regime appears to have little interest in nuclear matters. Iran still has a 5 MW_{th} U.S.-supplied research reactor, fueled with highly enriched uranium, but less than 6 kilograms of such fuel were shipped to Iran* (which is insufficient to make a bomb), and the reactor would be incapable of producing enough plutonium for a bomb even if operated regularly for more than a decade, and this could not be used without reprocessing.

Egypt recently ratified the NPT, and is the principal proponent of a Middle East Nuclear-Weapon-Free Zone Treaty (described in Part III.E below). It has for many years had a small (2 MW_{th}) Soviet-supplied research reactor, fueled with 10% enriched uranium and not capable of producing significant quantities of plutonium even if operated for many decades. This will now come under IAEA safeguards. Egypt has recently negotiated an agreement for cooperation with the United States, and is exploring with the United States and others the possible purchase of several nuclear power reactors.

* Department of Energy, NMIS Report I-29, page 19.

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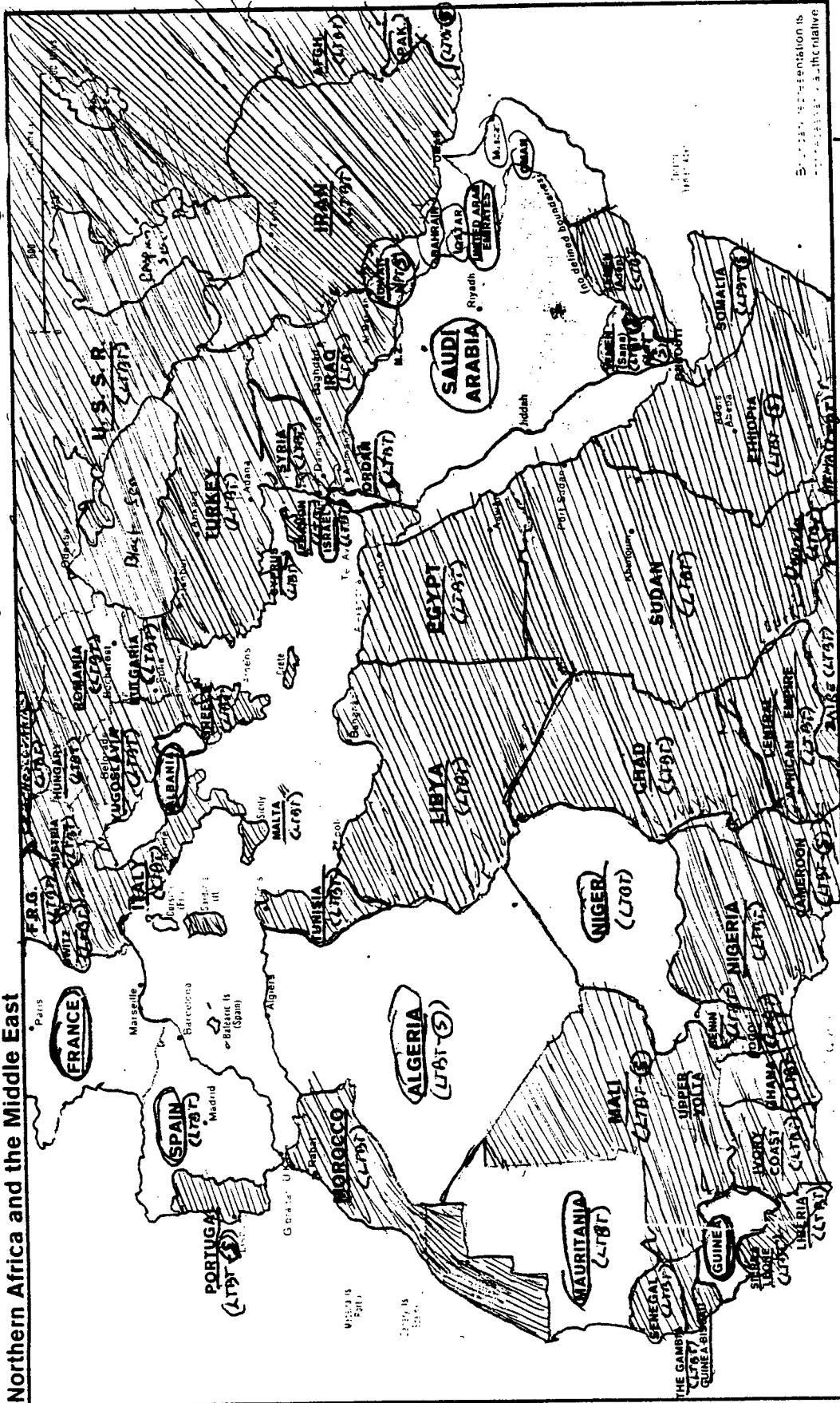
The NPT and Limited Test Ban Treaty status of other states in the Middle East and South Asian regions are shown in the maps on the following two pages. None of these other states currently has capabilities which pose a significant proliferation risk. But it should be noted that Morocco, Algeria, and Bangladesh have taken steps to acquire research reactors, and Saudi Arabia has expressed interest in establishing a nuclear research center. Kuwait, the United Arab Emirates and Syria are reportedly considering the possibility of acquiring nuclear power plants.

For a useful recent discussion, in some depth, of the proliferation problem in the Middle East, South Asia and other regions of the world, see Yager et al, Non-Proliferation and U.S. Foreign Policy (The Brookings Institution, 1980).*

* See also SIPRI, The Near Nuclear Countries and the NPT (1972); Pranger and Tahtinca, Nuclear Threat in the Middle East (1975).

Diagonal lines indicate parties to NPT; (LTBT) indicates parties to Limited Test Ban Treaty. Non-parties to NPT are circled. (LTBT-S) indicates states that have signed but not ratified LTBT.

