



Director of
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Iraq's Nuclear Interests, Programs, and Options

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IRAQ'S NUCLEAR INTERESTS, PROGRAMS, AND OPTIONS

Information available as of 1 October 1979 was
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FOREWORD

Iraqi nuclear intentions cannot be gauged with a high degree of confidence because the available evidence is fragmentary and, in most cases, ambiguous. The judgments advanced in this memorandum are thus largely speculative in nature. Nonetheless, they are generally consistent with the thrust and conclusions of the broader country assessment presented in NIE 36.2-1-79, *Iraq's Role in the Middle East*.

This memorandum was prepared under the auspices of the National Intelligence Officer for Nuclear Proliferation by scientific and political analysts in the National Foreign Assessment Center of the Central Intelligence Agency and in the Defense Intelligence Agency. It was coordinated with NFIB representatives in the Interagency Intelligence Working Group on Nuclear Proliferation.

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SUMMARY AND KEY JUDGMENTS

We have no hard evidence that Iraq has decided actually to acquire nuclear weapons. We believe, however, that the Iraqis have at least decided to put themselves in a position to do so by developing a relatively self-sufficient nuclear base that could produce such weapons eventually. Strong grounds for this conclusion are provided by Iraq's security concerns, regional ambitions, assertions of intent to match Israeli nuclear capabilities, and demonstrated interest in technologies and materials that would be needed to develop an autonomous nuclear weapons potential. At the same time, the wide-ranging nature of Iraq's quest for nuclear technology suggests that Baghdad may not yet have a fixed plan for achieving the latter goal.

If Iraq undertakes to build nuclear weapons, the greatest technical problem it will face is likely to be the acquisition of sufficient fissile material. Four approaches would seem to be open to it: diversion of the highly enriched uranium (HEU) that the French are scheduled to supply as fuel for the OSIRAK and ISIS research reactors; development of indigenous means of producing fissile material; diversion of plutonium produced in a nuclear power program; or acquisition of fissile material from a foreign source. Of these, only diversion of the French HEU or acquisition of fissile material abroad would offer any hope of success before the mid-to-late 1980s.

- If, as expected, the French do provide HEU, but no more than an initial loading for each of the two research reactors, Iraq might be able to divert this material and build an air-deliverable nuclear weapon by as early as 1981, although the 1983-84 period would be more likely. If spare loadings were also furnished, Baghdad might be able to build several such weapons in the same time frame. Diversion of the HEU could not, however, be accomplished without terminating or conspicuously violating international safeguards.
- Alternatively, the Iraqis could load natural uranium plates in core positions in the research reactors and recover the plutonium that was produced. But this extremely difficult technical operation could not be accomplished surreptitiously, and it would take at least two years of around-the-clock operation to acquire enough plutonium for a single nuclear weapon.
- It is very unlikely that Iraq could build a production reactor or centrifuge enrichment facility—or begin diverting the plutonium

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produced by the first of its planned power reactors—before the late 1980s.

- Iraq's chances of obtaining fissile material from a foreign source are poor before the mid-1980s, and only slightly better over the longer run.

Iraqi decisions with respect to how far, how fast, and by what route to pursue the nuclear weapons option will depend in part on domestic and international circumstances that are subject to change. In any case, Baghdad's estimates of the costs, risks, and returns of various courses of action will be based on its own particular perceptions. Under most foreseeable conditions, however, Iraq's interest in developing a capability to produce nuclear weapons will continue to be sustained by security concerns, regional ambitions, and recognition that its oil wealth and strategic location give it considerable leverage over its principal nuclear suppliers. At the same time, the Iraqis will be constrained by:

- Appreciation that any abrogation, blatant circumvention, or confirmed violation of their obligations under the Non-Proliferation Treaty (NPT) could result in the cessation or severe curtailment of vital foreign assistance for their nuclear program.
- The related prospect that, in the near-to-middle term at least, no secondary supplier would be willing or able to step in and fill the gap.
- The possibility of preemptive action by Israel.
- The risk to other important national interests (for example, the chance that the reactions of neighboring states could effectively frustrate Baghdad's longer run regional ambitions).

While the Iraqis obviously believe that the level of political and military risk associated with their current pattern of activity in the nuclear field is acceptable, they have exhibited a greater degree of pragmatism and flexibility in their foreign policy behavior over the past several years that suggests that they are not in any particular hurry to achieve their more ambitious objectives. They are thus likely to favor a covert and relatively measured nuclear weapons research and development effort which, if ultimately called upon to do so, could reasonably be expected to produce several deliverable warheads before it was uncovered. This would rule out conspicuous shortcuts entailing diversion of French HEU or misuse of the safeguarded reactors as anything more than measures of last resort.

Barring some unforeseen change in the Middle East military or political environment that brought about a marked shift in Baghdad's current policies, priorities, and perceptions of risk, we believe that it is

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unlikely that Iraq will attempt to build nuclear weapons before the late 1980s.¹ In the interim, however, the Iraqis can be expected to persist in trying to acquire all the necessary skills, facilities, and fissile material under the cover of their peaceful nuclear program.

If Baghdad follows this course of action, it will probably be successful in deterring any serious supplier pressures (both Western and Soviet) over the next several years. The dual character of its nuclear program is, however, likely to become less and less ambiguous as it approaches a capability to build nuclear weapons. The Israelis, moreover, are likely to raise more urgent alarms as soon as they can make a plausible case—both to mobilize international pressure against Iraq and to justify, in advance, any direct action they may decide to take. But even if the Iraqis manage to do no more than to avoid provoking Israel or the West for four or five years, time might work to their advantage. By then, they may no longer be so dependent on foreign nuclear assistance, and the Israelis might find preemptive intervention politically and militarily more difficult.

Although we cannot forecast with any degree of confidence just how the Iraqis would behave if they actually acquired nuclear weapons during the coming decade, we doubt that there would be major changes in their overall foreign policy objectives. Baghdad is virtually certain to remain strongly anti-Israeli. It is also likely to be at odds with a number of Arab governments and to experience recurrent periods of tension in its relations with Iran. Even if Iraq acquired nuclear weapons within the next few years, possession of such ordnance would not help to isolate Egyptian President Sadat or bring Ba'thists to power elsewhere in the Arab world. Nor would it end foreign exploitation of tribal or sectarian unrest that is endemic to Iraq. On the other hand, the Arab-Israeli dispute would probably be significantly affected.

Policymakers on both sides of that feud would have to rethink their military plans and strategy. However, Iraq's acquisition of nuclear weapons would not necessarily establish a stable balance of terror in the Middle East, where incidents that could trigger hostilities are common and few leaders have much understanding of the consequences of using nuclear weapons.

The implications for US policies and interests of the judgments advanced thus far underscore the weaknesses of the existing international nonproliferation regime. In view of the leverage that Iraq can bring to bear on its principal nuclear suppliers, the chances of broad and timely cooperation in denying Baghdad further weapons-applicable

¹ Although, as previously indicated, unlikely, another development that might prompt Baghdad to accelerate its nuclear weapons timetable would be covert acquisition of a substantial quantity of foreign-produced fissile material.

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materials, technology, and equipment range from poor to fair, depending on the nature of the item or knowledge concerned. The application by the United States of heavy pressure to secure such cooperation, whether or not it was obliged by law to do so, would probably create considerable friction in its relations with a number of its principal partners in the North Atlantic Treaty Organization (NATO) and the Organization for Economic Cooperation and Development (OECD)—particularly with France and Italy.

Since vigorous technology denial efforts could be quite costly but still inadequate to keep Iraq from acquiring nuclear weapons by the late 1980s if it wishes to do so, there will be a clear need for parallel efforts aimed at indirectly influencing the security concerns, national goals, and foreign policy objectives that promise to be the primary determinants of both (1) the degree of urgency that the Iraqis attach to their nuclear weapons ambitions, and (2) their behavior if and when they cross the weapons threshold. Progress toward a broadly accepted peace settlement in the Middle East will be particularly important in this connection, because, if the Iraqis acquire a nuclear weapons capability before such a settlement is achieved, the destabilizing effects of their accomplishment will be greatly—and perhaps disastrously—magnified.

