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REPORT OF THE MISSION DISPATCHED BY THE SECRETARY-GENERAL TO INVESTIGATE ALLEGATIONS OF THE USE OF CHEMICAL WEAPONS IN THE CONFLICT BETWEEN THE ISLAMIC REPUBLIC OF IRAN AND IRAQ

Note by the Secretary-General

1. In March 1984, at the request of the Government of the Islamic Republic of Iran, and after consultations with the Government of Iraq, the Secretary-General appointed a mission of specialists to investigate Iran's allegations that chemical weapons were being used by Iraq. The report of the specialists was transmitted to the Security Council on 26 March 1984 (S/16433). On 29 June 1984 the Secretary-General appealed to both Governments to undertake to abide by the terms of the Geneva Protocol of 1925 and received a positive response from Iran. In April 1985, on the request of the Government of Iran, the Secretary-General requested the medical specialist of the mission to examine Iranian patients hospitalized in Europe, allegedly as a result of the use of such weapons, and his report was transmitted to the Security Council on 24 April 1985 (S/17127).

2. In March 1985 the Secretary-General presented to the Governments of Iran and Iraq an eight-point plan designed to attain a comprehensive settlement of the conflict between the two States. This plan, which, inter alia, addressed the issue of ending the use of chemical weapons, was discussed by the Secretary-General with the two Governments during his visits to Tehran and Baghdad in April 1985, on which he reported to the Security Council (S/17097). Regrettably, despite continuing efforts, no further movement on the plan's proposals has materialized.

3. Following these events, the Secretary-General was requested by the President of the Security Council on 26 April 1985 to examine the feasibility of establishing arrangements to conduct prompt investigation of any further allegations of the use of chemical weapons. In response the Secretary-General informed the President of the Council on 14 May 1985 that he had decided to utilize the team of specialists who conducted the original investigation in March 1984, should the need for any further such investigation unfortunately arise. Further allegations by Iran 1/ followed which were rejected by Iraq, 2/ but at that stage a new investigation was not considered to be warranted.

4. On 9 February 1986, Iran began an offensive into Iraqi territory. The Secretary-General, in a statement on 11 February, urged that concerted and determined efforts be made, on the basis of his eight-point proposals, to end the war. As the combat escalated, however, Iran alleged the renewed use of chemical weapons by Iraq, 3/ which again denied this 4/ and, in turn, accused Iran of using such weapons. 5/ On 12 February and subsequently, while reiterating its allegations, the Government of Iran requested the dispatch of an investigation mission to the area. 6/ This distressing situation was developing in an alarming direction with implied warnings by Iran that it was considering the use of chemical weapons in retaliation unless the United Nations could take effective measures to end their use, stating that "on the basis of the 1925 Geneva Protocol the non-use of chemical weapons is unconditional". 7/

5. On 14 February 1986 the Security Council met in consultations on the request of the Secretary-General, who reported on developments and immediately after issued a statement calling for a cessation of hostilities in order to facilitate a just and peaceful resolution of the conflict. The statement pointed out that a cessation of hostilities would also make possible an investigation in the war zone where chemical weapons were alleged to have been used. The members of the Council expressed their support for the Secretary-General's approach. A number of them also urged that he dispatch an investigation mission at the earliest opportunity. Since a formal convening of the Council on the situation had been requested, the Secretary-General considered it advisable that a mission should be dispatched to the area after the Council had concluded its deliberations, and informed the Governments of Iran and Iraq accordingly.

6. On 24 February 1986, the Security Council adopted resolution 582 (1986), which deplored the initial acts which had given rise to the conflict, its continuation and its escalation, in particular the use of chemical weapons contrary to obligations under the 1925 Geneva Protocol. The resolution also called for an immediate cease-fire, a cessation of all hostilities, the withdrawal of all forces to the internationally recognized boundaries without delay, a comprehensive exchange of prisoners of war, and the submission by both parties of all aspects of the conflict to mediation or to any other means of peaceful settlement of disputes. Further, it requested the Secretary-General to continue his ongoing efforts to assist the two parties to give effect to the resolution. Also, it called on all other States to exercise the utmost restraint and to refrain from any act which might lead to a further escalation and widening of the conflict.

