



GC

GC(41)/INF/20  
30 September 1997

International Atomic Energy Agency

# GENERAL CONFERENCE

GENERAL Distr.  
Original: ENGLISH

---

Forty-first regular session

**DOCUMENT SUBMITTED BY  
THE PERMANENT MISSION OF IRAQ  
TO THE INTERNATIONAL ATOMIC ENERGY AGENCY**

The attached document is being made available to Member States for their information at the request of the Permanent Mission of Iraq to the International Atomic Energy Agency.



**Republic of Iraq**



Iraq's fulfillment of the obligations  
under section C of UNSCR 687 (1991)  
(nuclear part)

**September 24, 1997**

**National Monitoring Directorate  
Baghdad-Iraq**



## II. Introduction

1. Table 1 shows that 34 IAEA inspection teams visited Iraq during the period May 1991 until July 1997. The average number of IAEA inspectors per team was 16 and their average duration of stay in Iraq was 8 days. They carried out 573 inspections of various sites (excluding OMV inspections). The total inspection effort expended in Iraq (excluding OMV) was 5057 man.days. The Director General of the IAEA has submitted 10 reports to the UN Security Council over the same period totalling 128 pages (excluding annexes).
2. Upon the request of the IAEA on November 20, 1995, the Iraqi team (IT) submitted a draft of the "Full, Final, and Complete Declaration (FFCD)" of its former nuclear programme on March 1, 1996. After two discussion sessions with IAEA teams, the final document (FFCD-F) was submitted on September 7, 1996. Upon the request of the IAEA Action Team (AT), the IT added many further detailed clarifications as annexes to FFCD-F, the last of which was a slight amendment submitted on August 3, 1997. The activities associated with this effort are described in section II of this paper.
3. On April 6, 1991, Iraq accepted UN Security Council (UNSC) resolution 687(1991). In accordance with para 12 of this resolution, Iraq declared its nuclear materials and placed them under the exclusive control and custody of the IAEA as will be described in section III of this paper. All reactor fuel was removed from Iraq in 1991 and 1994 and the balance of nuclear materials is complete.
4. The status of facilities, equipment and materials that were part of the former Iraqi nuclear programme (INP) is presented in section IV of this paper. It is evident that most of the INP installations were either destroyed during the war, in Jan./Feb. 1991, or later by various IAEA inspection teams. Equipment and materials suffered a similar fate. Early in 1994, the IAEA completed its last task in the destruction of facilities and equipment that belonged to the former INP. These actions left Iraq without any material capability in the nuclear field.
5. The IAEA possesses a very large amount of documentation covering various aspects of the former INP as described in section V of this paper. The IAEA confiscated all technical reports relevant to the former INP leaving no copies in Iraq. This presents a continuing human problem for the personnel previously involved in the former INP, in that their previous scientific work cannot be assessed for their professional advancement.
6. Implementation of the ongoing monitoring and verification (OMV) plan pursuant to UNSCR 715(1991) is proceeding normally since 1994. The IAEA has not detected any proscribed equipment, materials or activities as summarised in section VI of this paper.
7. Iraq has fully implemented the resolution adopted on Sept. 20, 1996 during the General Conference of the IAEA (GC(40)/RES/21) as shown in section VII of this paper.
8. The IAEA Action Team (AT) that is required to judge that "Iraq has fulfilled the obligations specified in section C of UNSCR 687 (1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e. the implementation of para 22 of the same resolution" claimed on August 1, 1997 to have insufficient information on some minor subjects. The IT fully responded to the requirements of the IAEA Action Team and in a series of 27 letters listed in table 2, the last of which was on Sept. 24, 1997, presented sufficient clarifications to the AT. The assessment of these minor points is considered by the IT to be well within the capabilities of the AT, thus requiring no intervention from Member State experts, which the IAEA claimed delayed previous FFCD related assessments. Section VIII of this paper presents an updated status.

9. The report of the IAEA Action Team (GC(41)/20), issued on Sept. 9, 1997, to the forthcoming IAEA General Conference on Sept. 29, 1997 covered the period Sept. 1, 1996 up to August 31, 1997 but did not include important Iraqi team responses, on the aforementioned minor subjects, that were received by the IAEA on August 19 (2 responses), August 20, August 26, August 27 and August 31, 1997. Details of these responses are presented in sections VIII and IX of this paper.
10. Section X presents the summary and conclusions of this paper.

