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DEPARTMENT OF STATE
WASHINGTON

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It seems to me well balanced

June 2, 1965

Dear Steve:

The advent of the Monthly Alert List reminded me that you might be interested in the enclosed RM on Dimona, which Les Brown (whom you met in my office when you were briefly here) prepared.

You will notice the restrictive classifications and that it is highly speculative. Thoughts like these, however tentatively they must be held, lie behind some of the things that worry us constantly. I hope we are not living with Alice in Wonderland. Any personal reaction you may have would be welcome.

With warmest regards to both of you...

Sincerely yours,

Jim

James W. Spain
Director,
Office of Research and Analysis
for the Near East and South Asia

Encls: RNA Monthly Alert List for June, cy. 27
Research Memo RES-11, cy. 80

Stephen E. Palmer, Jr., Esquire,
First Secretary,
American Embassy,
Tel Aviv,
Israel

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AE 11-2 Dimona

~~CONTROLLED DISSEM~~

U.S. DEPARTMENT OF STATE

DIRECTOR OF INTELLIGENCE AND RESEARCH

Research Memorandum

RES-11, May 10, 1965

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

80

Subject: Implications of the 1965 Dimona Inspection Findings

ABSTRACT

The fourth US inspection of the Israeli reactor and associated facilities at Dimona took place in January 1965. The team's findings suggest that the Israelis are uncertain about the future of their atomic energy development. The pace at Dimona has clearly slowed, certain planned facilities have not yet been built and others have been shut down. Since Dimona is difficult to explain except in terms of a potential supplier of fissionable material for a weapons program, its current status suggests that the Israelis may have concluded that Dimona cannot in fact support a weapons program of any practical benefit to Israel in the foreseeable future. It is unlikely, however, that Israel is prepared to give up a nuclear weapons option. In examining the various alternatives open to them -- an examination that is perforce somewhat speculative -- the possibility of an Israeli-French arrangement must seriously be considered.

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Slowdown at Dimona

In January 1965 a US team inspected the Israeli reactor and associated facilities at Dimona. This was the fourth US inspection since 1961. The impression carried away by the inspectors on this visit was that there were major uncertainties regarding the future direction of atomic energy development in Israel; specifically, that the pace of the effort had slowed at Dimona, its operating and research budget was being cut, and that staff morale was bad. The planned uranium recovery plant associated with the phosphate works at Oron has not yet been started; the fuel fabrication plant at Dimona was placed on a standby condition on 1 January 1965 and is not expected to be reopened for at least a year; the metal recovery plant was also being shut down and was to be on standby by mid-March 1965. No date for resumption of operations had been set.

It is fairly clear that construction and operating plans revealed to the inspectors in 1964 have not been carried out in the intervening year. It is clear also that the Dimona staff, at least, do not expect them to be executed in the foreseeable future. What is less clear, however, is why.

The explanation provided by the Dimona staff was that the US-Israeli desalting project was causing a shift in interest to enriched fuel reactors at the expense of natural fuel reactors of the Dimona type. Furthermore, they said, the desalting project was the responsibility of the Israeli National Water Company, not the Israeli Atomic Energy Commission (IAEC).

The head of the IAEC, Bergmann, has long held that Israel should opt for natural fuel reactor desalting, in part because Israeli experience, primarily at Dimona, has been with this kind of reactor, and in part because big natural fuel reactors could provide a large unsafeguarded plutonium production capability if Israel were to start development of nuclear weapons. His reaction to the current US-Israeli examination of the desalinization project, which is predicated on the use of a US enriched fuel reactor, has not been enthusiastic and he has made no secret of his feelings in private conversations with US officials. The inspection team was told, in fact, that Bergmann had tendered his resignation (which was not accepted) over the desalting issue and particularly over the virtual exclusion of the IAEC from the project.

The official explanation for the slowdown has a certain plausibility and is reinforced somewhat by other considerations. The US Science Attaché in Tel Aviv noted in a recent report on Dimona that if one leaves the possible military factors aside, Dimona must be considered a "colossal blunder." It

be affected by any conceivable US-Israeli desalting agreement, hence the stand-down of Dimona must also be examined for its effect on future Israeli military requirements.

High Israeli officials have consistently stated the position that Israel was not engaged in a nuclear weapons program and that Dimona itself is covered by a peaceful-uses-only agreement with the French. On the other hand, these same officials have also consistently reiterated that Israel can make no binding future commitment on the subject of advanced weapons and that their actions would be dictated by developments in the area, specifically in the UAR.