Northern Africa and the Middle East



States that have signed but not ratified NPT

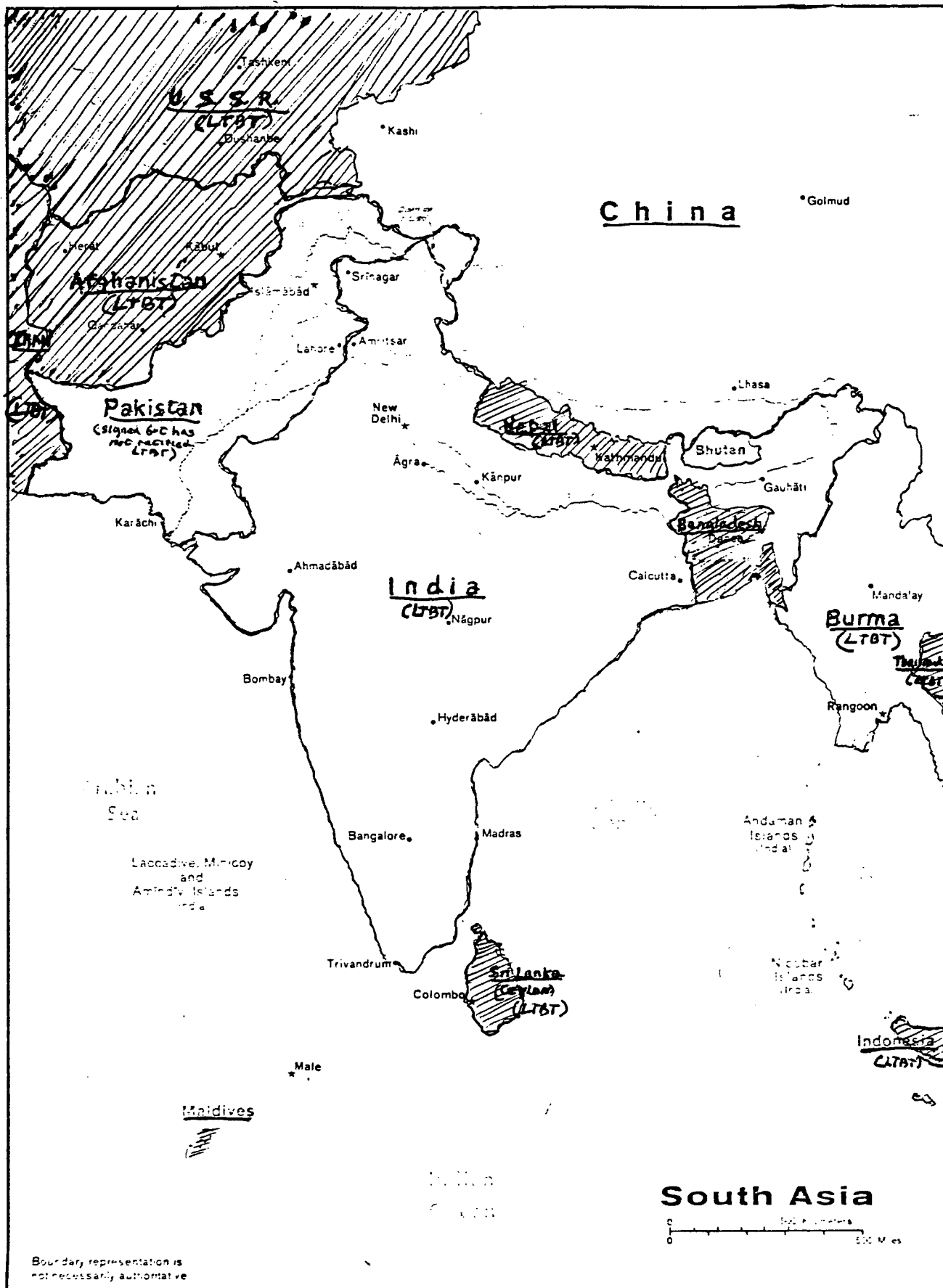
Kuwait O
Yemen(Sana) S

States that have not signed NPT

Albania O
Algeria S
Bahrain S
France* O*
Guinea O
Israel P
Mauritania P
Muscat & Oman O
Niger O
Pakistan S
Qatar O
Saudi Arabia O
Spain** P
United Arab Emirates O
Uganda P

*currently limits tests to underground, and behaves as if it were an NPT party.
**is putting all its current nuclear facilities under safeguards.

P = party
S = signed but not ratified
O = non-signatory



104101 6 79

(LTBT) indicates that state is party to Limited Test Ban Treaty
Diagonal lines indicate state is party to NPT

II. Pre-Emptive Strikes

This study will not attempt to address many of the weighty questions arising out of the bombing of the Iraqi facility, such as (a) its overall impact on the interests of Israel, (b) its impact on efforts to achieve peace in the Middle East, and (c) whether or not the use of U.S. aircraft was consistent with the terms of the agreement under which the aircraft was furnished. But it is necessary to make a few generic observations about pre-emptive strikes as a means of dealing with the proliferation problem:

- o While they may temporarily remove one of the symptoms of the disease, they cannot cure it. Assuming that a particular facility was in fact a part of a weapons-building program, its destruction might cause delays in the program but is most unlikely to stop it and could in fact reenforce the determination to proceed with it.

- o By abandoning the constraints of international law, they materially increase the risk of international chaos. If one state feels free to destroy a nuclear facility in another country, what barriers has it left to retaliation in kind, or to resort to the same expedient against other states?

- o They undermine efforts to deal with the problem through international law and diplomacy. The incentive to accept international constraints and safeguards with respect to genuinely peaceful, non-explosive nuclear programs will be reduced if, despite such acceptance, other states feel free to destroy such programs.

To reduce the motivation for preemptive strikes it is essential that we rededicate ourselves to the task of making international legal and diplomatic approaches to the problem as effective as possible. These approaches are discussed in the final section of this report.

