

# THE IAEA IN IRAQ

## PAST ACTIVITIES AND FINDINGS

BY GARRY B. DILLON

The report of the IAEA Director General to the Security Council on 8 October 1997, (S/1997/779) provides a comprehensive summary of the IAEA activities and findings regarding the investigation, destruction, removal, and rendering harmless of significant components of Iraq's clandestine nuclear weapons programme. In this report the IAEA concluded, *inter alia*, that its mandated activities had resulted in a coherent picture of Iraq's programme; that there were no indications of Iraq having achieved its program goal of producing a nuclear weapon; nor were there any indications that there remained in Iraq any physical capability for the production of amounts of weapons-usable nuclear material of any practical significance.

These conclusions were recorded in conjunction with the recognition that some uncertainty is inevitable in any countrywide technical verification process that seeks to ensure the absence of readily concealable items or activities. At the time of reporting, it was the IAEA view that the few remaining uncertainties did not detract from its ability to implement effectively its plan for the ongoing monitoring and verification (OMV) of Iraq's compliance with its undertaking not to acquire or develop nuclear weapons or weapons-usable nuclear materials or their related activities and facilities. It was

also the IAEA view that the investigation of the remaining uncertainties, or any other matter that may come to light, was provided for and could be accomplished within the scope of the OMV plan. Nothing arose to change these views from October 1997 to December 1998.

**Activities of the IAEA Iraq Action Team.** The first IAEA inspection in response to its mandate under UN Security Council Resolution 687 commenced in Iraq on May 15, 1991. As of October 1997, the IAEA had completed a series of 30 inspection campaigns in Iraq involving some 500 site inspections and utilizing more than 5000 person-days of inspector resources. During those campaigns the IAEA supervised the destruction of more than 50,000 square meters of factory floor space of nuclear programme facilities, some 2000 weapons-related items, and more than 600 metric tons of special alloys. The IAEA also arranged for and supervised the removal from Iraq of all weapon-usable nuclear material -- essentially highly enriched uranium (HEU) research reactor fuel -- and accounted for

and placed under its control, all other known nuclear materials -- some 500 tons of natural uranium in various chemical compounds and some 1.8 tons of low enriched (2.6 %) uranium dioxide. In addition to these activities, the IAEA began phasing in its OMV activities in November 1992 and commenced its continuous presence in Iraq through the establishment of the IAEA Nuclear Monitoring Group in August 1994.

The results of the inspections and discussions with Iraqi counterparts showed that by January 1991, through its Tuwaitha-based Atomic Energy Commission and later through the Nuclear Weapons Project (coded Petrochemical 3, or PC-3), Iraq

- had procured and domestically produced substantial amounts of natural uranium compounds at Al Qaim and had built and commissioned plants at Al Jesira to convert such compounds to supply materials for production-scale enrichment processes;

- had investigated several processes for the enrichment of uranium, including diffusion, electromagnetic isotope separa-

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*Mr. Dillon was the Leader of the IAEA Iraq Action Team from June 1997 to November 1999. He served as Deputy Leader (Operations) from January 1994 to June 1997 and was previously a Section Head in the Department of Safeguards. This article first appeared in the report -- "Iraq: A New Approach" -- published by the Carnegie Endowment for International Peace in Washington, DC. The report is accessible on the CEIP web site at [www.ceip.org](http://www.ceip.org).*

tion (EMIS) and centrifuge, as well as laboratory-scale work on laser isotopic separation (LIS) and chemical and ion exchange separation processes;

- had built and was in the process of commissioning a 15kg HEU/EMIS plant at Al Tarmiya and was building a similar plant at Al Sharqat;

- had, with significant foreign assistance, developed and successfully tested a workable single-cylinder centrifuge and was building a centrifuge machine production facility at Al Furat;

- had produced more than one ton of natural uranium metal and was further developing purification, casting, and machining technologies;

- was equipping and commissioning a major facility at Al Atheer for the production of HEU- "fueled" nuclear weapons;

- had, in conjunction with Al Atheer, carried out a semi-empirical programme at Al Qa Qaa for the production of explosive lenses and was soon to "cast" the first full-scale explosive package;

- had, in the second half of 1990, embarked upon a "crash programme" to extract the HEU material from the research reactor fuel to produce a single nuclear weapon;

- had irradiated in the Tuwaitha IRT-5000 research reactor domestically produced natural uranium targets and separated gram quantities of plutonium; and

- had undertaken three field experiments with radiation weapons containing radioactive materials produced by irradiating zirconium dioxide (actually its hafnium impurity) in the IRT research reactor.