The attractions of cutting back at Dimona are in basic conflict with the potential demands of national security -- demands it should be noted, which must be anticipated well in advance since the plutonium production capability of the Dimona reactor is quite small. If the Israelis were to decide now to begin a weapons program, they could probably produce at best no more than enough material for two weapons per year. This fact puts a high premium on starting plutonium production as early as possible and maintaining it at the highest feasible rate. The irradiation of fuel rods to produce plutonium and their subsequent "cooling" take by far the largest proportion of time in the plutonium production cycle, and there is no way for a given reactor to speed this process. For Dimona, irradiation and cooling would take about 9 months per reactor core and would result in about 4 kg of plutonium. It is unnecessary, however, to process the irradiated rods to extract the plutonium until there is an actual requirement for plutonium metal. The fuel rods can be stored indefinitely and an entire core of irradiated fuel can be processed in a few weeks. The fact, therefore, that there is now no plutonium extraction facility in Israel need not prevent the Israelis from starting the irradiation phase of the plutonium production cycle at any time.

The Israelis have the facilities for fabricating new cores. They have also obtained from Argentina enough unsafeguarded uranium for about 10 core loadings and are apparently attempting to obtain an equal amount from Gabon. Since the original 100-ton uranium oxide purchase from Argentina is far in excess of that needed to operate the reactor for research purposes (100 tons would last about 20 years), one is forced to assume that at least some preparation for plutonium production has taken place. The original French-supplied core, however, is apparently still in the reactor, which went critical over a year ago, and the facility for fabricating new cores has been shut down. It does not appear, therefore, that the Israelis are attempting to maximize plutonium production at the present time.

What then are the Israelis up to? It has been suggested by the Science Attaché in Tel Aviv that there may be an element of bluff in the whole Dimona project. By its very existence it keeps alive the potential threat of an Israeli weapons program and may force somewhat more cautious and circumspect behavior on the part of the Arabs, particularly since in a nuclear race the Arabs would find themselves hopelessly outdistanced even by the quite modest effort the Israelis could now mount.

There is clearly a limit, however, to how much money the Israelis would be willing to spend to maintain the bluff, and Dimona exceeds by a great deal what might be considered a reasonable investment for such a purpose. As was noted above, the Dimona investment also appears extraordinarily high to be justified solely in terms of research. This fact -- indeed the entire secret construction history of Dimona, its high security, and the covert French involvement -- supports a judgement that a military purpose was envisaged for Dimona. There is nothing in the current political atmosphere in the Middle East to suggest that the Israelis feel they are any less threatened now than they were in the late fifties when Dimona was conceived. Yet virtually all qualified observers agree that Dimona is not now being used to support a weapons program. Furthermore, except for the purchase of a quantity of uranium oxide, very little has been done to prepare Dimona for this role if a decision on a weapons program were later made.

The Israeli Dilemma

Of the various possible explanations for this state of affairs one, at least, merits close examination -- that the Israelis recognize that Dimona cannot, in fact, support a weapons program of any practical benefit and that some solution to Israel's security problem other than native weapon development will have to be found.

As was noted earlier, Dimona, at best, can produce only very small quantities of plutonium. By early 1966 it could produce only enough material for one or possibly two devices, with a maximum potential of perhaps two per year thereafter. This would be barely enough to support a test program; in fact, it would be enough only to allow perhaps two or three tests over the next few years and the stockpiling of two or three large and heavy devices. The Israel Defense Forces, however, possess no medium or heavy bombers. Their current aircraft can carry nothing larger than a 2,000-lb 30-inch diameter device, unless one were to include external carriage by the commercial jet aircraft of the Israeli national airline, El Al. If an effort were made to develop a weapon that could be

carried by a Vautour light jet bomber or a fighter, the entire plutonium output of Dimona over two or three years would be required for the test program alone, leaving no fissionable material for a stockpile of the weapons themselves.

Missile delivery would raise even more difficult problems of weapon development because of very stringent limits on weight and diameter. The Israelis have ordered from France a missile, designated the MD-620, which appears designed for a nuclear warhead of perhaps 1500 lbs and 30 inches diameter. Without outside assistance it would probably take the Israelis at least five years, and probably more, to produce a compatible warhead; in other words, it probably would take several years after the missile itself was ready for deployment. Again, the problem of obtaining fissionable material for the test program and for a few warheads would intrude itself in a very acute way.

Equally serious, from an Israelis' point of view, would be their inability to conduct clandestine tests. With a requirement for several tests to develop a deliverable weapon and with an equally urgent requirement for a stockpile of fissionable material over and above that needed for a test program, time becomes a very critical element -- time measured not in months, but in years. The first test the Israelis conducted would not be a demonstration of deterrent power but a flagrant provocation, an invitation to both their enemies and their allies to take swift and possibly violent action. The risk would be particularly high if the Israelis were to undertake a native program because they felt that they were unable to cope with the Arab threat by conventional means. If the conventional threat had reached such proportions that the Israelis felt compelled to build and test a nuclear device, the threat might well be adequate to destroy Israel before a weapon could be usefully deployed.