III. Review of Non-Proliferation Approaches in Light of These Cases

Even this rather cursory review of the proliferation risks in this part of the world suggests the gravity of the problem and the urgency of major efforts to avoid the addition of a nuclear weapons dimension to these regional conflicts. It also leads to the observations set forth below on existing and prospective measures intended to deal with the proliferation problem.

A. Continued Significance of the Non-Proliferation Treaty

While not a total answer to the proliferation problem, adherence to the NPT can make a very real difference in several respects, as illustrated below:

- (1) It means that Iraq is under an international obligation not to manufacture or acquire nuclear explosives;
- (2) The continuing obligation it creates to accept IAEA safeguards on all peaceful nuclear activities in Iraq means that the highly enriched uranium fuel for the OSIRAK reactor must be continuously accounted for and periodically checked physically; that if Iraq produced plutonium by the use of the OSIRAK reactor, it would have an international legal obligation to subject that plutonium to IAEA safeguards, and if it moved

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such material to the large hot cells in the complex it would have an international legal obligation to notify the IAEA and to submit design information on the hot cells to the IAEA in advance, to permit IAEA inspectors to safeguard the hot cells, and to follow the plutonium to any subsequent location.

(3) More generally, the safeguards obligation it entails provides an acknowledged means of checking compliance and creating a risk of detection and disclosure that can help deter misuse and provide some reassurance to other countries,

(4) It means that Iraq is under an international obligation not to transfer any special nuclear material to any other non-nuclear-weapon state without IAEA safeguards to verify that it will not be used in the recipient country for any nuclear explosive device.

(5) It means that none of the states covered by this study -- whether or not parties to the NPT -- can import nuclear materials or equipment from any state party to the NPT (or from France, under its declared policy of behaving as if it were a party to the NPT and in accordance with the Nuclear Suppliers' Guidelines) without IAEA safeguards on what is imported and on any special nuclear material derived from the use of such imports.

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The significance of the first four of these points can be appreciated when one considers the consequences of their absence in the cases of Israel and Pakistan:

- There is no international mechanism for checking on what is going on at Israel's Dimona facility. Assuming the use of unsafeguarded natural uranium and heavy water* it could be operated to produce significant quantities of plutonium, which could then be reprocessed and made into nuclear weapons without violating any international undertaking.

- Pakistan's enrichment facility could be completed and operated to produce highly enriched uranium without any international mechanism providing knowledge of how much was being produced or where it went (either in terms of its own use in a nuclear explosive or its transfer to another country), or any legal restrictions on its disposition.

- Pakistan's reprocessing facility could be completed and operated -- if it could obtain unsafeguarded spent fuel and unless it becomes subject to safeguards by virtue of an agreement entered into in connection with the aborted French construction of a large reprocessing facility** --

* The initial load of heavy water was supplied by France. Annual make-up requirements are small, and can presumably be produced indigenously by Israel, or possibly purchased.

**This agreement created a conclusive presumption that any solvent extraction reprocessing plant built on Pakistan for 20 years after the agreement would benefit from the French technology and thus had to be safeguarded. X

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without providing knowledge of how much plutonium was being produced or where it went (either in terms of its use in a nuclear explosive or transfer to another country), or any legal restrictions on its disposition.

The significance of the fifth point made on page 27 was highlighted in the opening U.S. statement at the 1980 NPT Review Conference, which pointed out that, together with France, the parties to the NPT comprise all of the world's exporters of nuclear power reactors and all major exporters of key components therefor; all of the world's exporters of enriched uranium; all of the world's exporters of heavy water (although the Chinese have since exported modest amounts); 94% of all foreign aid donations, and 87% of the funding of international financial institutions. It added that these figures demonstrate that -- for non-parties to the NPT -- the road to developing a nuclear power program in the foreseeable future must be traveled in cooperation with one or more of these members of the NPT regime.

As in the case of any legal obligation (including those embodied in our criminal codes), it is possible that violations of NPT obligations could occur. But the existence of the obligation has deterrent value and provides a clear basis for responses to behavior inconsistent with the obligation. Thus we do not abandon the laws against first degree murder on the ground that they have not eliminated all such murders.

"The fact that efforts to limit capabilities to build weapons facilities cannot be completely successful does not mean that they should be abandoned."
 Yager et al., p. 915

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It is also recognized that the NPT contains a provision permitting a party to withdraw on three months' notice "if it decides that extraordinary events, related to the subject matter of this treaty, have jeopardized the supreme interests of its country," advising the U.N. Security Council of the extraordinary events relied upon. But this provision is unlikely to be lightly resorted to, and it would provide some time for an international response to be brought into play. Despite the presence of such a withdrawal clause in three major multilateral arms control treaties (the Limited Test Ban Treaty, the Treaty of Tlatelolco, and the NPT, which have been in effect for 17, 13, and 11 years, respectively), no party has yet exercised this right or seriously threatened to do so. Moreover, it is possible to provide (as the United States does, and as the French did in the case of Iraq) for the continuation of IAEA safeguards on material derived from imports even in the event of a withdrawal from the NPT.

The recent argument (Washington Post editorial, June 16, 1971 and June 19 testimony of Roger Richter before the Senate Committee on Foreign Relations) that the NPT may be subject to abuse by countries wishing to use it as a cover while they are building up the capability to make nuclear weapons, seems to assume that supplier countries are likely to abandon the exercise of judgment in their nuclear exports where the recipient has joined the NPT. This ignores the consensus among the world's principal nuclear exporting states in the Nuclear Suppliers' Guidelines, that "In considering transfers, each supplier should exercise prudence having

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regard to all the circumstances of each case." Thus, for example, even though Libya is party to the NPT and might assert its rights under Article IV thereof to the fullest possible exchange of nuclear materials and equipment for peaceful purposes, it seems most unlikely that any supplier would be so mesmerized by these considerations that it would ship large quantities of separated plutonium or highly enriched uranium to Col. Qaddafi.