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DISCUSSION

The Policy Setting

1. Iraq's nuclear ambitions are an outgrowth of its determination to establish and secure itself as a major force in the Arab world. Iraqi leaders have used a decade of unprecedented internal stability, rising oil wealth, and, more recently, fortuitous regional developments to move their country from a position of political isolation to one of substantial influence today. Achievement of a broad nuclear capability is apparently regarded by the Iraqi Government as prerequisite to fulfillment of its ultimate objective: regional hegemony.

2. Barring domestic upheaval, Baghdad's new prominence in regional affairs is not likely to be transitory. The nation's strengths are broadly based. Oil reserves will last at least through this century and will ensure Baghdad's economic independence for the foreseeable future. Oil revenues have, in fact, jumped from about \$2 billion in 1973 to over \$14 billion in 1978. Much of that additional income has been used to build Iraq's armed forces to twice their size at the time of the 1973 Arab-Israeli war—and further expansion and modernization are planned. Other assets relevant to Iraq's pursuit of a greater voice in regional and global affairs include a substantial population, an ambitious literacy program, a relatively high agricultural potential, considerable influence with radical Palestinians, and a strategic location. Moreover, Baghdad has benefited from a series of recent developments that have weakened the positions of most of its principal regional competitors: Iran, Saudi Arabia, Syria, Egypt, and Turkey.

3. *Political Leadership.* The rapid growth of Iraq's national power has been in part attributable to the political skill, determination, and shared ideological perspective of the leaders who, as members of the Revolutionary Command Council (RCC), currently preside over the country's highly centralized Ba'thist regime. They have held power for 11 years in a country where instability, intrigue, and violence have characterized the political scene throughout most of the 20th century. This is the longest period of continuous rule since the Iraqi monarchy was overthrown in 1958. Even though the potential for trouble remains,

the continuity of leadership has been essential to the formulation and implementation of Iraq's ambitious plans—both domestic and foreign—for the future.

4. The key decisions in Iraq, including those relating to the country's nuclear program, are made by one man, President Saddam Husayn. The transition of power in July from ailing former President Bakr to Saddam did not go smoothly. Saddam apparently overreacted to suggestions by others in the Ba'thist leadership that he hold long overdue party elections to legitimize his succession to the presidency. He not only ousted those he believed threatened his succession, but used the episode as a pretext to remove others in the power structure whose loyalty he doubted. Saddam appears to have emerged from this summer's events firmly in charge. He will probably be at least temporarily distracted, however, by internal security matters. He is assisted by a handful of close associates and backed by both a powerful party organization and a pervasive security apparatus. Saddam's primary domestic goals, besides remaining in power, are economic self-sufficiency and establishment of Ba'thist socialism. Enlargement of individual freedoms is not emphasized. His carrot-and-stick approach to governing has proved reasonably effective, but even the present highly centralized regime cannot mask the persistent strains that arise from religious, ethnic, and ideological divisions within Iraq's heterogeneous society.

5. Ba'thist decisionmaking is highly personalized and secretive. Little is known of the actual mechanics of the decisionmaking process or the role of second-level advisers. Saddam almost certainly needs and seeks advice from others, but the composition of his inner circle of confidants probably changes according to the topic under consideration. The recent political turmoil in Baghdad may induce Saddam to broaden the decisionmaking process somewhat, though he is unlikely to cede any significant authority to his subordinates.

6. *Formulation and Implementation of Nuclear Policy.* As Chairman of the Iraqi Atomic Energy Commission (IAEC), Saddam is the key figure when it comes to questions of nuclear policy. IAEC Deputy

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Chairman 'Abd al-Razzaq Hashimi, an American-educated scientist and a senior Ba'thist, manages the day-to-day activities of the IAECC. Most important nuclear officials are Ba'th Party members and many seem to have close connections with the security and intelligence services. At the top political level, a handful of Revolutionary Command Council members who also hold important ministerial and Ba'th Party posts are probably consulted on nuclear policy. These leaders include RCC Vice Chairman Izzat Ibrahim al-Duri, Interior Minister Sa'dun Shakir, and Defense Minister Adnan Khayrallah Talfah. The execution in this summer's purge of Adnan Husayn, one of Saddam's key advisers on economic and nuclear matters, should not disrupt the progress of Iraq's nuclear program. First Deputy Prime Minister Taha Yasin Ramadan al-Jazrawi is the leading candidate to take Adnan Husayn's place in Iraqi deliberations on nuclear affairs. The extent and nature of the military's role with respect to the country's nuclear program are unclear, but at least one Army officer is believed to be assigned a key position in the IAECC as a representative of the Ministry of Defense. Domestic public opinion has not been a factor of concern to Iraq's nuclear policymakers. However, if the need arose, the Baghdad regime would probably have little trouble convincing the general populace that Iraq had the right and even a duty to develop nuclear weapons to defend itself against similarly equipped adversaries.

7. Economic Imperatives and Constraints. Simply put, there would seem to be little or no economic justification for the scale and direction of Baghdad's nuclear efforts. For one thing, the Iraqis have given first priority to facilities of a type that, unlike power reactors, will yield virtually no immediate economic return when they are completed. For another, even if the country's economic growth accelerates rapidly over a long period, natural gas (28 trillion cubic feet in proven reserves) now being flared in connection with crude oil production will provide an ample source of domestic energy for the foreseeable future. The economy is, moreover, too unsophisticated to be re-fit greatly from the technological spinoff of a large-scale nuclear program.

8. Political and technical impediments rather than economic constraints pose the chief obstacles to implementation of Iraq's nuclear plans. With \$10 billion in accumulated assets, and nearly double that figure in

oil income each year, the Iraqis are in a position to buy whatever technology and technological assistance they require without jeopardizing other economic options.¹ Stalling of the Iraqi nuclear effort, however, has been impeded by reluctance to assign foreigners to positions of responsibility.

9. Baghdad has apparently assigned considerable priority to overcoming the problems created by its insularity, particularly with respect to both human and natural resources.

Baghdad's training efforts have so far yielded an indigenous professional cadre of 350 (including 50 Ph.D.'s), and research grants have been used to lure foreign experts into the country on short-term assignments.² The Iraqis are reportedly planning to direct some of their scientists to leave for the West under the pretense of political pressure and to seek employment at nuclear facilities and research centers. Once they have gained sufficient experience, these individuals are to return to Iraq. [redacted] in addition to exploring with the French the possibility of extracting uranium from Iraq's phosphate ore, Baghdad has begun to invest in uranium mines in the Central African Republic.

10. Foreign Policy. Ba'thist foreign policy is in part influenced by an ideology that emphasizes Pan-Arabism in general and pro-Palestinian/anti-Israeli sentiments in particular. But pragmatic considerations have increasingly come to influence Iraqi behavior in the international arena. The change has been characterized by loosening ties with Moscow, restraint toward Arab neighbors, and growing commercial relations with the industrial West. Together with hostile Arab reactions to the Camp David accords, these developments have enabled Iraq to overcome resentments born of its confrontational tactics in the past and to establish reasonably cordial and cooperative

¹ Other aspects of Iraq's costly regional and international aspirations may, however, conflict financially with its nuclear ambitions. There is reason to doubt, for example, that Baghdad will simultaneously be able to fund the nuclear program, acquisition of a viable naval presence in the Persian Gulf, reequipment of Iraqi and Syrian ground and air forces with Western arms, and provision of de facto aid to less developed countries in the form of oil price discounts. Nonetheless, most of the financial conflicts that might arise would probably be resolved in favor of the nuclear program.

¹ For a more detailed discussion of the organization, functions, and staff of the IAECC, see the annex.

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relations with a number of previously cool or hostile regional states, including Saudi Arabia, Syria, and Jordan.