7. On 25 February 1986 the Iranian Government, in a statement on the resolution, stated inter alia that it was "a positive step towards the condemnation of Iraq as the aggressor and a just conclusion to the war". It further stated that Iran was prepared to co-operate with the Secretary-General and was "fully ready to co-operate towards the prevention of the expansion of the war and the involvement of other countries therein". It also commented that "the Security Council was, this time, under the obligation to strongly condemn Iraq by name for its repeated and large-scale use of chemical weapons" (S/17864).

8. On 5 March 1986 the Iraqi Government, in a letter to the Secretary-General presenting its position on resolution 582 (1986), declared, inter alia, that the

resolution "contains essential elements that illustrate the basic principles for the peaceful settlement of armed conflicts" and that "if the Iranian Government undertakes to accept the resolution formally and makes an effort to implement it unconditionally and in good faith, Iraq is ready to co-operate with the Security Council and with you in order also to implement it in good faith" on the basis of certain conditions, primarily that "the resolution represents a comprehensive and indivisible approach to settling the conflict. Therefore, it must constitute a globally and comprehensively applicable practical framework within which the elements of the settlement interconnect, at all stages, according to an established timetable, the implementation of each stage being a guarantee that the next stage will also be implemented." (S/17897)

9. Meanwhile, immediately upon the adoption by the Council of its resolution 582 (1986) on 24 February 1986, the Secretary-General gave instructions for the mission to assemble in Vienna and proceed without further delay to Iran. At the same time he reiterated to the Government of Iraq his readiness to instruct the mission to visit Iraq also, to investigate Iraq's allegations in this issue should the Government so request while the mission was still in the area. The position taken by the Government of Iraq was that this matter already had been addressed in Security Council resolution 582 (1986) and that any further moves should, in compliance with that resolution, focus on securing a comprehensive settlement of the conflict and should not deal separately with its "secondary" aspects.

10. The four specialists who constituted the mission, and who had conducted the original investigations in March 1984, are:

Dr. Gustav Andersson, Ph.D
Head, Analytical Chemistry Section
National Defence Research Institute
Umea, Sweden

Dr. Manuel Domínguez
Colonel, Army Medical Corps and specialist in atomic, biological and chemical weapons injuries
Professor of Preventive Medicine
Universidad Complutense de Madrid
Madrid, Spain

Dr. Peter Dunn, A.M., D.Sc., B.Sc. (Hons), FRACI
Superintendent Scientist
Materials Research Laboratories
Defence Science and Technology Organization
Department of Defence
Melbourne, Australia

Oberst. Ulrich Imobersteg, Dr. phil.chem.
Former Chief, Nuclear, Biological and Chemical Weapons Defence,
Ministry of Defence
Berne, Switzerland

Colonel Imobersteg was unable, due to a family emergency, to travel with the mission in Iran, but joined in the evaluation of the findings of his colleagues when they reached Switzerland to prepare the mission's report.

11. The work of the mission was co-ordinated by Mr. Iqbal Riza, Director in the Office of the Under-Secretaries-General for Special Political Affairs, who facilitated its organization and ensured liaison with the competent authorities. He was assisted by Mr. Sylvanus Tiewul, Senior Officer in the same Office. The mission spent four days in Iran, and the specialists submitted a joint report to the Secretary-General on 7 March 1986.

12. The Secretary-General wishes to place on record his deep appreciation to the members of the mission for the highly dedicated and efficient manner in which they completed their assignment, in spite of constraints in resources and time, and under strenuous and even dangerous conditions. He also wishes to express his appreciation to the Governments of Australia, Spain, Sweden and Switzerland for making available the services of these eminent scientists and the facilities of their laboratories.