It is important that decision-makers not give so much weight to conceivable abuses that they lose sight of the very real advantages of the NPT described above. e

B. Continued Importance and Utility of IAEA Safeguards

The utility of IAEA safeguards in verifying the location and form of highly enriched uranium fuel in Iraq and at Israel's IRR-1 reactor was mentioned in Part I, as well as the point that safeguards agreements require notification to the IAEA of imports or exports of U_3O_8 and of any upgrading of such material, and provide for routine inspections of any such material that has been upgraded and notice of any changes in its location or form.

With respect to the risks that plutonium could be produced through the operation of the OSIRAK reactor, it is to be noted that Iraq's safeguards agreement with the IAEA provides for a maximum annual routine inspection effort of 50 man days at each reactor in which the inventory or annual throughput (whichever is larger) of plutonium exceeds 5 kg or an equivalent amount of highly enriched uranium, and for an even larger allocation of effort (with a maximum routine inspection effort no less than 1.5 man years) for other facilities

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containing such quantities of these materials.* It also provides for special inspections without advance notification** (although in practice the IAEA has rarely, if ever, failed to provide some advance notice). While the Agency and Iraq still have under preparation a facility attachment spelling out in greater detail the types of reports, records, inspections and other measures to be routinely applied (which might well include camera surveillance to provide the continuity of knowledge between inspections that is an agreed objective of the safeguards under this agreement), the inspections to date were carried out under a provision permitting ad hoc inspections pending the completion of such a facility attachment. Thus they have not been legally restricted to three inspections per year, although that might have been the rate provided for in the facility attachment had it been completed.***

Some of the other advantages of safeguards were mentioned in the discussion of the NPT above. These include the opportunity for design review of any facility to which safeguarded material is moved, pursuit of any special nuclear material produced through the use of safeguarded material or equipment, and requirements designed to ensure that any safeguarded nuclear material or equipment that is exported to a non-nuclear weapon state will continue to be under IAEA safeguards (which

* IAEA-INFCIRC/172, sec. 80.

** Id., sec. 84.

***Mr. Richter indicated his belief that it would in his June 25 testimony before subcommittees of the House Committee on Foreign Affairs.

include an international obligation not to use the material for any military or explosive purpose). These advantages were contrasted with the problems in cases where safeguards do not apply.

Because of this contrast, the United States and other countries have been trying for the past few years to make NPT-type full scope safeguards coverage* a condition of all future supply commitments, and international consensus on this seemed nearly within reach at the 1980 NPT Review Conference. Renewal of these efforts seems strongly indicated, as does the continuation of strong efforts to improve safeguards techniques, instrumentation, and implementation.**

Recognition of the need for some improvements in IAEA safeguards at facilities such as the OSIRAK reactor, which present special difficulties, should not be turned into a denigration of the importance and utility of safeguards in general. It must be remembered that the vast majority of nuclear facilities in the world -- including most of the world's nuclear power reactors -- which are relatively easy to safeguard with high confidence -- are now under IAEA safeguards. The amount of plutonium produced each year in these safeguarded facilities is tens of tons.

*I.e., a commitment to accept IAEA safeguards not only on all existing peaceful nuclear activities, but also on any subsequent peaceful nuclear activities as they arise.

**Another potential safeguards development -- international plutonium storage (IPS) -- is the subject of a separate study by the present author soon to be published by the Congressional Research Service.

C. Prudent Common Nuclear Export Policies

The cases reviewed in this paper also highlight the desirability of continuing to promote prudent, common nuclear export policies. Unpopular as they were among the Third World countries, the Nuclear Suppliers' Guidelines* were in fact quite modest, sensible guidelines designed to ensure that commercial competition did not lead to bargaining away export conditions intended to prevent further proliferation. While their primary thrust was to ensure the broadest possible safeguards coverage** (and to crystallize French policy in favor of requiring safeguards on their nuclear exports), they also dealt with the need for great caution in the export of weapons-usable materials and facilities for their production or recovery. They helped give impetus to the idea, on which a much broader consensus was subsequently reached in the International Nuclear Fuel Cycle Evaluation (INFCE), that substitutes could and should be found for highly enriched uranium fuel for use in most research reactors (one example being the caramel fuel the French might supply for the OSIRAK reactor).*** They also emphasized the need

* IAEA-INF/CIRC/254. The basic guidelines (without annexes) are reprinted as an Appendix to the 1977 Annual Report of the U.S. Arms Control and Disarmament Agency.

** One of the mechanisms employed being a "trigger list" of items that should not be exported without triggering safeguards. There is a need to hold international consultations on upgrading this list.

*** The United States and Germany among others, have also done highly successful work in developing and demonstrating one use of relatively low enriched fuels in research reactors.

to design sensitive nuclear installations to facilitate the application of safeguards, and pointed out the desirability of ensuring that new enrichment capacity be designed and operated for the production of only low enriched uranium. They recognized the need, also acknowledged by INFCE, for improved safeguards at bulk handling facilities such as reprocessing plants, and for the maintenance of agreed levels of physical protection of nuclear materials and facilities against theft or seizure. They pointed to the general need for prudence in nuclear exports in the light of the circumstances of particular cases and for consultations in difficult cases, and laid the groundwork for sanctions against violation of the commonly agreed minimum conditions of export.

It is no indictment of the NPT to concede that it cannot carry the entire burden of preventing further proliferation. Such complementary approaches as those just described are also needed, as is a lessening by nuclear weapon states of the extent to which they relate nuclear weapons to their national security.