## **II. The "Full, Final and Complete Declaration" (FFCD):**

1. During the period May 1991 - July 1992, the Iraqi Team (IT) handed over to the IAEA Action Team (AT) a large amount of documents and technical reports describing details of the former Iraqi nuclear program (INP). In addition, the IT took the initiative and submitted a 60 page document describing major milestones of the former INP. This document was to be read in conjunction with other information possessed by or provided to the IAEA. According to information from the AT, this document was reviewed by approximately 150 IAEA Member State experts and 24 comments were received. The IT responded to these comments and issued a new version of about 100 pages that was submitted to the IAEA near the end of 1992. This document together with the information available to the IAEA was considered by the IT to be sufficient for stating in the semi-annual report of the IAEA to the UNSC in May/June 1995 that "Iraq has fulfilled the obligations specified in section C of UNSCR 687 (1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e., the implementation of para 22 of UNSCR 687 (1991)".
2. The IAEA AT, in its letter dated Nov. 20, 1995, requested the IT to prepare a stand alone FFCD document describing the former INP that could be understood without the need to refer to the large amount of supplementary documents and reports already available to the IAEA.
3. A preliminary list of contents of the proposed FFCD was handed over to the deputy AT leader (Mr. G. Dillon) early in Dec. 1995 and AT comments on the list of contents were invited. Some AT comments were received and the preliminary list of FFCD contents was modified accordingly.
4. The IT responded rapidly to the IAEA's request and submitted a draft FFCD document of six volumes comprising more than 1000 pages on March 1, 1996. The difficulties faced by the IT in preparing this document were due to the following:
  - a) The contents were mostly based on the best recollection of the personnel selected for drafting the various sections, since all relevant former INP documents were removed from Iraq by the AT.
  - b) The events that were to be written up from memory happened more than five years before.
  - c) The short period of time that was allocated for completing this task.
5. Discussions of the draft FFCD began belatedly on May 13, 1996 with the IAEA AT. As a result of these discussions a second draft was submitted on June 22, 1996.
6. The second draft was discussed with an IAEA team in the presence of the late AT leader Prof. M. Zifferero during the period June 24-27, 1996. Also the deputy AT leader at that time (Mr. G. Dillon) kindly made numerous useful editorial comments on the final draft, the last of which was received on Aug. 5, 1996.

7. The final version of the FFCD (labeled FFCD-F) of more than 1600 pages was submitted to the IAEA on Sept. 7, 1996.
8. After a torpid four months, the AT presented the IT with (42) comments on Jan. 13, 1997 plus (17) comments on Feb. 5, 1997 and then (12) comments on Feb. 12, 1997. In the opinion of the IT, the timing of these comments was such that the AT could avoid stating in its report to the UNSC at the semi-annual review of the SC scheduled for early April 1997 that "Iraq has fulfilled the obligations specified in section C of UNSCR 687 (1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e., the implementation of para 22 of UNSCR 687 (1991)" by claiming the existence of some pending matters.
9. These belated comments were responded to speedily by the IT, who submitted a full 30 page answer as an annex to FFCD-F on Feb. 26, 1997.
10. As foreseen by the IT, the IAEA in its April 8, 1997 report to the UN Secretary General (SC document S/1997/ 297) claimed that "Iraq provided a written response to the matters discussed and this response is currently under evaluation etc." . Indeed, in this way the AT evaded stating in the sixth monthly report to the UNSC that "Iraq has fulfilled the obligations specified in chapter C of UNSCR 687 (1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e., the implementation of para 22 of UNSCR 687 (1991)" at this important semi-annual opportunity.
11. The additions and revisions to the FFCD which were sent to the IAEA on Feb. 26, 1997 were reviewed by the IAEA AT, again in consultation with IAEA Member State experts, and were discussed during an IAEA technical team visit to Iraq from May 16-22, 1997.
12. Following the May discussions, the IAEA AT sent a number of comments dealing with minor aspects of the FFCD. All these matters were responded to in a series of letters during July 1997 which were further discussed during an IAEA technical team visit to Iraq from July 19-24, 1997. The comments arising from the July discussions were finally sent to the IAEA on August 3, 1997. The AT in its letter of August 6, 1997 congratulated the IT on completion of these hopefully "final" amendments.
13. In the opinion of the IT, the FFCD-F now includes the information required by the relevant SC resolutions and this document has assisted the IAEA in its activities to the point that the DG of the IAEA has made the following remark in his introductory statement to the Board of Governors on June 9, 1997: "As I have previously reported the Agency has for some time been at a point of diminishing returns with respect to furthering our knowledge of the details of Iraq's past nuclear program".
14. It is interesting to note that as the FFCD-F was about to take its "final" form then, the IAEA AT suggested on May 22, 1997 that the FFCD-F would benefit greatly from the inclusion of an additional chapter summarising practical and theoretical achievements with respect to the capabilities developed at the end of the former INP. This suggestion was repeated in a number of recent IAEA AT letters in various forms. The IT considered this suggestion carefully and concluded that its inclusion is unwarranted for the following reasons:
  - a) The practical and theoretical achievements of the former INP are described in detail in the various sections of FFCD-F and its annexes.
  - b) The capabilities developed at the end of the program (effectively Jan. 1991) are very different from those of today due to the changed circumstances. Their elucidation would misrepresent today's capabilities.

- c) The assessment of capabilities is both speculative and subjective and therefore it could not be regarded as a formal governmental document.
  - d) In view of the subjective and speculative nature of the additional information requested, new points of contention are likely to arise between the IT and AT, which must be avoided at this late juncture.
  - e) The AT has failed to provide an adequate explanation that shows in what particular way this new chapter would be helpful to anyone.
15. The IT considers the FFCD-F to be adequate "Full, Final and Complete" in form and content and fulfills Iraq's obligations with respect to this matter. Therefore, it is appropriate that the IAEA reconcile this fact and report to the SC according to paragraph 22 of UNSCR 687 (1991). The addition of a new chapter can only prolong unjustifiably the final acceptance of the FFCD. Minor details should not change the coherent picture of the former INP that has been developed by the IAEA AT. Such details can be clarified in the course of future IAEA AT inspections and investigations after reporting to the SC that Iraq has fulfilled the obligations specified in section C of UNSCR 687 (1991).