11. While Iraq's Arab neighbors have generally welcomed Baghdad's more cautious and flexible behavior, they rightly suspect that the Iraqis' regional ambitions remain unchanged; a mistrust that is reciprocated. Baghdad maintains its ties with fellow Arab Ba'ithists and other Arab radicals against the day when it may be in its interest to promote the establishment of sympathetic regimes in the Arabian Peninsula. Nor have the Iraqis felt compelled to renounce their longstanding territorial claims on Kuwait. Relations with the new revolutionary regime in Iran are tense at present, and both sides have justifiably accused each other of subversive behavior.

12. Nonetheless, the Iraqis clearly attach considerable importance to the further improvement of their international image. And while the change in their foreign policy behavior has been primarily tactical in nature, it does suggest that Baghdad does not feel in any great hurry to achieve its goal of regional hegemony. Moreover, this apparent absence of a sense of urgency would not seem to be out of character under prevailing circumstances, for the relative youth of Iraq's leaders should permit them to take a long-term view and thus to pursue policies that they believe will incrementally advance Iraqi interests at minimum risk of hostile reactions from key regional or extraregional powers.

13. **Security Concerns.** The Iraqis' perceptions of the threats to their national security and regional ambitions posed by Israel, on the one hand, and by their traditional rival, Iran, on the other, are undoubtedly the primary motivating factors behind Baghdad's interest in developing a capability to build nuclear weapons. Israel had an ambitious nuclear program when the Ba'ithists returned to power in July 1968, and Tehran was already showing signs of similar intentions. Nonetheless, the new regime's need to cope with persistent domestic security problems and to acquire the necessary economic wherewithal delayed mounting a serious nuclear effort for several years.⁷

⁷ Iraq signed the Non-Proliferation Treaty (NPT) on 1 July 1968, just 16 days before the Ba'ithists overthrew the 'Arif regime in Baghdad. It seems reasonable to assume that General 'Arif's successors, who ratified the treaty in the fall of 1969, did not give much thought to the possible longer term implications of their action.

14. The Iraqis strongly suspect that Israel already has a nuclear weapons capability, a prospect that they are likely to find even more troubling in the wake of an Egyptian-Israeli peace treaty that tilts the military balance in the Middle East further in favor of Israel. In any event, as early as 1975 [redacted]

[redacted] Iraq was prepared to spend hundreds of millions of dollars to achieve nuclear parity with Israel. In a similar vein, a ranking member of the Revolutionary Command Council publicly declared last summer that, if Israel had nuclear weapons, the Arabs must possess them too.

15. Ba'ithist Iraq's relations with Iran have never been more than coolly correct, and they were particularly bad in 1974 and early 1975 when we suspect the Iraqis began thinking about developing a capability to build nuclear weapons. The two countries were on the verge of war in the late 1960s and early 1970s. Border clashes were common, and each side sought to subvert the other—Iran by aiding and abetting the rebellious Kurds in Iraq, and Iraq by stimulating Arab separatism in Iran. Tensions eased in 1975 following conclusion of a bilateral agreement under which Iraq yielded to Tehran's positions with respect to disputed common boundaries in return for an Iranian pledge to cease all aid to Kurdish tribesmen in Iraq. Even so, the Iraqis undoubtedly viewed Iran's burgeoning nuclear and military modernization programs with considerable apprehension. And while the decline in Iranian military power and the nuclear standstill that have followed the Shah's downfall must have alleviated some of Iraq's immediate concerns, Baghdad probably still views Iran as a significant long-term threat to its interests in the Persian Gulf area.

Iraq's Nuclear Program

16. **Background.** Iraqi interest in nuclear energy began in 1955 with the establishment of a committee under the Minister of Development to study offers of assistance from the United States and Great Britain. England's proposal to establish a nuclear training center in Baghdad as part of its contribution to the support of the Baghdad Pact was accepted in January 1956.

17. The Iraqi Atomic Energy Commission was established in January 1959. Among other responsibilities relating to the exploitation of nuclear energy for peaceful purposes, it was charged with establishing cooperative arrangements with other countries. In August 1959, the IAEA concluded a nuclear coopera-

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tion agreement with the USSR under which Moscow undertook to construct a research reactor and an isotope laboratory in Iraq, to aid in prospecting for radioactive ores, and to train Iraqi personnel in nuclear-related skills and disciplines both in Iraq and in the Soviet Union.

18. Preliminary site work for the Research Center at Tuwaitha, south of Baghdad on the Tigris River (see annex), was started in 1960 while the Iraqi-Soviet construction contract was being negotiated. Eight years later, the Soviets completed installation of an IRT-2000 swimming pool research reactor which initially went critical at 2 MWt (megawatts thermal), and a modest research and training effort was begun. (The Soviets subsequently upgraded this reactor, and its power output was increased to 5 MWt in mid 1978.)

19. During the first few years of the Tuwaitha Center's operation, Iraqi activities in the nuclear field were limited to basic research, training, the production of isotopes, the establishment of a medical center at Saladin Hospital in Baghdad to use these isotopes, and the formation of a cobalt irradiation unit for diagnostic and therapeutic purposes. Evidence of more ambitious nuclear objectives began to surface about mid-1974. Since then, Iraq has actively sought to increase nuclear contacts and cooperation with other countries. In the process, visits have been exchanged with West Germany, India, Poland, France, Canada, Egypt, Italy, Japan, the USSR, and Sweden, and overtures have been made to several other countries.

20. *Recent Trends and Developments.* The most significant developments to emerge so far from this burst of international activity have been:

- The agreement concluded with Paris in 1976 under which the French will provide Iraq with a research reactor complex patterned after their own 70-MWt OSIRIS and 800-kWt ISIS reactor complex at Saclay.
- The agreements signed with Italy in 1976 and 1978 under which the Iraqis will obtain a radioisotope laboratory, a radiochemical laboratory, a fuel fabrication facility, a materials testing facility, and a supportive physical plant including warehouses and workshops.

All these new facilities will be collocated with the Soviet-supplied 5-MWt research reactor at the Tuwaitha Center. Original plans called for completion of Iraq's 40-MWt reactor (commonly dubbed OSIRAK) and the 800-kWt ISIS unit—both designed

to be fueled with several kilograms of weapons-usable highly enriched uranium (HEU)—by late 1980 or early 1981, but the sabotage in France last April of several OSIRAK components is likely to set back this timetable by anywhere from three to 18 months.* If a delay of much more than a year is involved, France may technically be in a position to substitute a fuel of too low a level of enrichment to be usable for nuclear weapons. Even so, we believe that the French will supply HEU for at least the initial loading.

21. The facilities being provided by the Italians are scheduled to be completed by late 1980. The radiochemistry lab—which is already in operation—has been the cause of some concern, because it will help the Iraqis to develop skills and techniques associated with reprocessing. In this connection, it should be noted that starting in early 1980, some 100 Iraqis are slated to receive training in radiochemical analysis and radiochemistry in Italy at the Casaccia Nuclear Research Center of the Comitato Nazionale per l'Energia Nucleare (CNEN). While the Italians claim that they have turned down Iraqi requests for reprocessing technology per se (and for enrichment technology as well), the envisaged training will have some relevance to reprocessing chemistry. Moreover, CNEN and Iraqi scientists discussed a number of papers explicitly focused on reprocessing technology in May 1979 at what was apparently intended to be the first in an annual series of seminars associated with the 1978 nuclear agreement between Italy and Iraq.

22. Iraq is also acquiring a limited capability in several other sensitive areas. For example, the IAEA currently has a computer hardware and software capability adequate for the design of at least relatively unsophisticated nuclear weapons, and it is planning to upgrade its equipment. Iraqi scientists have been studying laser isotope separation and fusion technologies in Italy and West Germany. And while Iraq does not yet have a significant high-explosive manufactur-

* The saboteurs set off a number of explosive devices on 6 April 1979 at an industrial plant in La Seyne-sur-Mer where some structural components were being built for OSIRAK and other reactors. Credit for the bombing was claimed by a previously unknown French environmentalist group which cited the Three Mile Island "catastrophe" as the catalyst that triggered their move. Nonetheless, the presence of OSIRAK components, the professionalism demonstrated by the saboteurs, the use of military-type plastic explosives, and the placement of the charges have led to widespread suspicion that the attack was executed by Israeli agents. So far, however, it appears that no hard evidence has been uncovered to substantiate these suspicions.