D. Test Ban Treaties

It is at least a positive feature that Israel and Iraq are both parties to the Limited Test Ban Treaty, as is every other country of current proliferation concern except Pakistan and Argentina. This treaty in effect requires that any nuclear explosions be conducted underground -- which adds to the expense and difficulty of such testing, but by no means precludes it. And it means that such states (like the United States) are parties

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to a treaty whose preamble states that they are "seeking to achieve the discontinuance of all test explosions of nuclear weapons for all time", and are "determined to continue negotiations to this end," and which states in Article I that its provisions are "without prejudice to the conclusion of a treaty resulting in the permanent banning of all nuclear test explosions, including all such explosions underground, the conclusion of which, as the Parties have stated in the Preamble to this Treaty, they seek to achieve."

Considerably greater protection against proliferation could be gained if these states became parties to a truly comprehensive test ban treaty. While it may be possible for a state with a sophisticated scientific establishment to develop a first atomic weapon without testing, a comprehensive test ban treaty could deprive such countries of reassurance as to whether their design really worked, hamper their further refinement of nuclear weapons, preclude their development of very large yield devices, and remove the opportunity to demonstrate that they had in fact achieved a nuclear weapons capability. And it would be an even-handed treaty.* It would prevent further nuclear testing by the nuclear weapon parties and symbolize some lessening of their emphasis on nuclear weapons.

The most obvious path toward achieving wide adherence to a comprehensive ban on all nuclear weapon tests would be to speed

* The NPT has two classes of parties with somewhat different obligations - nuclear-weapon states and non-nuclear-weapon states.

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completion of the trilateral US-UK-USSR negotiations on this subject in Geneva.

The impact of a threshold test ban treaty on the proliferation problem would be considerably less clear. The Threshold Test Ban Treaty now before the Senate has merit as a step in the right direction in the U.S.-Soviet context, and Mr. Rostow reportedly suggested, in the hearings on his confirmation as Director of the Arms Control and Disarmament Agency, that he could support it.* But the fact that it is a bilateral treaty and permits nuclear explosions up to 150 kilotons, would mean that it is not even open to adherence by the states discussed in this paper and that the threshold is larger than any likely initial tests by these countries. Moreover, for non-proliferation purposes, retention of an option to terminate obligations under the treaty after its initial five-year period would not provide much reassurance, and the problem of precluding "peaceful" nuclear explosions by non-nuclear weapon states not parties to the NPT could be knotty.

* Washington Post, June 23, 1981, p. A.2.

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E. Proposals for Nuclear-Weapons-Free Zones

The success of the Treaty of Tlatelolco, which creates a nuclear-weapons-free zone in Latin America,* has led to proposals for similar zones in the regions here under discussion.

On December 12, 1980, the U.N. General Assembly adopted by consensus, in which Israel joined, resolution 35/147, entitled "Establishment of a nuclear-weapon-free zone in the region of the Middle East", the text of which is set forth in Appendix C hereto. In a letter dated 9 June 1981 to the UN Secretary-General (A/36/315), the Government of Israel called attention to its own earlier proposal in the form of a draft resolution (A/C.1/L.8) which called upon all States of the Middle East and non-nuclear-weapon States adjacent to the region "to convene at the earliest possible date a conference with a view to negotiating a multilateral treaty establishing a nuclear-weapon-free zone in the Middle East," and requested that all such states indicate in the course of 1981 their consent to the holding of a preparatory conference to discuss the modalities of such a conference. It stated that in such a volatile area as the Middle East "a nuclear-weapon free zone can only be established if each State is contractually assured of compliance with the commitment by all the other States in the region to abstain from introducing nuclear weapons into the region." Taking note of an April 1981 suggestion by

* Although U.S. ratification of Additional Protocol I, which is a precondition to the treaty's becoming binding on Argentina, Brazil and Chile, is still pending before the Senate and deserves prompt action.

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Egypt for a study on the modalities for establishing such a nuclear weapon free zone, it proposed that such a study be undertaken by qualified experts from Middle East States, including Israel, as also recommended in a 1980 report by the Secretary-General (A/35/416, para. 248). Finally, the Israeli letter stated that "There is no need to wait until all Governments in the Middle East see their way to endorsing such a study: undertaking it in the manner proposed by Israel would, by itself, constitute a valuable step in the direction of building much needed confidence between the States of the region prior to the holding of the preparatory conference proposed above."

On December 12, 1980, the UN General Assembly also adopted by a vote of 96-3-44 a Pakistani resolution for the establishment of a nuclear-weapon free zone in South Asia (Res. 35/148, which is also included in Appendix B hereto). While this resolution was supported by the United States, it was opposed by India. This follows a pattern than has obtained since 1974. While Pakistan has advocated a zone generally limited to the sub-continent (i.e., excluding China), India has stated that it will support creation only of a zone which covers a broader Asian area, including China, and which results from consultations among the potential participants concerning such a zone. In 1975, India introduced its own resolution supporting this concept of the zone, and that was adopted by the General Assembly in addition to the Pakistani resolution. India did not introduce

its own resolution in 1980.

The reluctance of key parties in both of these regions to actually negotiate with other key parties suggests another approach which might be considered. This would be based on the concept of Protocol II to the Treaty of Tlatelolco, under which the five nuclear weapon states have agreed not to station nuclear weapons in the territories of the parties to the zone and not to use or threaten to use nuclear weapons against such parties so long as they abide by their obligations under that treaty. In the Middle East and South Asian regions, it is conceivable that the nuclear weapon states could agree upon such a protocol without completion of the regional treaty. Their undertaking could be conditioned on specified restraints by the countries in the region (e.g., refraining from any nuclear explosion, or the deployment or use of any nuclear weapon). It would be intended to provide an incentive for such restraints.

F. International Conventions Relating to Attacks on Nuclear Installations

In 1977, there was opened for signature a Protocol I Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts, and this Protocol has been brought into force by several states. It includes the following article:

"Article 56 - Protection of works and installations containing dangerous forces.

1. Works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, shall not be made the object of attack, even where these objects

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are military objectives, if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population. Other military objectives located at or in the vicinity of these works or installations shall not be made the object of attack if such attack may cause the release of dangerous forces from the works or installations and consequent severe losses among the civilian population.