13. In transmitting the report of the specialists (annexed) to the Security Council, the Secretary-General wishes to unequivocally emphasize once again that his overriding motivation is to pursue every avenue to promote an end to this tragic conflict. While urging immediate compliance by the parties concerned with Security Council resolution 582 (1986), he considers that, until this is achieved, it is also incumbent upon him, in accordance with internationally accepted humanitarian principles, to minimize the suffering caused by war on civilians and neutral parties and on the combatants themselves.

14. In the circumstances, the Secretary-General cannot but note with regret that the specialists have confirmed the use of chemical weapons by Iraqi forces against Iranian forces in the course of the present Iranian offensive into Iraqi territory. The Secretary-General repeatedly has declared that he strongly condemns the use of chemical weapons wherever and whenever this may occur. In the present instance such weapons have been used in violation of the Geneva Protocol of 1925 against Iranian forces, in the Iran/Iraq conflict.

15. The Secretary-General remains convinced that both international security and humanitarian concerns can ultimately be met only by the termination of this ruinous conflict through a comprehensive settlement. He once again expresses his readiness to assist in all endeavours to that end, and appeals to the Governments of Iran and Iraq to respond to the efforts of the United Nations to bring to their peoples the peace that will enable them to deploy their human and material resources for the strengthening and development of their countries. The Secretary-General also expresses his earnest hope that other States will also co-operate in international efforts to open the way towards the restoration of peace between Iran and Iraq on the basis of justice and honour.

Notes

1/ S/17143, S/17181, S/17127, S/17342, S/17606 and S/17782.

2/ S/17611.

3/ S/17790 and S/17858.

4/ S/17783.

5/ S/17824 and S/17826.

6/ S/17822, S/17829, S/17833, S/17835, S/17836 and S/17843.

7/ S/17829.

ANNEX

Report of the mission dispatched by the Secretary-General to investigate allegations of the use of chemical weapons in the conflict between Iran and Iraq

CONTENTS

LETTER OF TRANSMITTAL

Geneva, 6 March 1986

Sir,

We have the honour to submit herewith our report on the investigation you requested us to undertake concerning allegations of the use of chemical weapons in the Iran-Iraq conflict.

In order to undertake the investigation, three of us visited Iran from 26 February 1986 to 3 March 1986 for the purpose of carrying out on-site collection and examination of evidence. The fourth member of our team, Colonel Imobersteg, was unable to travel to Iran but he worked with us on our return to Switzerland in order to evaluate the evidence on the munitions aspects and to help us compile the final report. Although we were appointed in our individual capacities, we agreed to work as a team and our conclusions were reached unanimously.

In preparing our report, we have taken into account the reports of missions undertaken during 1984 and 1985 at your request. As the conclusions of the present mission are not in conflict with those of previous missions, a summary statement has been included in the present report.

The number of chemical casualties we saw in Iran and the nature and extent of their injuries was distressing to all of us, particularly the death of an injured soldier in our presence.

We are therefore, very concerned that although our reports of 1984 and 1985 confirmed that chemical weapons had been used against Iranian forces, attacks are still continuing in spite of appeals by the United Nations and on a more intense scale than used previously. This is in direct contravention of the 1925 Geneva Protocol which has been accepted by both Iran and Iraq. We wish to make a special plea to ensure that every effort is made to stop the use of chemical weapons in the Iran-Iraq conflict.

In undertaking the present mission we received support from many organizations and individuals. In particular, we would like to record our thanks to the Government of Iran for the co-operation and assistance provided throughout our mission.

We also wish to express our appreciation for the assistance we received from the Secretariat of the United Nations, particularly from Mr. Iqbal Riza and Mr. Sylvanus Tiewul of the Office of the Under-Secretaries-General for Special Political Affairs.

Our special thanks are due to the laboratories in Switzerland and Sweden, which assisted us in the technical aspects of this mission. As well as undertaking analyses on our behalf, the AC Laboratory Spiez, Switzerland under the direction of Dr. B. Brunner provided facilities to us for the drafting of our report.