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ing or testing capability, construction is under way with Yugoslav assistance on a large arms manufacturing facility at Al Iskandariyah that will produce artillery and ammunition up to 130 mm in caliber.

23. Iraq's future plans include the acquisition of at least one, and possibly as many as four, electric power reactors. Baghdad is negotiating with West Germany, Italy, and France, for a 600-MWe (megawatt electric) power reactor that is to be built near Samarra. It has stipulated that award of the contract will be conditional upon agreement by the bidder to supply fuel for the reactor as well. The decision on who will build the reactor has been postponed several times, most recently until 31 December 1979. In part, this foot-dragging may be attributable to legitimate safety concerns raised by the Three Mile Island accident. The Iraqis claimed as much last spring. However, it is also true that the delay can be exploited to Baghdad's advantage as a means of inducing all three competitors (who probably believe that winning the Samarra contract would give them an inside track in the bidding on any future reactors) to be more forthcoming in the kinds of nuclear assistance they are willing to extend.⁷ In any event, further delays may be expected, and it seems unlikely that the Samarra reactor will be operational before the late 1980s.

24. Iraq will obviously be heavily dependent on foreign support for its nuclear program for some time to come. Baghdad is, however, making a vigorous effort to alter this situation, in part by sending its scientists to more than a half dozen foreign countries for training, and in part through an aggressive and generously funded procurement program that has covered everything from reactors to precision shop equipment. According to the Iraqi official who is in charge of his country's fledgling power plant project, Iraq is seeking to acquire all the equipment and technology it will need to achieve nuclear independence by about 1986.

25. In sum, like the political and economic indicators discussed earlier, a number of the technical aspects of Iraq's nuclear program are suggestive of

The Iraqis have already demonstrated their readiness to exploit the prospect of the Samarra reactor contract in efforts to acquire sensitive technology and material. In April 1976, for example, when Japan bid on the project and offered to supply (as middleman) the enriched uranium needed to fuel the reactor under an intergovernmental safeguards agreement, the Iraqis asked the Japanese to find some way to avoid safeguards on that fuel. Largely because of their inability to furnish enriched uranium on these terms, the Japanese subsequently withdrew from the bidding on the Samarra project.

active interest in nuclear weapons. But since most of these are also consistent with Baghdad's avowed intention to free itself from dependence on foreign nuclear assistance by the mid-1980s, they cannot be construed as proof of Iraqi intentions to develop a nuclear weapons capability.

26. *Technical Obstacles to Weapon Development.* If Iraq undertakes to develop nuclear weapons, the greatest technical problem it will face will probably be acquisition of sufficient fissile material. Four approaches are open, at least in theory, to Baghdad: diversion of the HEU in the fuel to be supplied by France for the OSIRAK and ISIS reactors; development of indigenous means of producing fissile material; diversion of plutonium produced in a nuclear power program; or acquisition of fissile material from a foreign source. None of these possible paths shows any great promise in the near future.

27. Diversion of the French HEU would be the simplest and most direct route to a limited nuclear capability. When this HEU will become available is not clear. It is unlikely that the fuel will be supplied before completion of the reactors. Completion was originally scheduled for 1981 but could easily be delayed by a year or more. The amount to be supplied is also unclear, but will be at least 23 kilograms, that is, 11.5 kilograms for an initial loading for each reactor.⁸ This would be sufficient for a nuclear explosive. If spare loadings are provided by the French, as much as 80 kilograms could conceivably be made available, enough for several nuclear weapons.⁹ The HEU could be diverted before the fuel is irradiated in the reactor or after removal and storage in a cooling pond for several months.¹⁰ This path to proliferation may thus

⁷ After the initial delivery of 11.5 kilograms of HEU for the ISIS reactor, however, additional loadings provided by the French will probably consist of only 11.5 kilograms of HEU for the OSIRAK reactor.

⁸ The number of nuclear weapons that could be constructed would depend upon the nature of their design and the desired yield. These factors would also determine the technical desirability of testing the device or weapon produced—an important consideration for Baghdad because such a test would involve considerable political and military risk (particularly if Iraq had not yet stockpiled any spare nuclear weapons for purposes of deterrence).

⁹ Use of fuel that had been irradiated in the OSIRAK reactor would complicate weapons design and fabrication and reduce the number of nuclear weapons that could be produced from a given quantity of the fuel. Preirradiation of the fuel—a precautionary measure the French are considering but are judged unlikely to press if the Iraqis object strenuously—would make the HEU more difficult to handle but would not affect the number of nuclear weapons that could be made from it.

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become a threat as early as 1981 and it will remain one as long as the fuel remains in Iraqi hands. As indicated earlier, the French might technically be in a position to substitute low-enriched fuel for the HEU if completion of the reactors is delayed beyond 1981. Nonetheless, we believe that the French will adhere to their current plans and commitments and supply HEU for at least the initial loading.

28. Iraq at present has no indigenous capability to produce fissile material in quantity and no prospects of developing one before late in the 1980s. The Soviet-supplied 5-MWt research reactor is capable of producing gram quantities of plutonium, but even this trivial amount is not accessible to the Iraqis because the irradiated fuel is routinely returned to the USSR. Neither the OSIRAK nor the ISIS reactor under construction by the French can produce more than a few grams of plutonium in the fuel elements. The loading of natural uranium plates in core positions would increase the production rate, but it still would take the Iraqis two or more years of around-the-clock operation to accumulate enough plutonium for a single nuclear weapon. Moreover, this substitution—an extremely difficult technical operation—would have to be accomplished under the noses of inspectors and visiting scientists and would require unusually frequent core-fuel reloadings. Hence it would be impossible to hide.

29. There is no good basis for estimating how long it would take Iraq to develop and construct an indigenous plutonium production reactor and reprocessing plant, but it is certain that this could not be accomplished before the late 1980s. Development of a centrifuge plant for production of enriched uranium might be a more feasible approach, certainly if Pakistan—for the sake of Pan-Muslim solidarity—could be prevailed upon to assist in the technology. Even with Pakistani aid, however, this approach would not yield tangible results before the late 1980s.

30. Assuming a willingness to violate safeguards, Iraq will eventually be in a position to divert plutonium produced in its nuclear power program to nuclear weapons. As noted elsewhere, construction of the first power plant is still being negotiated. Even if construction began in 1979, the plant would not be complete before the late 1980s.

31. There remains the possibility that Iraq might be able to obtain fissile material from a foreign source, either through a clandestine operation of some sort or with the willing assistance of another state—Pakistan,

for example. Even if Islamabad were offered substantial financial aid in return, however, the chances that Pakistan would be willing to provide Iraq with either HEU or enrichment services would be problematical at best. It is highly unlikely that Pakistan could or would accede to such a request in the near future. Under the most optimistic assumptions, the Pakistani plant will not produce sufficient HEU for a single nuclear device before the early 1980s. Pakistan would thus not be in a position to provide such services before the mid-1980s and even then on a very limited basis.

32. In short, of the various scenarios by which Iraq might obtain fissile material, only two—diversion of the French HEU and acquisition abroad through a clandestine operation in a relatively advanced country—offer any hope of success before 1985, and most suggest the late 1980s as the earliest reasonable date. Under no likely circumstance will fissile material be available in quantity before the late 1980s. Diversion of the French HEU would certainly be detected, and this could lead to a cutoff of fuel supplies and other forms of nuclear assistance. The Iraqis would be risking the future of their whole nuclear program for the acquisition of enough fissile material for only a few nuclear weapons (possibly for only one).