2. The special protection against attack provided by paragraph 1 shall cease: ***(b) for a nuclear electrical generating station only if it provides electric power in regular, significant and direct support of military operations and if such attack is the only feasible way to terminate such support.***

3. In all cases, the civilian population and individual civilians shall remain entitled to all the protection accorded them by international law, including the protection of the precautionary measures provided for in Article 57 [which relate to planning and decisions upon attacks]. If the protection ceases and any of the works, installations or military objectives mentioned in paragraph 1 is attacked, all practical precautions shall be taken to avoid the release of the dangerous forces.

4. It is prohibited to make any of the works, installations or military objectives mentioned in paragraph 1 the object of reprisals.

Neither Israel nor Iraq nor the United States has yet joined this Convention, and it would not appear literally applicable to the Iraqi research reactor, which was not an electrical generating

station. But the establishment of this principle is obviously relevant. Prime Minister Begin's explanation of the timing of the recent bombing included the point that bombing it after it had become operational would have released dangerous forces of the kind covered by this article.

The Radiological Weapons Convention currently under negotiation in the Committee on Disarmament in Geneva does not, in its present form, deal with the release of radiation by attacks on nuclear installations, but the Swedish delegation has proposed that it do so. If this were pursued, it would apply in peacetime (not only in war) and might correct the regrettable omission of research reactors, as well as reprocessing and waste handling facilities (which would present even greater potential hazards than reactors if bombed).

CONCLUSION

To allow the bombing of the Iraqi facility to devalue international efforts to prevent further nuclear proliferation would be both irresponsible and tragic. Instead, it is hoped that it will result in a renewed determination to pursue such efforts and make them more effective. In this connection, the vitality of the NPT regime must be maintained; efforts must be continued to achieve full-scope safeguards coverage and to improve safeguards techniques and implementation; common, responsible nuclear export policies must be followed, strengthened and improved by all concerned; and increased attention should be given to the contributions which could be made by restrictions on nuclear testing, nuclear weapons free zones, and other relevant international initiatives. It should become a major, explicit objective of diplomatic efforts to prevent the addition of a nuclear weapons dimension to the hostilities in the Middle East and South Asia.

Extract from Statement by Iraqi President
Saddam Hussein during Cabinet Meeting June 23, 1981
(FBIS-MEA-81-121, Wednesday June 24, 1981)

Irrespective of Iraq's intentions and of its present or future capabilities, I believe that anyone or any state in the world which really wants peace and security and which really respects peoples and does not want them to be subjugated to foreign forces should help the Arabs in one way or another to acquire atomic bombs to confront the actual Israeli atomic bombs, not to champion the Arabs and not to fuel war, but to safeguard and achieve peace. Irrespective of the Arabs' intentions and capabilities and even if the Arabs do not want them and are unable to use them, I believe that any state in the world that is internationally and positively responsible to humanity and peace must tell the Arabs: Here, take these weapons in order to face the Zionist threat with atomic bombs and prevent the Zionist entity from using atomic bombs against the Arabs, thus saving the world from the dangers of using atomic bombs in wars.

This logic is applied by the United States in its dealing with the Soviet Union and by the Soviet Union in dealing with the United States. Others also apply this logic toward each other. I do not believe that the Soviet Union now wants to use the atomic bomb against the United States or that the United States wants to use it against the Soviet Union. This is due to the advanced state reached by humanity in its thinking, conscience and attitudes, including public opinion in the United States, the Soviet Union and the world at large. I do not believe that either the Americans or the Soviets will use the atomic bomb against each other. However, both of them and others like them are always endeavoring to develop their weapons to prevent the eruption of war.

This logic is not to justify the Arabs' acquisition of nuclear technology for military purposes but is an open discussion with humanity. This discussion is not aimed at dealing with the Arabs as those who have created a precedent, because the Arabs do not possess nuclear weapons, but is a discussion to deal with a state that actually exists in Israel. All experts and all concerned with atomic weapons and the affairs of the Middle East admit that Israel possesses several nuclear bombs.

What would happen if Israel imposed conditions on the Arabs, they did not accept them and Israel used nuclear bombs against them? What would happen to the Arabs and mankind under such blackmail and in such a dangerous situation?

Israeli Description of Pakistan's Nuclear Program

(Extract from letter dated 27 May, 1981 from the Permanent Representative of Israel to the United Nations addressed to the Secretary-General (A/36/298))

In his letter dated 3 February 1981 and addressed to Your Excellency (A/36/92), the Permanent Representative of Pakistan claimed, inter alia, that "the nuclear research and development programme of Pakistan is geared entirely to peaceful purposes". * * *

On instructions, I have the honour to make the following observations:

A. Pakistan's nuclear weapons programme

1. Background

Pakistan is not a party to the Treaty on the Non-Proliferation of Nuclear Weapons. It has not ratified the Partial Test-Ban Treaty of 1963, and its nuclear activities are not completely covered by International Atomic Energy Agency (IAEA) safeguards.

Although Pakistani officials frequently deny their country's intentions to develop nuclear weapons and maintain that its nuclear activities are designed for peaceful purposes, there is abundant evidence indicating that Pakistan aims at producing nuclear weapons. The Pakistani Atomic Energy

* A/36/50.

81-14659

/...

Commission, the Ministry of Defence and the Engineering Research Laboratories share responsibility for the country's nuclear activities, and are involved in a process directed at the establishment of a nuclear infrastructure, which, on completion, will make Pakistan self-sufficient in the nuclear field. 1/

In order to obtain weapon-grade material, Pakistan has embarked in parallel on the reprocessing of plutonium and on uranium enrichment. Pakistan is also working on the development of nuclear explosive devices and on preparations for a test nuclear detonation.