We wish, Mr. Secretary-General, to express our gratitude to you for the confidence you have again reposed in us.

Yours sincerely,

(Signed) Dr. Gustav ANDERSSON
Dr. Manuel DOMINGUEZ
Dr. Peter DUNN
Oberst Ulrich IMOBERSTEG

I. TERMS OF REFERENCE

1. The mission was requested by the Secretary-General to determine, to the extent possible, whether chemical weapons had been used in the conflict between Iran and Iraq and, if so, the type, extent and circumstances of their use. It was also indicated that the mission's investigations were in continuation of those first conducted by it in March 1984. In accordance with the itinerary arranged by the United Nations, our investigations were conducted only in Iran.

II. REVIEW OF DOCUMENTATION

2. Prior to the preparation of the present report, we reviewed the following United Nations documents:

(a) Report of the specialists appointed by the Secretary-General to investigate allegations by the Islamic Republic of Iran concerning the use of chemical weapons (March 1984); 1/

(b) Letter dated 17 April 1985 from the Secretary-General addressed to the President of the Security Council (concerning the medical examinations conducted in April 1985); 2/

(c) Letters concerning chemical weapons from the Government of Iran to the Secretary-General; 3/

(d) Letters concerning chemical weapons from the Government of Iraq to the Secretary-General; 4/

(e) Declarations concerning chemical weapons by the President of the Security Council. 5/

3. We also referred, during the drafting of our report, to the Geneva Protocol of 1925 for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare.

III. METHODOLOGY

4. In order to carry out our task, we adopted, as required, the following approaches:

(a) Interviews were held with government officials in Tehran in order to obtain information regarding the alleged use of chemical weapons;

(b) A visit was made to the war zone in order to examine evidence of weapons used in alleged chemical attacks and to collect samples for chemical examination in specialized laboratories located in Europe;

(c) Clinical examinations were made of, and interviews conducted with, a number of patients who were allegedly exposed to an attack of chemical warfare agents (these included a number of Iraqi casualties). The clinical examinations were undertaken both in the war zone and in hospitals in Ahvaz and Tehran to which patients had been evacuated;

(d) An interview was held with a captured Iraqi pilot about his experiences with the use of chemical weapons.

5. Because of experience gained during the 1984 mission to Iran, we were able in this mission to be essentially self-contained in regard to protective clothing, masks and gloves, as well as sampling equipment and containers for transport. In addition, we had available the latest version of the British-designed and developed Chemical Agent Monitor (CAM, Graseby Dynamics Ltd). This battery-powered, portable instrument enables low concentrations of vapours of specific chemical substances to be detected. For the present investigation, the CAM was used in a mode suitable for the detection of the vapour of mustard gas and nerve agents. A visual scale on the instrument gave an indication of the concentration of vapour present. The CAM instrument used by us had previously been calibrated at the National Defence Research Institute, Umea, Sweden, against known concentrations of mustard vapour and nerve agents.

6. We believe the equipment used during this investigation is ideal in that it provides adequate protection against chemical agents for participants, is self-contained, readily transportable and, with the availability of the CAM, even low contaminated areas can be easily delineated for sampling.

7. We spent four days in Iran (for the chronology of activities, see appendix I). In Tehran we paid visits to the Ministry of Foreign Affairs, to several hospitals and the Coroner's mortuary. A visit was made to the war zone situated around Abadan. We were scheduled to fly to Ahvaz but were diverted to the Iranian Air Force Base at Omidiyeh for safety reasons. We were then transferred to Ahvaz by helicopter. From Ahvaz we travelled to the Abadan area by road and to a field hospital near Qofas to examine areas allegedly attacked by chemical weapons. We then returned to Ahvaz for visits to a hospital and an infirmary. From Ahvaz the return journey was by road to Omidiyeh and then by aircraft to Tehran, the tour having taken 24 hours (for a map of the area visited, see appendix II). The night before our departure from Tehran the Iranian authorities presented a list with details of other recent alleged attacks by chemical weapons, which we were not in a position to investigate.