33. Although critical, acquisition of fissile material is not the only hurdle that Iraq will have to negotiate before it is able to build a deliverable nuclear weapon. In particular, the Iraqis have no background or experience in the development, testing, and production of explosive components of the kind necessary for nuclear weapons. Nor is it likely that they have much experience in developing and using applicable nuclear, metallurgical, and equation-of-state data. Iraq does have an advantage over many countries of proliferation interest in that it possesses light and medium bombers in addition to fighter aircraft.¹¹ Developing an initial crude device into a weapon deliverable by such bombers would be a much easier task than developing small, externally carried weapons for fighters. Even so, developing a deliverable nuclear weapon would require an intensive effort of two or three years. If a design program is already in existence, a weapon

¹¹ Iraq currently has Soviet TU-16 and TU-22 medium bombers and IL-28 light bombers in inventory as well as MIG-21, MIG-23, SU-20/22, and SU-7 fighters. Iraq also has Soviet Scud surface-to-surface missiles and FROG rockets. Development of nuclear warheads for the Scuds and FROGs would appear to be out of the question for the foreseeable future.

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could be available within a few months of the acquisition of the French HEU—that is, as early as 1981. This, however, would require a degree of success in design and fabrication that has not been evident in other developing countries' nuclear weapons design efforts. A more likely estimate would be that the Iraqis would require at least until 1983 or 1984 to produce a nuclear weapon, even if they pursue the unlikely path of diversion of French HEU.

Future Incentives and Constraints

34. We have no direct knowledge of how Baghdad has gone about weighing the potential costs and benefits of pursuing the nuclear weapons option. We doubt, however, that the process has been very sophisticated or that it has taken Iraq very deeply into such questions as nuclear doctrine or how nuclear weapons fit into strategic planning. Indeed, it seems likely that Iraq's top political leaders do not yet fully comprehend the power of nuclear weapons or all the potential consequences of using them. Rather, their thinking has for the most part probably run along the simpler lines suggested earlier: if Iraq is to achieve regional hegemony, it must be a nuclear power; and if Israel has nuclear weapons, Iraq must also have them.

35. Iraq is, however, just embarking on an effort that will give it a capability to develop and produce nuclear weapons, and there will be a number of crucial decision points ahead that will require more searching assessment of the relative merits of alternative courses of action. The mix of—and relative priority accorded to—the factors that will influence Iraqi judgments with respect to how far, how fast, and by what route to proceed will depend in part upon domestic and international circumstances that are subject to change. Moreover, Baghdad's estimates of the costs, risks, and benefits of various courses of action will be based on its own particular perceptions. Nonetheless, many of the broader considerations that are likely to affect the pace and parameters of Iraq's pursuit of the weapons option can be identified and weighed, and conclusions can be drawn about their likely impact.

36. *Military Considerations.* Expected military benefits will continue to be a major incentive for Iraq to develop a capability to build nuclear weapons. Although Baghdad may come to realize that a nuclear attack on Israel would be suicidal, the Iraqis probably already believe they could derive significant military advantages from the possession of nuclear weapons without actually employing them. At the least, for

example, they are likely to expect that Israel would behave more cautiously on the battlefield in the event of a renewed outbreak of large-scale conventional hostilities in the Middle East. Moreover, they may believe that if they and their allies were facing disastrous defeat in such a conflict, the attendant threat of nuclear warfare would ensure immediate and strong diplomatic intervention by the superpowers—almost inescapably to Arab advantage.

37. With respect to their other immediate and longer term security concerns, the Iraqis may also see a nuclear weapons capability as a means of deterring possible hostile moves by either Iran or Syria as well as of discouraging superpower military intervention in the Persian Gulf area—a threat that Baghdad takes seriously.

38. But even from a military point of view, the urgency of any nuclear weapons effort must to some degree be tempered by prudence. As Iraq's leaders undoubtedly are well aware, they cannot hope to realize these anticipated military benefits in full unless they both achieve and at least tacitly acknowledge a meaningful nuclear weapons capability. Under the very best of circumstances, the latter action would entail some political and military risk. At worst, premature disclosure of a nascent or rudimentary capability could invite a preemptive Israeli attack on Iraq's nuclear facilities. This possibility was underscored by the previously cited unsolved sabotage in France of nearly completed components for Iraq's long-ordered OSIRAK reactor, and it is one that the Iraqis are likely to take into serious account if they consider such shortcuts to acquiring a very limited weapons capability as the unconcealable diversion of French-supplied HEU research reactor fuel.

39. *Political and Economic Considerations.* Full realization of the nonmilitary benefits that Baghdad may hope to achieve by acquiring a nuclear weapons capability—above all, regional preeminence and a more influential role in the global arena—will also depend upon general recognition that Baghdad has in fact become a member of the nuclear club. Once again, therefore, the principal problem that will face the Iraqi Government is how to achieve that status without paying prohibitive costs (in this case, political and economic) en route.

40. As has already been noted, the funding of an ambitious nuclear program will not place an undue strain on the Iraqi economy. At present, moreover, there is no indication of significant antinuclear senti-

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ment either among the general populace or within the governmental or military establishments. There would seem, therefore, to be few domestic constraints on Iraq's nuclear ambitions. Nonetheless, the country's civilian Ba'athist leaders will at some point have to address (and seek to reduce) the potential threat to their survival that would result from introduction of nuclear weapons into an inherently unstable society that is possessed of a still not fully tamed military establishment with a long history of political intervention.

41. Far more numerous and complex concerns arise from the prospect of widespread adverse foreign reaction to an obvious Iraqi quest for nuclear weapons. First of all, the Iraqis must consider the benefits they derive at this early stage in their nuclear development from their status as an adherent of the Non-Proliferation Treaty. They know that if they seriously pursue a weapons capability, this status will eventually become untenable. It seems unlikely, however, that they will deliberately cast aside their NPT credentials (by, for example, blatantly violating International Atomic Energy Agency safeguards) as long as they feel that adherence to the treaty continues to work to their advantage—both as a cloak of respectability for their overall nuclear program and as a means of obtaining otherwise unavailable kinds of nuclear assistance.

42. These latter considerations are important in view of the extent of Iraqi dependence on foreign assistance in the nuclear field. As suggested below, Baghdad is in a relatively strong position to use bargaining and pressure tactics to secure continued cooperation on the part of its principal nuclear suppliers in the face of at least some degree of doubt and suspicion. However, the effectiveness of this leverage is likely to depend to no small extent on its success in keeping its interest in nuclear weapons shrouded in ambiguity.

43. Future nuclear assistance will not be the only factor to consider, because many other interests important to Iraq (for example, its ability to acquire sophisticated conventional weapons) could be adversely affected by indiscreet pursuit of the nuclear weapons option. This is perhaps most evident with respect to the Ba'athist regime's multifaceted and complex relationship with its traditional patron, the USSR, but it also applies to Baghdad's increasingly broad and diverse links with its Western nuclear partners and other members of the Organization for Economic Cooperation and Development (OECD).

44. Moscow's perception of the dangers of nuclear weapons proliferation coincides in many respects with US concerns. Soviet nuclear exports generally carry controls at least as stringent as those on US nuclear transfers. Since the mid-1960s, the Soviets have supported the imposition of IAEA safeguards on all nuclear activity of non-nuclear-weapon states (NNWS). Further, the Soviets have urged signature of the NPT. Finally, they have denied their Warsaw Pact allies opportunities for developing nuclear technology that could lead to an independent nuclear weapons capability, and they have required those allies to sign the NPT.

45. Nonetheless, the USSR shapes its nonproliferation policy to suit overall foreign and national security goals rather than treating it as an end in itself. In their approach to the Third World, for example, the Soviets tailor their nuclear policy to fit their relations with the individual country concerned. While they sharply criticize the nuclear programs of such threshold states as South Africa, Israel, Pakistan, and Brazil, they are willing to act as a supplier—albeit under safeguards—to Iraq, Libya, India, and Cuba. The Soviets apparently view the transfer of nuclear technology and material to friendly NNWS as a means of achieving immediate political and economic benefits while gaining some ability to prevent or delay acquisition of a nuclear weapons capability by the countries concerned.