### III. Nuclear Material Balance:

1. In accordance with para 12 of UNSCR 687 (1991) Iraq declared its nuclear materials and placed them under the exclusive control and custody of the IAEA since April 1991. Iraq had 539 tons of uranium as yellow cake or refined UO<sub>2</sub> and as follows:
  - 338 tons of imported yellow cake.
  - 6 tons of imported depleted uranium.
  - 27.5 tons of imported UO<sub>2</sub>, part of this had been used within the former INP.
  - 168 tons of yellow cake that was produced locally by extraction from phosphoric acid in Akashat and, was converted to UO<sub>2</sub> at Al-Jazira site.

This nuclear material was collected from different locations in Iraq and inventoried by IAEA inspection teams. Then, after verification by the IAEA, this material was placed under its custody in a single location near Baghdad.
2. In addition, Iraq had 127 kg of uranium as reactor fuel for the (14) and (17) July research reactors in various enrichments and in two categories (fresh and spent fuel). This fuel was under IAEA safeguards before 1991 and remained so thereafter. The IAEA AT verified the disposition of this fuel, then it was removed from Iraq in two shipments: the first was late in 1991, which included all the fresh fuel and the second was in February 1994, which included all the spent fuel.
3. The IAEA AT efforts in the verification of all nuclear materials (quantitative and qualitative) started when the first IAEA inspection team visited Iraq in May 1991 and continued until Sept., 1996. This verification process included physical and chemical assays (destructive and non-destructive) covering all nuclear materials including those that were present before the implementation of safeguards.
4. The verification activities implemented by IAEA eventually confirmed the Iraqi declaration concerning the inventory of nuclear materials.
5. The DG of the IAEA stated in his briefing to the SC in Nov. 7, 1996 that "No further objects in the nuclear sphere have been the subject of destruction, removal or rendering harmless since the last consignment of highly enriched uranium was air-lifted to Russia in February 1994".

6. The IT responded to some AT remarks on the question of nuclear material balance in a letter dated Sept. 10, 1996 and presented some final clarifications. Since that date, the IT did not receive any further remarks from the IAEA, which indicated that the balance of nuclear materials is final and complete thereby implying that Iraq had fulfilled its obligations fully in this very important area.

#### **IV. Status of facilities, equipment and materials:**

1. A large number of the former INP facilities were either partially or completely destroyed as a result of aerial bombardment and missile attacks during the war in Jan./Feb. 1991 (60% of the facilities listed in table 3). A few facilities were unilaterally destroyed by Iraq during March/April 1991 (6% of the facilities listed in table 3). Other facilities were completely destroyed by the eleventh, twelfth and thirteenth IAEA inspection teams (34% of the facilities listed in table 3). The status of destroyed facilities for Tuwaitha, Al-Qaim, Abu-Sukhair, Al-Jazira, Tarmiya, Ash-Sharqat and Al-Atheer sites is shown in table 3.
2. UNSCR 687 (1991) stated that "Iraq shall unconditionally agree not to acquire or develop nuclear weapons or nuclear-weapons-usable material or any sub-systems or components or any research, development, support or manufacturing facilities related to the above". Based on this resolution, all major buildings, systems, components, subsystems and other items specified in para 12 of resolution 687 were destroyed, removed or rendered harmless either unilaterally by Iraq, or by the IAEA AT. In addition, a considerable number of items were destroyed during the war. Others were placed under OMV. The report of the seventh inspection team in 1991 stated that "a large amount of EMIS and centrifuge equipment were destroyed during the seventh inspection". The destruction process was continued by the eighth inspection team, whose report stated "Activities during the seventh inspection, to destroy or render harmless equipment components associated with the Iraqi uranium enrichment program continued during the eighth inspection". In addition, the reports of the eleventh and twelfth inspection teams in 1992 stated that "the destruction of the buildings and equipment at the Al-Atheer - Al-Hatteen site has been completed". Also, the fifteenth inspection team in 1992 destroyed a number of additional equipment and materials. On Oct. 19, 1996, the Iraqi side handed over to the AT a document which contained detailed information on the status, locations, and quantities of main equipment including those that were still outside Iraq due to the embargo imposed in August 1990. Moreover, the Iraqi side authorized the IAEA to dispose of what it saw appropriate of these equipment and materials belonging to the gas centrifuge program.
3. The IT submitted, as part of the FFCD-F and its supplementary attachments, more details on the status of equipment and materials including their storage locations, movements and destruction sites. The IAEA AT directly verified this at that time. After removal of the main equipment from destruction pits to storage, the eighth IAEA AT (1991) requested the IT to cover all destruction pits. Also the twelfth IAEA AT (1992), and after the destruction of Al-Atheer, agreed to the removal and transfer of all debris. During 1997, the AT requested all destruction pits to be uncovered in order to verify the remains of the destroyed equipment and materials. The IC submitted to the IAEA AT on Feb. 17, 1997 a report on the status of equipment comprising 78 pages. This report also included answers to all IAEA AT queries and comments concerning the destroyed equipment of the former INP.

4. The status of equipment and materials remained unchanged since 1991 except for the following:
  - Labeling of the equipment according to the IAEA code and submission of a new version of the inventory.
  - Changing equipment locations as mentioned in FFCD-F attachments.
  - Verification of equipment movement and analysis of missing items. The Iraqi side has assisted the IAEA AT in this respect by assigning personnel to accompany the AT during visits to the old destruction sites.
5. For verification purposes, the IT submitted on July 8, 1997 to the IAEA AT an inventory of 62 pages of destroyed equipment and materials that have been identified and accounted for.
6. In response to an IAEA request, the IT submitted a new version of addendum I part 2 annex 1 of the FFCD-F on Aug. 9, 1997. This addendum dealt with the movement and destruction of equipment and materials.