IV. MEDICAL ASPECTS

8. The medical aspects of the report are based on examinations carried out between 27 February and 2 March 1986 inclusive, on 40 patients admitted to the Labbafi-Nejad and Baghiyat-Allah hospitals and the Val Fajr Infirmary in Tehran and to the Shaheed Baghai Hospital and the Sayed-o-Shehada Infirmary in Ahvaz. These 40 patients were selected personally by the medical specialist on the mission from among those exposed to chemical weapons. All were carefully observed and

questioned through an interpreter. The report is also based on the examination of 42 patients who were being transferred, at the Ahvaz airport, from two buses to a Hercules aircraft for evacuation to Tehran. In addition, a cursory observation was made of some 300 patients admitted to the Seyedo-Shohada Infirmary, 300 others admitted to the Val Fajr Infirmary, some 40 to the Labbafi-Nejad Hospital and about 80 to the Baghiyat-Allah Hospital. Also taken into account were the examinations made of 23 cadavers, reports of four Iranian doctors who were exposed - one of whom was in critical condition (Nos. 22, 23, 26 and 29 in appendix III) - and a reading of some clinical histories. The information obtained from the injured doctors was particularly valuable because of their ability to use scientific terms in describing their condition.

9. There were various reports by Iranian medical authorities that some 2,000 persons exposed to chemical weapons had been treated at Ahvaz hospitals and some 10,000 at the Val Fajr Infirmary in Tehran.

10. The lesions observed on the patients questioned led to the unanimous conclusion that they were exposed to bombs which were dropped from aircraft and exploded on contact with the ground. In some cases, the explosions had been detected by the flash; in many cases, by the odour of garlic or, according to others, a pungent smell.

11. The clinical history of those affected has been as follows.

12. The first symptom observed was conjunctivitis in varying degrees. It appeared from 20 minutes after exposure up to hours later, and in all cases increased in intensity in the following 8 to 48 hours, with intense palpebral oedema. Since photophobia was very intense, the patients had to be protected from light.

13. The skin began to itch early. In addition, some, generally the most seriously affected, experienced nausea, vomiting and diarrhoea.

14. At the same time, erythema similar to that produced by ultraviolet rays developed. Skin colour gradually darkened until it became black in some areas, especially in the armpits, genitals, inner surface of the thigh and, with less frequency and intensity, in the bend of the elbow and even less in the popliteal space (back of the knee). In some cases, the colour of the genitals became as black as tar.

15. In addition to this pigmentation, in some areas there were vesicles of various sizes, which could cover a large part of the trunk or limbs. Usually they were large. They could be found in any area of the body except the palms of the hands and the soles of the feet. The vesicles were filled with an amber liquid, which under pressure formed very high blisters.

16. The vesicles subsequently broke open, leaving cutaneous detachment over wide areas, which in some cases covered more than 85 per cent of the surface of the body, as in the case of second-degree burns. These ulcerations were painful, and the patients complained especially when they were moved or when the lesions were dressed.

17. Some patients developed rhinorrhea, or more frequently pharyngitis, laryngitis and tracheitis. They had productive coughs, which in some cases became hemoptysic. The progression of the respiratory symptoms led to chronic bronchitis, emphysema, pulmonary oedema, in short, respiratory distress.

18. The most seriously affected developed leukopenia, especially of the lymphopenic type which provokes infection of the ulcerations, especially by pseudomonas. A few others developed thrombopenia and even pancytopenia.

19. The pathogenesis of the lesions depended on the intensity of the intoxication. In serious cases, for example, shortly before death, the patient's face turned completely black, while in other cases it took six days or more to manifest itself.