Although Iraq had been close to the threshold of success in

such areas as the production of HEU through the EMIS process, the production and pilot-scale cascading of single cylinder centrifuge machines,\* and the fabrication of the explosive package for a nuclear weapon, by December 1998 the IAEA was satisfied that there were no indications of Iraq having:

- produced a nuclear weapon;

- produced more than a few grams of weapon-usable nuclear material (HEU or separated plutonium) through its indigenous processes;

- otherwise acquired weapons-usable nuclear material; or

- retained any physical capability for the production of amounts of weapons-usable nuclear material of any practical significance.

Furthermore, all of the safeguarded research reactor fuel, including the HEU fuel that Iraq had planned to divert to its crash programme, had been verified and fully accounted for by the IAEA and removed from Iraq.

**Iraq's Co-operation.** Co-operation is very difficult to measure. An inspection authority is likely to be afforded co-operation until it requires information or access that the inspected party does not wish to provide. Unless the authority requires such information or access, it may conclude that it has received the ill-described "full co-operation," although it may, from its own perspective, have asked all the wrong questions and visited all the wrong locations. It must also be recog-

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\* *Iraq's capabilities with respect to machine manufacture and particularly cascading are prudently overstated.*

nized that the manner in which the inspection authority asks for information or access can greatly affect the response of the inspected party. Iraq's co-operation with the IAEA has been variable, starting at a low level with Iraq's initial complete denial of its clandestine nuclear programme, soon dipping lower with the denial of access to a military site where EMIS components were being concealed, and reaching its nadir during the two "standoffs" occurring in inspection number six (September 22-30, 1991).\*\*

It is distinctly feasible that the improvements in co-operation, which gradually followed these confrontations, resulted from Iraq's realization that it was impossible to continue to deny that its clandestine programme was not specifically dedicated to nuclear weapons production. Iraq's cooperation was tested on many occasions with the IAEA's introduction of "capable site" inspections that involved visits to locations with no known association with Iraq's nuclear programme but that the IAEA judged to have capabilities to support prohibited nuclear activities. Apart from a few politically motivated grumbles, Iraq provided the necessary co-operation to facilitate these inspections, which by

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\*\* *Following the IAEA team's discovery of a cache of technical documents at the Al Niqabat Centre, the team was detained for five hours, after which the Iraqi counterpart removed, sanitized, and later returned the documents. The next day the Iraqi counterpart prevented the IAEA team from leaving the Al Khyrat complex with a second cache of documents, a standoff that lasted 96 hours.*

## POSTSCRIPT BY GARRY DILLON



This summary paper was first published in August 2002 along with papers of similar scope describing other aspects of Iraq's WMD programmes. Despite its inclusion in a compendium introducing the concept of "coercive inspections", the author made it clear to the publisher – the Carnegie Foundation for International Peace (CEIP) - that he did not support that concept which he considered to have the potential to result in a serious hazard to inspectors in the field.

Since that time the UN Security Council has adopted resolution 1441 – not dissimilar in scope and objective to that contained in the author's paper to the CEIP workshop on Iraq in July 1991 – and inspectors have already resumed their activities in Iraq. Resolution 1441 contains little new but is extremely helpful in bringing to prominence and elaborating the extensive rights of the inspection authorities already embodied in their respective plans for on-goings monitoring and verification. What is new is the inspectorates' right to transport Iraqi nationals and their family members outside Iraq in order to conduct unencumbered interviews. This new right seems to have been viewed with circumspection within the inspectorates and rightly so. Its implementation is fraught with difficulty. For example, if the Iraqi regime is true to the media model then it must be assumed that valued family members of critical interviewees have already been at least identified by the regime if, that is, they are not already "enjoying the hospitality of the State". Again, would the apparent refusal of family members,



young and old, to accompany the interviewee be deemed to be non-co-operation? Does 1441 really give the inspectorates the right of extradition or does it mean that those interviewees willing to leave, along with their families, and released without serious objections by the Iraqi regime, are likely to have little to

contribute to current knowledge?