Table 4 gives a summary of the status of equipment of the former INP. The table shows that most of the equipment has either been destroyed during the war or by the IAEA AT or by the Iraqi side.

In conclusion, the status of facilities, equipment and materials given in tables 3 and 4 shows that all former INP capabilities have been totally destroyed, and therefore, Iraq no longer possesses any capability in the nuclear field.

#### **V. Status of documentation:**

1. The IAEA possesses a nearly complete set of IAEC/department 3000 and PC-3 technical reports relevant to the former INP. The number of technical reports issued was 1572. There are very few missing reports (<0.2%) whose titles are known. The IT provided abstracts and descriptions of the contents of these reports from the best recollection of their original authors. The few missing reports cover very minor areas of importance to the INP.
2. In addition to the technical reports the IAEA possesses the following information in its Iraq library:
  - a) 1.5 million pages of technical and non-technical documents.
  - b) Approximately 9 km of microfilm of technical and non-technical documents.
  - c) A large amount of microfiches of documents.
  - d) A very large holding of engineering design drawings and workshop drawings.
3. From this large documentation library, the IAEA AT has been able to assess and verify the extent of the former INP and its temporal development.
4. The FFCD-F of approximately 2000 pages (including annexes) can only be viewed as a condensed summary of the work that was undertaken in the former INP.

#### **VII. Implementation of the ongoing monitoring and verification (OMV) plan:**

1. Iraq formally accepted UNSCR 715 (1991) on Nov. 26, 1993 (see SC document S/26811). However, Iraq had practically implemented OMV since April 1992 (i.e., before the date of formal acceptance), since various IAEA inspection teams tagged equipment,

collected air, water and soil specimen for radiometric surveys in order to verify the absence of proscribed nuclear activities.

2. Since August 1994, more than 1000 OMV inspections were carried out by the IAEA within Iraq. The majority of these were without prior notice and many were carried out jointly with UNSCOM personnel. No proscribed equipment, materials or activities were ever detected (see for example the latest IAEA report GC (41)/20 issued on Sept. 9, 1997).
3. In addition, Iraq has continued to provide, since 1994, semi-annual declarations on the current use of nearly 160 facilities, installations and sites including those that were involved in the former INP. Detailed inventories of equipment and materials are included in these declarations.
4. Key personnel of the former INP are being interviewed on a regular basis by IAEA AT staff as part of the implementation of the OMV plan.
5. In conclusion, the OMV plan has been up and running in the nuclear area since 1994 and no proscribed equipment, materials or activities exist in Iraq or have been detected.

### VII. Iraq's implementation of resolution GC (40)/RES/21:

1. On Sept. 20, 1996 the IAEA General Conference adopted resolution/21.
2. Iraq has fulfilled its obligations under this resolution.
3. Iraq has cooperated fully with the IAEA and responded adequately to all relevant IAEA AT requests. It can safely be said that no outstanding matters of any substance remain today.
4. Iraq has resolved all remarks concerning the FFCD-F and would quote a remark from the AT letter of August 6, 1997 on the last five responses "Finally it appears that congratulations are in order".
5. Iraq has provided all the necessary information to the IAEA AT relevant to discharging its mandate under the operative SC resolutions.
6. Iraq has disclosed to the IAEA AT the status of all former INP related equipment and materials and allowed the IAEA AT unrestricted access to all relevant facilities.

### VIII. IAEA Action Team letter of August 1, 1997:

The following are the five areas that the IAEA AT claimed to need more information on before making judgement on the completeness of its knowledge in the context of the respective obligations under paragraphs 12 and 13 of Section C of UNSCR 687 (1991).

1. "Strategy for concealment and unilateral destruction" –

This area was adequately covered in the IT response handed over to the AT on Sept. 3, 1997. It was pointed out at the outset that Iraq never had a concealment strategy. The period under consideration from March 1991 up to Sept. 1996 was divided into three phases. For each phase, a background was given followed by terms of reference for the team whose members were defined and finally the milestones were listed. The IT reply was in 6 pages with sufficient detail and ended with concluding remarks.

2. "External assistance" –

This area was adequately covered in the IT response handed over to the AT on Sept. 15, 1997 and August 9, 1997. The particular interest of the AT in this area was because it involved one of Iraq's security agencies. It turned out that only 4 items

relevant to the former INP were procured and delivered through TCC (a procurement arm of this agency). This is to be contrasted to more than 3000 procurement transactions implemented through other former INP procurement channels. These items were of general use and made very little impact on the progress of the former INP. Moreover, all the items were fully accounted for and some were handed over to AT members or tagged by the IAEA.

3. "Status of the nuclear weapon" –

The AT posed some minor questions on some aspects of this subject which had been dwelt upon in sufficient detail in the FFCD-F and was adequately discussed during many meetings. The IT responded with a 7 page letter dated August 27, 1997. It answered fully the questions posed by the AT on cast lens design and manufacture. The status of furnaces to be used for uranium metallurgy was also presented in sufficient detail. Finally, the design basis of four neutron initiator options were elucidated in the detail necessary to close the subject.

4. "Abandonment of the program" –

This subject was dealt with adequately in the IT letter of August 31, 1997. The activities of the former INP were classified into five categories. It was concluded that no activities of any substance relevant to the former INP were carried out beyond April 1991. All INP activities were practically terminated and abandoned during April 1991 and only reports of previous accomplishments or new non-proscribed activities were issued later than this date. Moreover, the IT letter of August 26, 1997 presented the organigram for entities previously attached to PC-3 or EDC and presented their temporal transformation into new entities with new missions. Copies of 66 Governmental or Ministerial decrees detailing their transformation and defining their new missions were attached to this letter.