2. The weapons programme

(a) Plutonium course

Since 1972, Pakistan has operated a 137MW CANDU (heavy water type) power reactor located at Paradise Point Sind, near Karachi. This reactor - known as KANUPP - is under IAEA safeguards. KANUPP is well-suited for the production of weapons-usable plutonium since it can be loaded and unloaded on line. During its eight years of operation, KANUPP has produced spent fuel containing more than 100 kg of plutonium. A chemical facility is required to obtain plutonium. Pakistan obtains plutonium from the irradiated fuel produced in this nuclear power plant through reprocessing activities carried out at a hot laboratories complex located close to the Nuclear Research Centre at PINSTECH (the Pakistan Institute of Technology), near Islamabad. 2/ This facility has functioned clandestinely since 1980, 3/ and produces annually at least 20 lb of plutonium necessary for one explosive device a year. 4/ Thus it is possible that this reprocessing facility will provide Pakistan with the necessary quantity of plutonium for one explosive device by the middle of 1981.

In addition - after obtaining most blueprints of a French reprocessing plant and clandestinely purchasing components from a variety of countries - Pakistan has begun constructing at the Chasma Nuclear Centre a large reprocessing plant (KNC2), to be completed in 1982-1983. This plant will enable Pakistan to produce plutonium for at least 10 nuclear explosive devices a year. In other words, it will enable Pakistan to build a meaningful arsenal of nuclear weapons. 5/

(b) Enriched uranium course

Pakistan is secretly constructing (near Kahuta, 20 km from Islamabad) a plant for the production of weapon-grade enriched uranium by centrifuges. This plant is built on the basis of information concerning uranium enrichment technology stolen from the URENCO plant in the Netherlands by a leading Pakistani scientist, Dr. A. Q. Khan. 6/ Pakistan has established a chain of "front" companies throughout 14 countries to acquire clandestinely all the necessary components piece by piece. 7/

/...

Pakistan apparently intends to build the plant in phases:

- (i) A pilot plant which, already in 1979, was reported to have been working. 8/
- (ii) The assembling of about 1,000 centrifuges which are expected to produce enough enriched uranium for one nuclear explosive device every two years. This phase is in the process of being completed. 9/
- (iii) The assembling of close to 10,000 centrifuges which in turn could produce about 150 kg of enriched uranium a year, sufficient to make about seven nuclear explosive devices a year. 10/
- (c) Development of the first nuclear explosive device

Pakistan is making preparations related to the development of an explosive device and its testing. For this purpose, it is apparently acquiring overseas the necessary items and equipment and is preparing a detonation site in the desert. 11/

The first Pakistani nuclear explosive device will probably be a plutonium one produced at the hot laboratories of PINSTECH. The decision as to whether and when the first nuclear device is tested will apparently be influenced by various political considerations facing the country's leadership.

3. Other activities in the nuclear fuel cycle

Pakistan is also actively seeking to achieve self-sufficiency in other fields of the fuel cycle.

(a) Uranium mining and purchasing

Pakistan mines, mills and processes uranium ores at the Dera Gazi Khan mines in the central region of the country. 12/ Several hundred tons of uranium are being purchased from Niger, either directly or through Libya. 13/

(b) Fuel fabrication plant

Pakistan has built at Chasma a plant to manufacture fuel elements, apparently using indigenous uranium. 14/

4. Foreign assistance and financial support

There are reports that Libya and Saudi Arabia have provided extensive financial assistance to Pakistan. 15/ Saudi Arabia, which expressed admiration for the Pakistani achievements in the nuclear field, 16/ tried to influence Pakistan to curtail Iraqi financial support in return for sharing Pakistani know-how. 17/

A/36/298
English

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Annex

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U.N. General Assembly Resolutions on Establishment of
Nuclear-Weapon-Free Zones in the Middle East
and South Asia

35/147. Establishment of a nuclear-weapon-free zone in the region of the Middle East

Date: 12 December 1980
Adopted without a vote

Meeting: 94
Report: A/35/690

The General Assembly,

Recalling its resolution 3263 (XXIX) of 9 December 1974, in which it overwhelmingly commended the idea of the establishment of a nuclear-weapon-free zone in the region of the Middle East,

Recalling also its resolution 3474 (XXX) of 11 December 1975, in which it recognized that the establishment of a nuclear-weapon-free zone in the Middle East enjoyed wide support in the region,

Bearing in mind its resolution 31/71 of 10 December 1976, in which it expressed the conviction that progress towards the establishment of a nuclear-weapon-free zone in the Middle East would greatly enhance the cause of peace in the region and in the world,

Recalling its resolution 32/82 of 12 December 1977, in which it expressed the conviction that the development of nuclear capability would further complicate the situation and immensely damage the efforts to establish a nuclear-weapon-free zone in the Middle East,

Guided by the recommendations in the Final Document of the Tenth Special Session of the General Assembly dealing with the establishment of a nuclear-weapon-free zone in the region of the Middle East, 39/

Recalling also its resolutions 33/64 of 14 December 1978 and 34/77 of 11 December 1979,

Recognizing that the establishment of a nuclear-weapon-free zone in the Middle East would greatly enhance international peace and security,

1. Urges all parties directly concerned seriously to consider taking the practical and urgent steps required for the implementation of the proposal to establish a nuclear-weapon-free zone in the Middle East in accordance with the relevant resolutions of the General Assembly and, as a means of promoting this objective, invites the countries concerned to adhere to the Treaty on the Non-Proliferation of Nuclear Weapons; 40/

2. Invites those countries, pending the establishment of such a zone in the Middle East and during the process of its establishment, to declare solemnly that they will refrain, on a reciprocal basis, from producing, acquiring or in any other way possessing nuclear weapons and nuclear explosive devices;

3. Calls upon those countries to refrain, on a reciprocal basis, from permitting the stationing of nuclear weapons on their territory by any third party and to agree to place all their nuclear activities under International Atomic Energy Agency safeguards;

4. Further invites those countries, pending the establishment of a nuclear-weapon-free zone in the Middle East and during the process of its establishment, to declare their support for establishing such a zone in the region consistent with paragraphs 60 to 63, in particular paragraph 63 (d), of the Final Document of the Tenth Special Session and to deposit those declarations with the Security Council for consideration as appropriate;

39/ Ibid., para. 63 (d).