From a political standpoint, the risk would also be high. The reaction of most of Israel's present supporters, except possibly France, would be violently condemnatory, unless Israel were actually under attack or threat of it or unless the UAR had somehow acquired or was on the point of acquiring a nuclear weapon at the time of the test. Thus, having created a situation where the risks of military action were high, Israel would find itself virtually without allies.

Possibility of French Collaboration

These awkward facts have no doubt been considered by Israeli planners. It is not inconceivable that since they have been unable to resolve the

problem, further expenditure on Dimona has been suspended. This is not to say that the Israelis have necessarily resigned themselves to a non-nuclear status forever. One avenue that might be open to them, for example, would be third-party assistance -- in this case from France. For a militarily useful native program Israel would have to obtain fissionable materials, design data, and probably testing facilities. A better alternative would be an arrangement providing for acquisition of complete weapons, since Israeli requirements are limited basically to a very small number of missile warheads of a single type, or to bombs compatible with small jet aircraft.

It must be emphasized that there is no evidence that the French are parties to such an arrangement. Nor is there anything in French official statements to suggest that they would consider it in their interest to commit themselves to any kind of a nuclear weapons agreement with the Israelis. Quite the contrary, we have long held that it would not be in their interest to do so, and there is considerable evidence that the French Foreign Office, at least, shares US concern over the possibility of Israeli acquisition of nuclear weapons. These officials continue to state unequivocally that France has no intention of assisting any other country in achieving a nuclear weapons capability, although they doubt the practicality or even the possibility of an airtight safeguard system and prefer a flexible approach tailored to the nature of the project and to their judgement of the intentions, capabilities, and trustworthiness of the recipient country. In this respect, they seem to be reflecting the views of President de Gaulle (with whom the decisions after all would rest) that proliferation is inevitable.

French performance in the case of Israel, suggests a somewhat relaxed attitude. In the first place, the French built Dimona. Whatever its limitations as a producer of fissionable material, it has some capability. Safeguards are virtually non-existent and apply, so far as we can determine, only to the first French-supplied core; when it is removed and returned to France, French safeguard responsibility will cease.

Equally inexplicable, from a non-proliferation point of view, is the French-Israeli agreement on the MD-620 missile. Little is known about the origin of this agreement, particularly whether the development cost is being shared by the two countries in the expectation that both will ultimately purchase it for their armed services, or whether it is a missile built strictly to Israeli specifications. If it is the former, the fact that it appears to be designed to take a nuclear as well as a

high-explosive warhead can be satisfactorily explained by the planned French use of it. If it is the latter, however, its dual capability becomes more sinister; since native development by the Israelis of a compatible nuclear warhead would be a long and difficult task, an MD-620 missile built to Israeli specifications raises most acutely the problem of a possible French-Israeli arrangement on nuclear warheads.

It is not inconceivable that the French might consider an arrangement whereby French nuclear warheads for the MD-620 would be supplied in the event that any Arab country obtained nuclear weapons. Such an agreement would not be out of line with past French Near Eastern policy, would not be inconsistent with their public proliferation posture, and would run virtually no risk of upsetting the military balance in the Middle East and in fact, could be justified as a move to maintain this balance.

From the Israeli standpoint, a contingency agreement of this sort would appear to be equally advantageous at least for the foreseeable future. It would insure them against the worst eventuality, i.e., Arab acquisition of nuclear weapons, while avoiding the very high political, and military risks of a native program. It would not, of course, affect the conventional arms balance, but we do not believe that the Israelis would be obliged to meet the problem of rectifying a future imbalance of Arab-Israeli conventional arms by introducing nuclear weapons, because it is US and probably French policy to see that this balance is maintained. If the Israelis felt that an unfavorable balance was developing because the manpower advantage of the Arabs had become a significant military factor, we believe the Israelis would first press the US for a security guarantee before committing itself to a nuclear weapons program.

Whether a French-Israeli nuclear weapons agreement exists or has even been considered, we cannot say. The current aspect of the Israeli nuclear program, however, particularly the slowdown at Dimona, the deep French involvement in the Israeli missile and nuclear programs and the ambivalent French position on safeguards and proliferation all suggest this possibility.

Read related article:

Duplicity, Deception, and Self-Deception: Israel, the United States, and the Dimona Inspections, 1964-65

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