5. "Procurement" –

The IT responded on this subject with letters on August 9, August 19, 1997 and also on Sept. 4, 1997. The AT was informed that PC-3 or EDC did not enter into any new procurement contracts beyond April 1991. The AT was interested in contracts unrelated to the former INP and in any case an adequate response was handed over on Sept. 24, 1997.

It should be noted that the AT leader was invited to visit Baghdad to finalise matters on two occasions (August 19, 1997 and then Sept. 4, 1997). He had difficulties in scheduling this important finalisation visit ! Nevertheless, the IT has responded fully and adequately to all AT questions, remarks and comments and hopes that the AT will acknowledge this fact and assess the responses impartially.

## **IX. Comments on the IAEA report GC 41/20:**

1. On Sept. 20, 1996, the General Conference adopted a resolution whose operative para 8 requested the DG of the IAEA to report on the status of the Agency's implementation of UNSCR 687 (1991) and 715 (1991) that relate to Iraq (see GC (40)/RES/21 for details).
2. The Agency's report GC (41)/20 issued on Sept. 9, 1997 covered its activities during the period Sept. 1, 1996 up to Aug. 31, 1997.
3. The last technical team from the IAEA visited Iraq during the period July 19-24, 1997. On July 23, 1997 it submitted to the IT a list of 17 points that required further clarifications from the IT.

4. Furthermore, the AT submitted in its letter dated August 1, 1997 a list of five topics which the AT considered to need further clarifications and also suggested the addition of a new chapter to the FFCD-F.
5. The IT wishes to point out the unfortunate tactic adopted by the IAEA in submitting its requests for clarification piecemeal and at dates (accidentally or carefully) chosen to make the IT response almost impossible to meet the deadline of August 31, 1997.
6. Nevertheless, an enormous effort was mounted by the IT to process the AT requests in good time. All pending matters were adequately addressed and clarified in a series of 27 letters, whose dates of issue and subject matters are presented in table 2.
7. The IAEA AT chose arbitrarily not to consider any IT responses handed over later than Aug. 14, 1997! The IAEA report supposedly covered the period up to Aug. 31, 1997!.
8. The same delaying tactic was adopted by the AT after FFCD-F was submitted on Sept. 7, 1996, when no comments were made for more than 4 months until mid Jan./Feb. 1997 when 71 questions were tabled ! Although the IT responded adequately to these questions in a 30 page reply submitted on Feb. 26, 1997, nevertheless, the DG of the IAEA in his report to the SC (S/1997/297) on April 11, 1997 claimed that the AT was still reviewing these responses. Thereby, the opportunity of stating in the semi-annual report to the UNSC that "Iraq has fulfilled the obligations specified in chapter C of UNSCR 687 (1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e., the implementation of para 22 of UNSCR 687 (1991)" was missed at the semi-annual review by the SC during April 1997.
9. The areas that the IAEA AT have recently singled out for more information are minor and have been fully addressed by the IT in responses handed over up to Sept. 24, 1997 (see table 2).
10. In the opinion of the IT, these responses can be assessed adequately by personnel of the AT themselves, without the need for any assistance from Member State experts. The pending matters are generally non-technical and do not require any great technical insight. It is hoped that these assessments are made in good time for the Agency's forthcoming October report to the SC.

## **X. Summary and Conclusions:**

1. It is evident that a great deal of effort has been devoted by both Iraq and the IAEA for the implementation of UNSCR 687(1991) since April 1991.
2. The Iraqi team has co-operated fully with the IAEA Action Team and responded to all requests relevant to its mandate.
3. Since no further comments were received by the Iraqi team from the IAEA Action Team, then the present version of the "Full, Final and Complete Declaration (FFCD-F)" is considered by the Iraqi team to be adequate.
4. The overall balance of nuclear materials has been completed since 1996. All reactor fuel was removed from Iraq by the IAEA since 1994.
5. All facilities, equipment and non-nuclear materials related to the former Iraqi nuclear programme have been either destroyed or rendered harmless. All technical documentation relevant to the former INP was confiscated by the IAEA and removed from Iraq.
6. The on-going monitoring and verification plan pursuant to UNSCR 715(1991) is up and running since 1994. No proscribed equipment, materials or activities exist in Iraq and therefore the IAEA did not detect their presence.

7. The Iraqi team calls upon the IAEA to conclude its final assessment in its forthcoming October 1997 report to the Security Council and not to dwell unnecessarily on minor matters, that can be dealt with in parallel with OMV discussions.
8. It is evident from the presentation made in this paper that "Iraq has fulfilled the obligations specified in Section C of UNSCR 687(1991), which paves the way, together with a similar report by UNSCOM, to lifting the embargo, i.e. the implementation of para 22 of the same resolution". The IAEA should reconcile this important fact in its forthcoming October 1997 report to the Security Council.