46. It seems likely, therefore, that if the Soviets become convinced that Iraq is seriously seeking to develop a capability to build nuclear weapons, they will privately attempt to stymie this effort. The Iraqis probably expect as much, but calculate that Moscow would not press its opposition to the point of risking a rupture of relations for fear of losing an important Arab ally as well as access to gas and oil needed to fill long-term Soviet energy needs. In any event, Moscow's natural preference will be to remain in the background and to let Western nations (especially the United States) take the lead in exerting public pressure on Iraq.

47. Should Moscow come to the conclusion that the Western allies were unable to take effective action against Baghdad, it might decide to play a more active role. Even in that event, however, its options would still be limited by its broader foreign policy concerns. These would virtually preclude taking military, economic, or political steps harsh enough to exercise a decisive influence on the fiercely independent Iraqis.

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48. Baghdad will be particularly sensitive to the reactions of France and Italy to its moves in the nuclear field because it has turned to those two countries as its primary sources of the equipment and technology it will need to achieve a modest independent nuclear capability by the mid-to-late 1980s. Paris and Rome also have sold significant supplies of conventional arms to the Iraqis, who are intent on reducing their dependence on the USSR in this field.

49. The Italians maintain that their exports of nuclear equipment, material, and technology are subject to strict NPT and IAEA safeguards—and are contingent on importer guarantees not to construct nuclear explosive devices. To some degree, however, effective and uniform implementation of this policy has been impeded by fragmentation of responsibility and bureaucratic complexities.¹²

50. For its part, French nuclear export policy has undergone a marked change under President Giscard. Since coming to office in 1974, Giscard has reversed the relatively permissive positions of previous French governments with respect both to general policy and to specific projects. In the process, he has imbued the French bureaucracy with a new awareness of the dangers and responsibilities associated with exporting nuclear technology and materials. A key element in Giscard's approach was his establishment in 1976 of a presidentially chaired interministerial council to pass on foreign nuclear policy. Under his aegis, there have been two decisions to block the sale by French firms of nuclear reprocessing facilities to foreign countries: in one case to Pakistan, in the other, significantly enough, to Iraq.¹³

¹² Some Italian officials have recently demonstrated concern about the proliferation aspects of Italy's nuclear sales to Iraq and a commitment to act to restrain proliferation risks. However, the extreme weakness of the Italian Government, its imperative not to jeopardize Cabinet unity by pressing divisive issues, its tenuous link to Italian technical officials, and the lack of agreed international standards for nuclear export controls all suggest that effective Italian action restricting implementation of the deal with Iraq is not likely in the near term.

¹³ Giscard also intervened to veto the sale of a gas-cooled graphite reactor to Iraq that had been approved in 1974 by the then Prime Minister, Jacques Chirac. The reactor in question was a very efficient plutonium producer of the type used to support the French nuclear weapons program. To avoid antagonizing the Iraqis, the French offered to build them a nuclear research center—and to sell them France's most sophisticated research reactor, the OSIRIS—as compensation. This is one of the reasons that the French feel that they cannot renounce or make major changes in the OSIRAK (OSIRIS) sale agreement.

51. At present, the French and Italians apparently do not perceive any convincing evidence that Iraq is seeking to develop a nuclear weapons capability. If they should see such evidence, both countries would be faced with a painful dilemma. On the one hand, their publicly proclaimed and sincerely held concern over the dangers inherent in nuclear proliferation would virtually dictate some demonstration of displeasure with Iraq's behavior. On the other, the need to protect other important political and economic interests in Iraq as well as in the Middle East in general would argue against a forceful response.

52. The potential strength of Baghdad's bargaining position is illustrated by the following considerations:

- By 1980, about 25 percent of the oil that France consumes annually will be imported from Iraq. The corresponding figure for Italy is 17 percent. Iraq, however, is having difficulty maintaining oil output at current levels and may be seeking an excuse to slash exports to a major customer.
- The French and Italians are endeavoring to boost exports to Arab countries to offset their sharply rising oil import bills, and Iraq provides a growing market. In particular, the French arms industry expects to capture from the USSR a large share of the multibillion-dollar Iraqi arms market.¹⁴
- Iraq has \$10 billion in Eurodollar assets that can be employed as both carrot and stick. While neither France nor Italy is a major money market, a number of leading French banks are heavily dependent on Arab capital and petrodollar deposits.
- Baghdad figures importantly in France's larger efforts to reestablish its former influential position in the Middle East. Paris seems convinced that Iraq is emerging as a leading regional power, and the French may be willing to go to considerable lengths to avoid jeopardizing the niche they have carved out in that area.
- Similarly, Italian interest in maintaining good relations with Iraq may be reinforced by fear that strains in these relations could adversely affect Rome's crucially important links with Middle East oil suppliers in general.

¹⁴ In 1978, French exports to Iraq were valued at \$500 million, Italian at \$325 million.

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53. The record suggests that the Iraqis are likely to exploit their leverage actively—using both threats and blandishments—to postpone the day that Rome and Paris decide that Baghdad can no longer credibly be given the benefit of the doubt as well as to minimize the damage to Iraqi interests when that day comes. Even though Baghdad must allow for the effects of US (and possibly Soviet) efforts to stiffen French and Italian resolve, it probably views its prospects of success with respect to the first objective with some optimism—providing, as stipulated earlier, it takes no precipitous action that dispels all doubt about the military nature of its ultimate intentions in the nuclear field. The Iraqis are probably less confident, however, about their ability to control the consequences once the dual character of their nuclear program is, in fact, irretrievably exposed. It is at least possible that France and Italy will feel compelled to suspend most if not all forms of collaboration in the nuclear field. In that event, it would be unlikely that either other Western suppliers or the USSR will be willing to step in to fill the gap. At the same time, the degree to which Iraq may be able to prevent adverse foreign reactions to its nuclear plans from damaging its interests in other fields is clearly likely to depend on circumstances that will, to some extent at least, be beyond its control. Thus the Iraqis will have sound reason to seek to avoid bringing matters to a head for several years—that is, not until they have laid considerably sounder foundations for the achievement of the current nuclear and foreign policy goals.

54. A sober appraisal of the extent of the assistance that the Iraqis could reasonably expect to receive for their nuclear program from experienced developing countries would tend to reinforce the arguments for postponing the day of reckoning.¹³ Few of these countries could make more than a marginal contribution to the Iraqi program, and for various reasons most of those that could contribute more would probably prove unwilling to do so—particularly once Baghdad's intent to develop a capability to build nuclear weapons was clearly established. Although the Iraqis will be able to offer economic incentives and, in the case of Pakistan, at least, play upon both Muslim bonds and

¹³ Nuclear assistance from secondary suppliers could be supplemented to some extent by clandestine purchases of technology and material from nonofficial sources—an approach in keeping with the Baghdad tradition of conspiracy and intrigue. Iraqi intelligence operatives have, in fact, shown interest in acquiring unguarded uranium

professed common enmity toward Israel, the extent of the cooperation they secure is likely to be limited by such broad inhibiting factors as:

- General reluctance to share militarily sensitive or commercially valuable nuclear technology for fear of long-term damage to national interests.
- More specific aversion (reinforced by considerations of likely adverse international repercussions) to deliberately helping another state to acquire a nuclear weapons capability. (Even those states bent on acquiring such a capability for themselves have good cause to wish to discourage wider proliferation.)
- Unwillingness to part with scarce resources (for example, nuclear materials, specialized equipment, and skilled personnel) needed to fulfill national nuclear goals.

55. In any event, Iraqi efforts to date to tap secondary sources of nuclear assistance appear to have yielded scant returns. Baghdad's experience with India—which is the Third World's most sophisticated nation in terms of nuclear technology and is a potential source of both reprocessing and nuclear explosive technology—provides a notable case in point. The two countries signed a bilateral nuclear cooperation agreement in March 1974, but the benefits that have flowed therefrom for Baghdad have been severely limited by New Delhi's longstanding and rigid policy of not transferring sensitive nuclear technology to other countries. This prohibition has, in fact, been applied with particular stringency to Iraq and other Arab states for fear that Pakistan might become the ultimate beneficiary.