40/ General Assembly resolution 2373 (XXII), annex.

5. Reaffirms again its recommendation to the nuclear-weapon States to refrain from any action contrary to the spirit and purpose of the present resolution and the objective of establishing in the region of the Middle East a nuclear-weapon-free zone under an effective system of safeguards and to extend their co-operation to the States of the region in their efforts to promote these objectives;

6. Renews its invitation to the Secretary-General to continue to explore the possibilities of making progress towards the establishment of a nuclear-weapon-free zone in the region of the Middle East;

7. Decides to include in the provisional agenda of its thirty-sixth session the item entitled "Establishment of a nuclear-weapon-free zone in the region of the Middle East".

35/148. Establishment of a nuclear-weapon-free zone in South Asia

Date: 12 December 1980 Meeting: 94
Vote: 96-3-44 (recorded) Report: A/35/691

The General Assembly,

Recalling its resolutions 3265 B (XXIX) of 9 December 1974, 3476 B (XXX) of 11 December 1975, 31/73 of 10 December 1976, 32/83 of 12 December 1977, 33/65 of 14 December 1978 and 34/78 of 11 December 1979 concerning the establishment of a nuclear-weapon-free zone in South Asia,

Reiterating its conviction that the establishment of nuclear-weapon-free zones in various regions of the world is one of the measures which can contribute most effectively to the objectives of non-proliferation of nuclear weapons and general and complete disarmament,

Believing that the establishment of a nuclear-weapon-free zone in South Asia, as in other regions, will strengthen the security of the States of the region against the use or threat of use of nuclear weapons,

Noting the declarations issued at the highest level by Governments of South Asian States reaffirming their undertaking not to acquire or manufacture nuclear weapons and to devote their nuclear programmes exclusively to the economic and social advancement of their peoples,

Recalling that in the above-mentioned resolutions it called upon the States of the South Asian region and such other neighbouring non-nuclear-weapon States as might be interested to make all possible efforts to establish a nuclear-weapon-free zone in South Asia and to refrain, in the meantime, from any action contrary to this objective,

Further recalling that, in its resolutions 3265 B (XXIX), 31/73 and 32/83, it requested the Secretary-General to convene a meeting for the purpose of the consultations mentioned therein and to render such assistance as might be required to promote the efforts for the establishment of a nuclear-weapon-free zone in South Asia,

Bearing in mind the provisions of paragraphs 60 to 63 of the Final Document of the Tenth Special Session of the General Assembly 41/ regarding the establishment of nuclear-weapon-free zones, including in the region of South Asia,

Taking note of the report of the Secretary-General on the establishment of a nuclear-weapon-free zone in South Asia, 42/

1. Reaffirms its endorsement, in principle, of the concept of a nuclear-weapon-free zone in South Asia;

41/ Resolution S-10/2.

42/ A/35/452.

2. Urges once again the States of South Asia and such other neighbouring non-nuclear-weapon States as may be interested to continue to make all possible efforts to establish a nuclear-weapon-free zone in South Asia and to refrain, in the meantime, from any action contrary to this objective;
3. Calls upon those nuclear-weapon States which have not done so to respond positively to this proposal and to extend the necessary co-operation in the efforts to establish a nuclear-weapon-free zone in South Asia;
4. Requests the Secretary-General to render such assistance as may be required to promote the efforts for the establishment of a nuclear-weapon-free zone in South Asia and to report on the subject to the General Assembly at its thirty-sixth session;
5. Decides to include in the provisional agenda of its thirty-sixth session the item entitled "Establishment of a nuclear-weapon-free zone in South Asia".

RECORDED VOTE ON RESOLUTION 35/148:

In favour: Bahrain, Bangladesh, Barbados, Belgium, Burundi, Canada, Cape Verde, Chad, Chile, China, Colombia, Comoros, Costa Rica, Democratic Kampuchea, Democratic Yemen, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, Gabon, Gambia, Federal Republic of Germany, Ghana, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Iceland, Iran, Iraq, Ireland, Ivory Coast, Jamaica, Japan, Jordan, Kenya, Kuwait, Lebanon, Lesotho, Liberia, Libya, Luxembourg, Malaysia, Maldives, Mali, Malta, Mauritania, Mexico, Nepal, Netherlands, New Zealand, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Portugal, Qatar, Romania, Rwanda, Saint Lucia, Samoa, Saudi Arabia, Senegal, Sierra Leone, Singapore, Somalia, Spain, Sri Lanka, Sudan, Swaziland, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkey, Uganda, United Arab Emirates, United Republic of Cameroon, United Republic of Tanzania, United States, Upper Volta, Uruguay, Venezuela, Yemen, Zaire, Zambia, Zimbabwe.

Against: Bhutan, India, Mauritius.

Abstaining: Afghanistan, Algeria, Angola, Argentina, Australia, Austria, Bahamas, Benin, Bolivia, Brazil, Bulgaria, Burma, Byelorussia, Central African Republic, Congo, Cuba, Cyprus, Czechoslovakia, Denmark, Ethiopia, Fiji, France, German Democratic Republic, Greece, Hungary, Indonesia, Israel, Italy, Lao People's Democratic Republic, Malawi, Mongolia, Morocco, Mozambique, Nicaragua, Norway, Poland, Sao Tome and Principe, Seychelles, Sweden, Ukraine, USSR, United Kingdom, Viet Nam, Yugoslavia.

Absent: Albania, Botswana, Dominica, Equatorial Guinea, Guinea-Bissau, Madagascar, Saint Vincent, Solomon Islands, Suriname, Syria.