**Table 1**  
**IAEA inspection teams that visited Iraq during the period May 1991- July 1997**

No.	Team	No. of inspectors	days	Man.Day	No. of inspections
1.	First	34	7	238	8
2.	Second	18	12	216	8
3.	Third	28	12	336	22
4.	Fourth	14	14	196	34
5.	Fifth	9	7	63	6
6.	Sixth	45	9	405	6
7.	Seventh	26	12	312	37
8.	Eighth	12	8	96	19
9.	Ninth	6	4	24	7
10.	Tenth	25	9	225	34
11.	Eleventh	31	8	248	17
12.	Twelfth	21	9	189	23
13.	Thirteenth	8	8	64	5
14.	Fourteenth	15	8	120	14
15.	Fifteenth	28	11	308	30
16.	Sixteenth	8	4	48	4
17.	Seventeenth	8	7	56	10
18.	Eighteenth	23	9	207	35
19.	Nineteenth	14	8	112	33
20.	Twentieth	10	6	60	10
21.	Twenty-First	16	4	64	21
22.	Twenty-Second	17	16	272	41
23.	Twenty-Third	17	8	136	43
24.	Twenty-Fourth	12	12	144	39
25.	Twenty-Fifth	12	9	108	24
26.	Twenty-Sixth	18	16	288	16
27.	Twenty-Seventh	8	8	64	20
28.	Twenty-Eighth	15	12	180	5
29.	Twenty-Ninth	13	8	104	2
30.	Thirtieth/1	6	3	18	/
31.	Thirtieth/2	6	7	42	/
32.	Thirtieth/3	6	6	36	/
33.	Thirtieth/4	6	7	42	/
34.	Thirtieth/5	6	6	36	/
<b>Total</b>		<b>541</b>	<b>284</b>	<b>5057</b>	<b>573</b>

Table 2

## Detailed Clarifications Submitted by the Iraqi Team to the IAEA - Action Team

Following the Latest Action Team Visit to Baghdad During July 19-23, 1997 and Action Team Letters of August 1, August 26, Sept. 6 and Sept. 19, 1997

Letter No.	Action Team Request (Heading)	Iraqi Team Response		
		Date of issue	No. of pages	No. of attachments
1.	EDC equipment in Amman (point #13 of CM <sup>+</sup> )	04/08/1997	1	2
2.	Procurement and external assistance / ATL1 and (point #9 of CM)	09/08/1997	2	0
3.	Cooperation with IAEA (point #15 of CM)	09/08/1997	1	0
4.	Comments on Addendum II part I of the FFCD-F of Sept. 7, 1996	11/08/1997	1	0
5.	Nature of the HHF cache (point #1 of CM)	11/08/1997	4	0
6.	Nature of the HHF cache (point #1 of CM) further note	13/08/1997	1	1
7.	Movement, concealment and destruction of materials and documents (point #3 of CM)	13/08/1997	3	1
8.	Translation of the list of Al-Kawther technical reports (point #4 of CM)	13/08/1997	1	1
9.	Status of the streak camera system (point #8 of CM)	13/08/1997	1	1
10.	Information on report that deals with uranium purification (point #12 of CM)	13/08/1997	1	0
11.	Locations of Al-Atheer equipment (point #16 of CM)	13/08/1997	2	2
12.	Movement and destruction of documentation (point #7 of CM)	14/08/1997	1	1
13.	Procurement / ATL1	19/08/1997	1	0
14.	Request for Action Team leader visit to Baghdad	19/08/1997	1	0
15.	Sites 4 & 5 of EDC (point #6 of CM)	20/08/1997	1	Some debris found at location no. 4
16.	List of directives and decrees indicating the abandonment of the former INP and the organigram of PC-3 and EDC (point #5 of CM)	26/08/1997	1	4
17.	Status of the nuclear weapon / ATL1 and point #2 of CM	27/08/1997	7	5
18.	Abandonment of the program / ATL1	31/08/1997	4	2
19.	Actions and reactions related to concealment and unilateral destruction of materials, equipment and documentation / ATL1	03/09/1997	6	0
20.	Belarus contract / ATL2	04/09/1997	1	0
21.	Status of some G4 equipment / ATL3 and point #10 of CM	11/09/1997	1	1
22.	The addition of a new chapter to FFCD-F	15/09/1997	3	0
23.	External assistance to the former Iraqi Nuclear Program (INP)	15/09/1997	3	1
24.	Detailed clarifications to all AT remarks	16/09/1997	1	1
25.	The addition of new chapter to FFCD-F	22/09/1997	2	0
26.	Response to the AT letter of Sept. 19, 1997	22/09/1997	2	0
27.	Procurement/MIC-Belarus	24/09/1997	1	1
		<b>Total</b>	<b>54</b>	<b>24</b>

<sup>+</sup> CM = List of Remarks Presented During the Closing Meeting of July 23, 1997.

<sup>++</sup> ATL1 = Action Team Letter of August 1, 1997.

ATL2 = Action Team Letter of August 26, 1997.

ATL3 = Action Team Letter of Sept. 6, 1997.

ATL4 = Action Team Letter of Sept. 19, 1997.