56. At present, Indian nuclear cooperation with Iraq appears to be restricted to an exchange of scientists and the provision of opportunities for training at the Bhabha Atomic Research Center (BARC) near Bombay. Of the 13 foreign scientists who received training at BARC in 1977, four were Iraqis who were given courses in low-temperature physics, uranium analysis, reactor physics, and neutron defraction. A fifth Iraqi who sought training in heavy-water separation was told that his proposed program would not be "feasible" because of labor problems at the heavy-water plant where he wished to study.

57. In the event that the Indians became convinced that Iraq was actively seeking to develop a nuclear

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weapons capability, New Delhi would almost certainly suspend or sharply curtail its already limited nuclear cooperation with Baghdad.

58. The Israelis charge that Iraq has been more successful in persuading Pakistan to collaborate on nuclear matters, but this is open to question. At present, we have no hard evidence that such cooperation has ever been seriously considered by Islamabad. It should be noted, however, that Pakistan is currently providing limited military training to Iraqis, both on its own soil and in Iraq. Plans have been made for a joint ministerial commission. Trade between the two countries has grown significantly over the past few years. Thus there would at least seem to be ample precedent for new cooperative ventures.

59. Even if Iraq were to offer much-needed petroleum and financial assistance as inducements, however, Pakistan's willingness to share the fruits of its nuclear program is likely to be constrained by a number of considerations. Islamabad must, for example, consider the sensitivities of its principal oil-rich Muslim patrons, Saudi Arabia and Iran—countries that view Iraq with considerable mistrust. Overall relations between the conservative Pakistani and radical Iraqi regimes have never been close—indeed, Islamabad believes that Baghdad favors India in South Asian politics. Pakistan has few human or material resources in the nuclear field that it can spare without seriously disrupting its own plans. Islamabad would also have to weigh the risk of further damage to its relations with the United States, particularly if it were to continue to extend assistance to Iraq after the latter's intention to develop a capability to build nuclear weapons had been clearly documented.

60. The chances that Pakistan will be willing or able to furnish the type of assistance needed to advance the Iraqi nuclear program very significantly thus seem relatively slim. However, Islamabad is likely to be reluctant to reject an Iraqi request for help altogether. It might, therefore, agree to essentially covert collaboration in limited areas that do not prejudice its own nuclear program or other national interests.

61. Just how thoroughly the Iraqis have canvassed the rest of the field so far is not known. Baghdad has, however, approached both Brazil and Turkey in recent months with proposals for nuclear cooperation. Although neither of these countries is immune from

Iraqi economic inducements or pressures, their ability to aid Iraq will be quite limited for some time to come. The Brazilians have fended off Iraqi entreaties for a close working relationship. However, they have agreed to provide Baghdad with a modest quantity of unenriched uranium and have held out the possibility of limited technical assistance at some future date. The Turks have yet to make a clear response, but they are presumably uneasy over Iraq's nuclear ambitions.

62. Turkey's dilemma draws attention to another problem that will have to be weighed in Baghdad's calculations, that of the likely reactions of its immediate neighbors to its nuclear weapons ambitions. For their part, the Turks would feel threatened if Iraq acquired a nuclear weapons capability. Ankara's response, however, would probably be limited for both political and economic reasons to seeking specific NATO guarantees to counter the Iraqi threat.

63. Baghdad can be less confident that its pursuit of nuclear weapons production capability will not spark emulation elsewhere in the Middle East. Its professions of dedication to the principles of Muslim collaboration and solidarity are generally discounted by its coreligionist neighbors, most of whom would be likely to view an Iraqi nuclear bomb as less relevant to their overall cause within the context of the Arab-Israeli dispute than to Iraq's own regional ambitions. In any event, Baghdad's nuclear program has reportedly already stirred Syrian interest in mounting a similar effort, and, if pressed aggressively, Iraq's quest for weapons-applicable facilities and technology could bring about a revival of Iran's nuclear ambitions.

64. The actual or impending acquisition of nuclear weapons by a country with Iraq's intemperate credentials would be particularly upsetting to the Saudis and other Persian Gulf Arabs. The Saudis have long regarded Iraq as a major rival for influence in the Arab world and especially in the Gulf, but they are well aware they cannot match Iraqi military might and have traditionally sought to accommodate their radical neighbors. Riyadh would probably feel compelled to adjust its relations more closely to Baghdad to avoid offending the Iraqis.

65. Finally, there is Israel to consider. The risk that hasty or otherwise incautious action could provoke a preemptive attack from that quarter has already been cited. While the threshold of Israeli tolerance is unclear, the Iraqis almost certainly recognize that the

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danger of both covert and overt physical intervention is very real.

Conclusions and Implications

66. We have no hard evidence that Iraq has as yet decided to acquire nuclear weapons. Nonetheless, Iraq's security concerns, regional ambitions, assertions of intent to match Israeli nuclear capabilities, and demonstrated interest in technologies and materials that would be needed to develop an autonomous nuclear weapons potential provide strong reason to believe that Baghdad has at least decided to put itself in a position to produce nuclear weapons if it eventually desires to do so by developing a relatively self-sufficient nuclear industrial base.

67. This conclusion is consistent with what we know of the overall policy environment in Iraq. Baghdad's political and military motives for pursuing such a course are strong. The highly centralized, authoritarian Ba'thist political system insulates the Iraqi leaders against public pressures and facilitates maintenance of the necessary degree of secrecy.

68. While the Iraqis obviously believe that the level of political and military risk associated with their current pattern of activity in the nuclear field is acceptable, they have exhibited, as noted earlier, a greater degree of pragmatism and flexibility in their foreign policy behavior over the past several years that suggests that they are not in any particular hurry to achieve their more ambitious objectives. Moreover, Iraq's top leaders are probably already well aware that overaggressive pursuit of the nuclear weapons option could be highly counterproductive in terms of its effects on other and more pressing national interests. They are thus likely to favor a covert and relatively measured nuclear weapons research and development effort which, if ultimately called upon to do so, could reasonably be expected to produce several deliverable warheads before it was uncovered.

69. The wide-ranging nature of Iraq's quest for nuclear technology suggests that Baghdad does not yet have a fixed plan for achieving this goal. High-profile shortcuts involving diversion of French HEU or fuel substitution in safeguarded reactors would, however, seem to be ruled out as anything more than last resort measures.

70. Barring some unforeseen change in the Middle East military or political environment that brought about a marked shift in Baghdad's current policies,

priorities, and perceptions of risk, we believe that it is unlikely that Iraq will attempt to build nuclear weapons before the late 1980s.¹⁴ In the interim, however, the Iraqis can be expected to persist in trying to acquire all the necessary skills, facilities, and fissile material under the cover of their peaceful nuclear program.

71. If Baghdad follows this course of action, it will probably be successful in deterring any serious supplier pressures (both Western and Soviet) over the next several years. The dual character of Iraq's nuclear program is, however, likely to become less and less ambiguous as the country approaches a capability to build nuclear weapons. The Israelis, moreover, are likely to raise more urgent alarms as soon as they can make a plausible case—both to mobilize international pressure against Iraq and to justify, in advance, any direct action they may decide to take.

72. Although the present limits of Israeli tolerance are unknown, it seems reasonable to assume that they will be disinclined to risk taking any really drastic action unless they are convinced that Iraq is on the verge of acquiring one or two deliverable nuclear weapons. Hence, even though early Iraqi diversion of the initial supplies of French HEU would bring the Israelis to high state of alert, it might not trigger an immediate preemptive response, because Tel Aviv could count on some delay before Baghdad would be able to construct usable nuclear weapons from the material.

73. At the same time, however, Israeli perceptions and options will be affected by future changes in the regional and global politico-military environment. In consequence, if the Iraqis simply manage to avoid provoking Israel or the West for four or five years, time might work to their advantage. By then, they may no longer be so dependent on foreign nuclear assistance, and the Israelis might find preemptive intervention politically and militarily more difficult.