Despite the above reservation, resolution 1441 provides a firm basis for the inspectorates to do their jobs and thus be able to provide to the Security Council substantial findings from which the Council may determine whether Iraq is in compliance with its disarmament obligations. As the informed reader will know, these findings will not be arrived at overnight, nor even in sixty days, but with Iraq's active co-operation could be honed to a level of meaningful credibility within a period of one year.

A satisfactory outcome for Iraq remains, as ever, in the hands of the Iraqi regime.

*Photo: Top left, Iraqi Declaration; Top right, IAEA/UNMOVIC headquarters in Baghdad; Bottom right, Sign outside inspector offices in Baghdad. (Credit: Mark Gwozdecky/IAEA)*

December 1998 had involved more than 60 sites. It is fair to summarize Iraqi co-operation as being essentially adequate from late 1991 until difficulties re-emerged in August 1998 with Iraq's refusal to co-operate with UNSCOM and eventually the IAEA. It is also fair to say that Iraq's motivation to co-operate was destroyed by the statement that, regardless of Iraq's compliance, the embargo and the sanctions would not be lifted as long as President Saddam Hussein remained in power. Fortunately, as it would be regarded in some quarters, Iraq could be relied upon to make yet another public relations blunder and emerge as the "villain of the piece."

**Financial and Personnel Resources.** Like most such ventures, the UNSCOM-IAEA activities in Iraq received a surfeit of moral support and, after Iraq's "unfrozen assets" were exhausted, woefully inadequate financial resources. The IAEA Iraq Action Team was limited to a budget of no more than \$3 million per year, in addition to logistical services provided through UNSCOM. To complete its mandated activities, the Action Team drew on the inspection resources of the IAEA Department of Safeguards -- for which the department received no compensation -- and cost-free personnel resources from IAEA Member States. For the future, the costs of full operation of the IAEA's OMV plan in 1998 were estimated to be in the range \$10 to \$12 million per year, in addition to logistical services to be provided through the UN Monitoring, Verification, and Inspection Commission (UNMOVIC),



and to require some 20 person-years of human resources. On an annual basis, the task was assessed to include but not be limited to 500 site inspections, 100 key personnel interviews, 100 capable site inspections, and 200 ground-based radiation surveys, to be complemented by fixed and rotary wing aerial radiation surveys, in parallel with a wide-area monitoring plan involving vegetation, aquatic, deposition, and aerosol sampling and analysis.

It would be relatively easy to justify twice the effort, but it is far from clear that this would bring twice the assurance. For comparison, the IAEA's OMV plan translates to about 2000 person-days of inspection per year; however the total person-days of inspection expended by the IAEA Department of Safeguards in 1998 was 10,500.

Another apposite, though perhaps oversimplified, comparison assumes that the real product of the IAEA Department of Safeguards is person-days of inspection, from which simple arithmetic would yield a unit cost of approximately \$10,000. Averaging ten person-days of inspection per year to have been spent in Iraq from 1980 to 1990 results in an

undoubtedly overstated total "investment" of \$1,000,000 over the decade. During that same period, Iraq is variously estimated to have spent up to \$5,000,000,000! These are scarcely the statistics of an even playing field.

**Conclusion.** Technical inspection authorities that are comprehensively and competently staffed, adequately funded, and supported by unwavering political support for their mandate can provide a satisfactory level of assurance of compliance.

This conclusion presupposes that the "complyee" is able to recognize some benefit from compliance. In a cease-fire context, the "carrot and stick" approach to motivation seems to be entirely appropriate. However, the carrot should represent a tangible benefit, not merely the withholding of the stick. Indeed, during 1998, Iraq repeatedly claimed that "the light at the end of the tunnel had gone out." □

*IAEA inspectors in the 1990s examine an Electro Magnetic Isotope Separation (EMIS) machine in Iraq. EMIS's are used to produce highly enriched uranium from natural uranium.*

*Credits: Action Team 1991-1998/IAEA*