**Table 3**  
**The status of destroyed facilities of the former Iraqi nuclear program**

I. Tuwaitha:

Item	Bldg.	Bldg. No.	Activity	Status of bldgs.	Remarks
1.	IRT-5000 Research reactor	13	Swimming pool research reactor (5MW) using 80% enriched fuel and H <sub>2</sub> O as moderator.	Completely destroyed. (S1)	-Under IAEA Safeguards. (with facility attachment code IQA-) -Completely destroyed including all its components. -All the reactor fuel was removed from Iraq.
2.	Tammuz-2 Research reactor	24	Swimming pool research reactor (500 KW) using 93% enriched fuel and H <sub>2</sub> O as moderator. Special D <sub>2</sub> O tank	Completely destroyed (S1)	-Under IAEA safeguards (with facility attachment code IAB-) -Completely destroyed including all components and cooling tower (Bldg. 31) -All reactor fuel was removed from Iraq.
3.	PWR Fuel Fabrication plant.	73	-Plant for the production of LWR fuel with capacity of 30 t/y of nuclear grade UO <sub>2</sub> . -Part of the bldg. was used for Uranium metal production and Uranium Conversion (UO <sub>4</sub> to UO <sub>2</sub> ).	Completely destroyed (S1).	-Under IAEA Safeguards (with facility attachment code IQC-) The plant was completely destroyed with its attached buildings as follows: Bldg.68 H <sub>2</sub> production plant. Bldg 73 c workshop. Bldg .73.3 HVAC
4.	LAMA	22.	Materials Testing hot labs.	Completely destroyed (S1)	-The hot cells have been dismantled under IAEA supervision and remote manipulators rendered harmless.
5.	Radio chemistry lab.	9	Reprocessing lab. of fresh and irradiated fuel.	Completely destroyed (S1)	All its components and equipment have been dismantled
6.	Physics dept.	10B	labs. used for U-metal casting	completely destroyed (S1)	
7.	Radioactive isotope production labs.	15/15B	Isotope production, part (15B) used for UF <sub>4</sub> production	completely destroyed(S1)+(S2)	-All its hot cells and its components are under IAEA seals.
8.	RWTS	35	Low and medium Radioactive Waste Treatment level	completely destroyed (S1)	

Table 3 (continued -1)

Item	Bldg.	Bldg. No.	Activity	Status of bldgs.	Remarks
9.	Mechanical workshop	57	Main mechanical workshop with machine tools	Completely destroyed (S1)	Bldg. was levelled
10.	Material studies	63	Material research and development labs. For EMIS support	completely destroyed (S1)	
11.	Chemical lab.	64	Labs. modified to be used for UF <sub>4</sub> and U-enriched metal production	Completely destroyed (S1)	<ul style="list-style-type: none"> <li>• It was under planning.</li> <li>• The hot cell was dismantled.</li> </ul>
12.	R & D for EMIS	80	R & D for EMIS program	Completely destroyed (S1)&(S2)	<ul style="list-style-type: none"> <li>• The remaining equipment was removed.</li> </ul>
13.	Electrical engineering design labs.	82	Electrical engineering support for EMIS	destroyed (S1)	<ul style="list-style-type: none"> <li>• The bldg. was rebuilt and used as a physics research center</li> </ul>
14.	UCl <sub>4</sub> production pilot plant and R&D labs.	85	Pilot plant for UCl <sub>4</sub> production starting from UO <sub>2</sub> and chemical R&D labs.	Completely destroyed (S1)&(S2)	
15.	Chemical enrichment	90	R & D chemical enrichment using ion-exchange and solvent extraction techniques	The main bldg. was completely destroyed (S1)&(S2)	

II Al-Qaim

16.	Uranium purification	300	Unit for Uranium extraction from H <sub>3</sub> PO <sub>4</sub> and purification to UO <sub>4</sub>	Completely destroyed (S1)	<ul style="list-style-type: none"> <li>• The bldg. was destroyed with all its components.</li> </ul>
-----	----------------------	-----	---	---------------------------	--

III. Abu-Sukhair

17.	Uranium mine	-	Uranium ore mine from carbonate rock	the mine was closed and sealed by IAEA	
-----	--------------	---	--------------------------------------	--	--

VI Al-Jazira

18.	UO <sub>2</sub> production plant	000	UO <sub>2</sub> production plant from UO <sub>4</sub> (Y.C.) with a design capacity of 185 t/year of nuclear grade UO <sub>2</sub>	Completely destroyed (S1)&(S2)	<ul style="list-style-type: none"> <li>• Bldg. was levelled</li> </ul>
-----	----------------------------------	-----	--	--------------------------------	--

Table 3 (continued -2)

Item	Bldg.	Bldg. No.	Activity	Status of bldgs.	Remarks
19.	UCl <sub>4</sub> production pilot plant	400	Pilot plant for UCl <sub>4</sub> production from UO <sub>2</sub> with a design capacity of 150 t/year	Completely destroyed (S1)	
V. Tarmiya site					
20.	Stage 1 separator bldg.	80	Electromagnetic isotope separators (R120) with their power supplies and control equipment	Completely destroyed (S1)&(S3)	• Building utilities were destroyed by IAEA in July 1992.
21.	Stage 2 separator bldg.	90	Electromagnetic isotope separators (R60)	Completely destroyed (S3) on July 20, 1992	• The bldg. was not used. • Building utilities were destroyed by IAEA.
22.	Chemical process bldg.	210	Chemical recovery of natural uranium from components of R120 separators	Partially destroyed (S1)	
23.	Chemical process bldg.	230	Chemical recovery of enriched uranium from components of R60 separators	Completely destroyed (S1)	
IV. Ash-sharqat					
24.	Main process bldg.	310	Planned for stage 1 electromagnetic separators (R120)	Completely destroyed (S1)&(S3)	• Not utilized (No process equipment was installed).
25.	Main process bldg.	320	Planned for stage 2 electromagnetic separators (R60)	Completely destroyed (S1)&(S3)	=
26.	Chemical recovery	350	Planned for chemical recovery for natural uranium from components of (R120) separators	Completely destroyed (S1)	=
27.	Chemical recovery	370	Planned for chemical recovery of natural uranium from components of (R60) separators	Completely destroyed (S1)	=