20. The combined clinical and analytical data prove beyond doubt that the lesions observed were caused by the chemical warfare agent known as yperite, the chemical structure of which corresponds to bis-(2-chloroethyl)-sulphide.

21. This observation yielded no evidence of the use of abun, which had been demonstrated during the 1984 observation. Nevertheles earlier in February 1986, Dr. Sohrabpur of Labbafi-Nejad Hospital reported that he had treated 41 persons exposed to nerve gas who exhibited clear symptoms of intoxication by acetylcholine esterase-inhibiting substances. Similarly, cases of nerve-gas intoxicatien have been treated at the Shaheed Baghai Hospital of Ahvaz. It was believed that such intoxication was not due to tabun, because serum choline esterase was not very low and because large doses of atropine were required. In some cases, as much as 1,000 mg (1 g) were needed to restore neuronal activity in the patients. Pralidoxime also produced satisfactory results. Lastly, Dr. Khatemi of the Val Fajr Infirmary reported that four to five days after the Iranian offensive began (on 9 February), about 1,000 persons were admitted to the hospital with symptoms of nerve-gas intoxication. He estimated that many more must have been exposed since, in mild cases, patients easily recovered after a few injections of atropine. In the cases he observed, an average dose of 200-300 mg in all was required (including doses received before admission to Val Fajr). In a few cases, 1,000 mg (1 g) were needed.

22. Some information was collected regarding the use of hydrocyanide. The reported facts are as follows.

23. The staff at Val Fajr Infirmary attended to a casualty (a male nurse) who had shown symptoms of hydrocyanide intoxication and had been treated for it at the front, but when he was admitted to the Infirmary there were no longer signs of such intoxication.

24. The doctor supervising the evacuation of the casualties at Ahvaz on 28 February 1986, told me that he had attended to a patient exposed to chemical bombs who had exhibited peculiar symptoms, somewhat similar to those from hydrocyanide, that had quickly killed him.

25. It should also be noted that patients Nos. 25 and 29 listed in annex ..., who were exposed to yperite, had shown signs of hydrocyanide intoxication, but by the time they were examined individually, such signs had disappeared.

26. It should be borne in mind that the explosion of a bomb containing tabun may produce hydrocyanide when the tabun decomposes. This does not happen with yperite.

27. It is perfectly possible to use hydrocyanide bombs and even to manufacture binary bombs. It is not very feasible, however, to produce bombs containing a fluid such as yperite and a gas such as hydrocyanide.

28. A case-by-case summary of the conditions observed in the patients examined is contained in appendix III.

29. It should be placed on record here that immense efforts have been made to attend to those exposed to chemical agents; that the medical treatment provided is perfectly in order; that the quality of the doctors responsible for such treatment is very high; that all the victims are treated with the utmost compassion and care; and that the affected Iraqi prisoners are also treated with the utmost care and respect.

V. CHEMICAL ASPECTS

30. It is important to record that there was a lapse of about two weeks between the dates of the first alleged attacks and the arrival of the mission in Iran. In addition, unusually heavy rain had occurred in south-west Iran during February and many areas were flooded. The delays and the environmental degradation of chemical warfare agents that might have been used in attacks (particularly the nerve gas, tabun) made the chemical part of our work difficult.

31. Three specific areas were visited in the war zone in order to investigate the alleged use of chemical weapons against Iranian forces (see appendix II).

Survey area A

32. This area, located in a suburb 2 km north-east of the centre of Abadan, was reached at 1300 hours on 28 February 1986. The attack on the area was stated to have taken place about 1600 hours on 13 February 1986. We examined two bomb craters which had been decontaminated to make the area safe for personnel. Using the CAM, a low mustard vapour concentration of approximately 0-2.5 mg/m^3 was found in one of the craters. This positive indication of mustard vapour, even in an area attacked two weeks earlier and subject to heavy rain in the intervening period, is strong evidence that chemical bombs were used.