74. Although we cannot forecast with any degree of confidence just how the Iraqis would behave if they actually acquired nuclear weapons during the coming decade, we doubt that there would be major changes in their overall foreign policy objectives. Baghdad is virtually certain to remain strongly anti-Israeli. It is also likely to be at odds with a number of Arab

¹⁴ Although, as previously indicated, unlikely, another development that might prompt Baghdad to accelerate its nuclear weapons timetable would be covert acquisition of a substantial quantity of foreign-produced fissile material.

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governments and to experience recurrent periods of tension in its relations with Iran. Even if Iraq acquired nuclear weapons within the next few years, they would not help to isolate Egyptian President Sadat or bring Ba'athists to power elsewhere in the Arab world. Nor would they end foreign exploitation of tribal or sectarian unrest that is endemic to Iraq. On the other hand, the Arab-Israeli dispute would probably be significantly affected.

75. Policymakers on both sides of that feud would have to rethink their military plans and strategy. However, Iraq's acquisition of nuclear weapons would not necessarily establish a stable balance of terror in the Middle East, where incidents that could trigger hostilities are common and few leaders have much understanding of the consequences of using nuclear weapons.

76. The implications for US policies and interests of the judgments advanced thus far underscore the weaknesses of the existing international nonproliferation regime. In view of the leverage that Iraq can bring to bear on its principal nuclear suppliers, the chances of broad and timely cooperation in denying Baghdad further weapons-applicable materials, technology, and

equipment range from poor to fair, depending on the nature of the item or knowledge concerned. The application by the United States of heavy pressure to secure such cooperation, whether or not it was obliged by law to do so, would probably create considerable friction in its relations with a number of its principal OECD and NATO partners—particularly with France and Italy.

77. Since vigorous technology denial efforts could be quite costly but still inadequate to keep Iraq from acquiring nuclear weapons by the late 1980s if it wishes to do so, there will be a clear need for parallel efforts aimed at indirectly influencing the security concerns, national goals, and foreign policy objectives that promise to be the primary determinants of both (1) the degree of urgency that the Iraqis attach to their nuclear weapons ambitions, and (2) their behavior if and when they cross the weapons threshold. Progress toward a broadly accepted peace settlement in the Middle East will be particularly important in this connection, because, if the Iraqis acquire a nuclear weapons capability before such a settlement is achieved, the destabilizing effects of their accomplishment will be greatly—and perhaps disastrously—magnified.

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ANNEX

THE IRAQI ATOMIC ENERGY COMMISSION

1. Iraq's nuclear policies are set by President Saddam Husayn in his capacity as Chairman of the Iraqi Atomic Energy Commission, but the day-to-day activities of the IAEC are managed by the Deputy Chairman, Dr. 'Abd al-Razzaq Hashimi. The IAEC has four components:

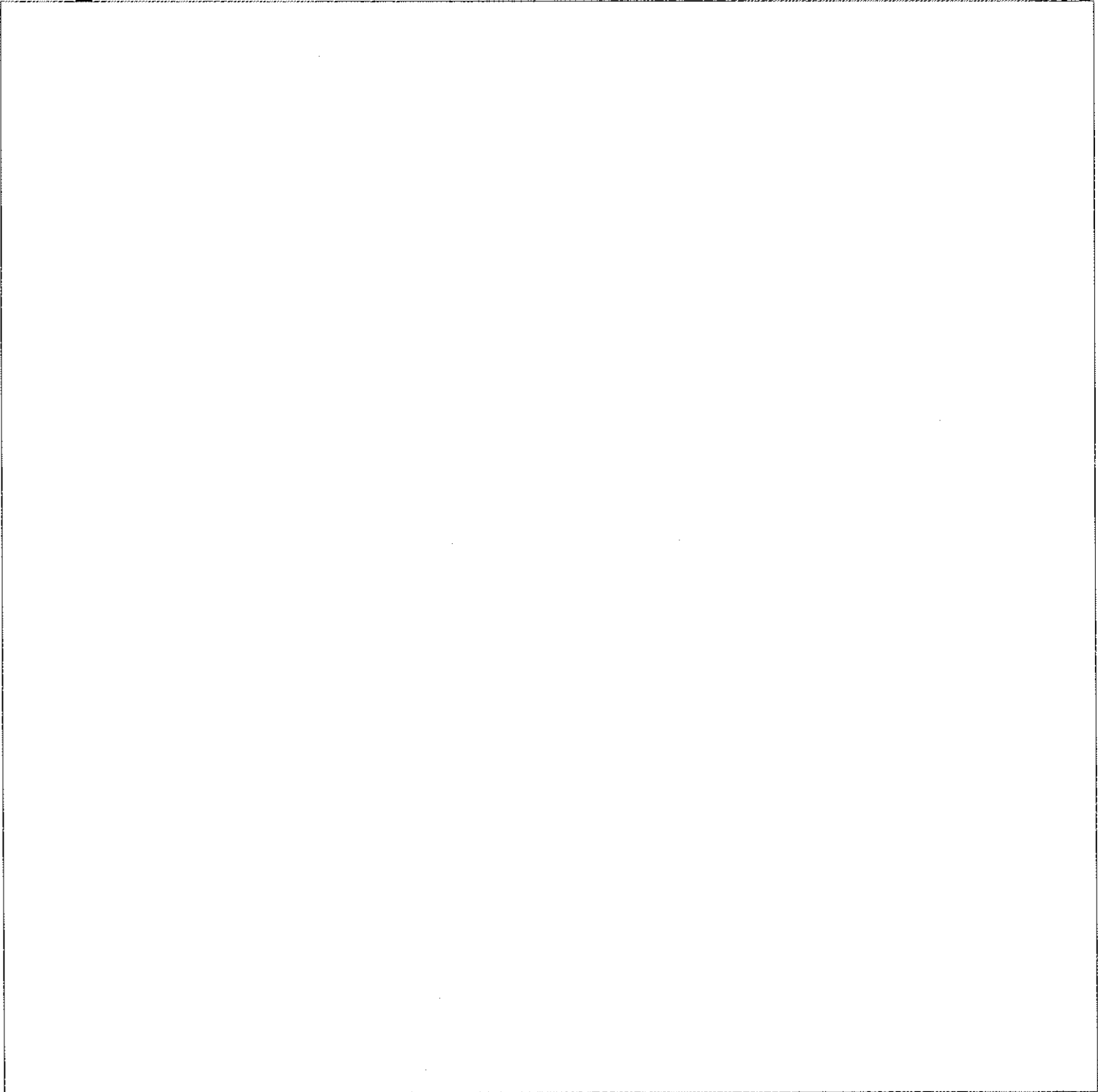
- The Office of Policies and Programs is responsible for coordinating the research goals of the IAEC with foreign institutes. It also maintains contact with the International Atomic Energy Agency.
- The Office for Education and Training is in charge of planning and organizing education courses and lectures for IAEC personnel.
- The Office for Administration is responsible for security and all administrative affairs.
- The Office for Projects, the largest and most important IAEC component, is responsible for the construction of all new buildings for nuclear projects, including nuclear research and power reactor projects. It is also responsible for the review of construction bids and cost estimates of nuclear projects.

2. Beyond these generalities we know very little about the operations of the IAEC or its subordinate research center (see photograph and map). However, it has been reported that Dr. Ja'far Ja'far, Iraq's best trained nuclear physicist, has engaged in weapons-related research (possibly no more than feasibility studies), and that he had been authorized to establish a staff of nuclear engineers to assist him in this effort.¹

3. The amount of funding for IAEC is unknown, but it may be financed through the Trade Regulation Council in the Ministry of Industry and Minerals. The extent of military involvement in the nuclear program is unclear, but it has been reported that the Minister of Defense has a representative in the IAEC, currently believed to be Hunan 'Abd al-Khalig 'Abd al-Ghafur.² This might explain why it was Defense Minister Talfah who, after visiting Paris, announced that the French had pledged prompt replacement of the damaged OSIRAK reactor components.

¹ Dr. Ja'far heads the Tuwalitha Nuclear Research Center's Department of Nuclear Physics. His background includes several years of experience working in the French nuclear establishment.





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