**Table 3 (continued -3)**

**IV. Al-Atheer**

<b>Item</b>	<b>Bldg.</b>	<b>Bldg. No.</b>	<b>Activity</b>	<b>Status of bldgs.</b>	<b>Remarks</b>
28.	High explosive test bunker	33	Explosion experiments	Completely destroyed (S3)	
29.	Explosive chamber	18	Explosion experiments	Completely destroyed (S3)	
30.	Control building	19	Explosion experiments	Completely destroyed (S3)	
31.	Physics (gas gun) bldg.	21	Not utilized	Completely destroyed (S3)	
32.	Casting bldg.	50	Not utilized	Completely destroyed (S3)	
33.	Carbide bldg.	55	Not utilized	Completely destroyed (S3)	
34.	Powder bldg.	82	Powder technology	Completely destroyed (S3)	
35.	Polymer bldg.	84	Not utilized	Completely destroyed (S3)	

Note:

<b>No.</b>	<b>Abbreviation</b>	<b>Key</b>
1.	S1	Destroyed during the war Jan. - Feb. , 1991
2.	S2	Destroyed by the Iraqi side up to the end of June 1991
3.	S3	Destroyed by IAEA action team
4.	S4	Operational and utilized by ....
5.	S5	Operational but not utilized
6.	S6	Not operational
7.	S7	Lost during evacuation

Table 4

## Essential units, equipment and non-nuclear materials of the former INP

## A. Electromagnetic Isotope Separation (EMIS)

No.	Item	Qty.	Status August 1991	Remarks
1.	Separator type R120 and system components (phase one)	8	S1&S2	Return iron available and under OMV verified by IAEA-AT
2.	Separator type R120 and system components (phase two)	3	S2	Return iron available and under OMV verified by IAEA-AT
3.	Separator type R60 and system components	8	S2&S3	Verified by IAEA-AT
4.	Project 102 and 103	2	S1&S2	
5.	Separator type R100	3	S1&S2	
6.	Separator type R50	1	S1&S2	

## B. Chemical Isotope Separation (CIS)

No.	Item	Qty.	Status August 1991	Remarks
1.	Distillation unit	3	S1	
2.	Battery of mixer settlers	3	S1	
3.	Lithium isotopic enrichment equipment	1	S1	

## C. Gaseous Diffusion Isotope Separation (GDIS)

No.	Item	Qty.	Status August 1991	Remarks
1.	Anodized barrier tube	600	S2	
2.	Project 354 (Barrier corrosion testing unit)	1	S2	
3.	Project 365 (Barrier qualification in UF <sub>6</sub> unit)	1	S2	

## D. Magnetic Centrifuge Isotope Separation

No.	Item	Qty.	Status August 1991	Remarks
1.	Centrifuge manufactured parts	Over 1000	S3	
2.	Frequency converter	19	S1, S2, S3 one S5	
3.	Three roller flow forming machine	1	S3	Rendered useless
4.	CNC turning machine	3	S3	Rendered useless
5.	MIG welding machine	1	S3	Rendered useless
6.	EBW machine	1	S5	Sealed by IAEA
7.	Furnaces	4	S5	Sealed by IAEA
8.	CNC turning and milling machine	10	S5 & one S6	Sealed by IAEA
9.	Horizontal and vertical balancing machines	2	S3	Rendered useless by IAEA
10.	Maraging steel	100 ton	S2	
11.	Aluminium alloy	over 400 ton	S2	

Table 4 (continued -1)

## E. Al-Atheer Site

No.	Item	Qty.	Status August 1991	Remarks
1.	Industrial cold isostatic press(CIP)	1	S3	
2.	Industrial hot isostatic press(HIP)	1	S3	
3.	Lab. scale CIP	1	S3	
4.	Lab. scale HIP	1	S3	
5.	Resistance heated heat treatment furnaces COV652, MOV551 and MOV542	3	S3	
6.	High vacuum melting and casting induction furnace (V56030B)	1	S3	
7.	High vacuum laboratory induction furnace	1	S3	
8.	Atmospheric plasma spraying system (APS)	1	S3	
9.	Vacuum plasma spraying system (VPS)	1	S3	
10.	Turning machine (Harding)	1	S3	
11.	Precision lathe machine(Schaublin)	1	S3	
12.	Jig boring machine (Waida)	1	S3	

## F. Chemical process

No.	Item	Qty.	Status August 1991	Remarks
1.	Pilot plant for UCl <sub>4</sub> production - Tuwaitha	1	S1	
2.	Pilot plant for recovery of uranium	1	S1	
3.	Sublimation unit for project 244	2	S1	
4.	System for preparation of UCl <sub>4</sub> by liquid phase reaction	1	S1	
5.	System for reduction of uranium peroxide	1	S1	
6.	Pilot plant for recovery of uranium from liner (EMIS)	2	S1, S2	
7.	System for handling washing solution containing uranium recovered from liner	1	S1	
8.	Unit for production of metallic uranium	1	S5, S6 & S7	
9.	Unit for preparation of UF <sub>4</sub> by direct reaction with UO <sub>2</sub> .	1	S1, S2	
10.	plant for production of metallic U/UF <sub>4</sub> preparation	1	S1, S5, S6	
11.	Unit for preparation of UF <sub>4</sub> from nuclear grade UO <sub>2</sub> directly	1	S1	
12.	Unit for production of nuclear grade UO <sub>2</sub>	1	S1, S2, S5, S6 & S7	