33. Just as we were about to depart survey area A, an exchange of heavy artillery shells occurred between Iranian and Iraqi forces. We saw the impact of eight Iraqi shells a few kilometres away.

Survey area B

34. Located 15 km south of Abadan on the road to Qofas, area B was reached at 1400 hours on 28 February 1986. In a flat, muddy area several hundred metres off the main road, three bomb craters were found resulting from an alleged attack two

weeks earlier. We examined the craters using the CAM and although the area had been decontaminated, positive evidence of the presence of mustard gas was found. At the bottom of each of the craters low vapour concentration levels of the order of 0-2.5 mg/m^3 were measured. This evidence again indicated the use of chemical bombs in the area.

Survey area C

35. From survey area B we travelled south by road and crossed the Bahmanshir River in order to visit the Hadhrat Fatima (AS) Field Hospital located about 40 km from Abadan. The area was reached at about 1500 hours on Friday, 28 February 1986 and the alleged attack on the hospital had taken place at about 1000 hours on the previous day. It was stated that of 12 bombs dropped, 4 had fallen in the hospital area. One bomb had exploded 15 m from the entrance to the hospital. To reduce danger to the patients, the area was immediately decontaminated and the crater filled with clean earth. In spite of the decontamination action, trace vapour concentrations of mustard gas of 0-0.1 mg/m^3 were recorded in the area, using the CAM.

36. At about 50 m from the hospital entrance, we were shown a crater from the same attack which had not been decontaminated, but filled with fresh soil. Using the CAM, we located an area which was heavily contaminated with mustard gas. The reading on the instrument was off the scale (greater than 4 mg/m^3) when vapour levels near ground level were measured. Using special protective equipment, we collected about 1 kg of contaminated soil; this was transported back to Tehran by us.

37. At the Clinical Laboratory of the Labbafi-Nejad Medical Centre in Tehran on 1 March 1986, samples of soil were repacked for safe transportation to selected laboratories in Europe for chemical analysis. Three samples of the soil, each of approximately 100 grams, were placed in individual dry, screw-capped glass bottles. Each bottle was then repacked in a separate screw-capped plastic jar containing activated granulated charcoal as an absorbent. The screw cap was secured with thick adhesive tape and each bottle labelled for positive identification.

38. Sample number 1 was delivered by safe hand to the National Defence Research Institute (FOA4), Umea, Sweden for analysis. Samples numbers 2 and 3 were delivered to the AC Laboratory, AC Central, Spiez, Switzerland. One sample was used for analysis and the other will be retained by the laboratory as a reference sample.

39. The soil samples were shown to contain between 0.1 and 0.2 per cent by weight, of mustard gas (bis-(2-chloroethyl)-sulphide), together with some minor by-products. Mustard gas is a classical chemical warfare agent and was used extensively for the first time during the First World War. The results from the AC Laboratory in Switzerland and those from the Swedish National Defence Research Institute, which are similar, are given in appendices IV and V. Spectra, chromatograms and other experimental details can be obtained from the laboratories on request.

40. During the evening of Friday, 28 February 1986, in the clinical laboratory of the Shaheed Baghai Hospital in Ahvaz, we were shown separate samples of human hair from two patients. It was stated that the hair was collected shortly after the victim had been attacked with chemical weapons. We examined the casualties in the hospital. One of the victims had been attacked at the Hadhrat Fatima (AS) Field Hospital on 27 February 1986 (case No. 20) and the other in the Al-Faw area (case No. 24). The two hair samples were carried by safe hand to the National Defence Research Institute, Umea, Sweden, for chemical analysis. It was shown that the hair sample associated with case No. 20 contained mustard gas. In the hair sample associated with case No. 24, no mustard gas was found.

VI. MUNITIONS ASPECTS

41. During the 1984 investigation of chemical attacks in the Iran-Iraq conflict, several partially damaged aerial bombs were found and examined. These were sampled and shown to contain mustard gas as the sole chemical filling. Dimensions of the bomb were obtained, as well as the total mass.

42. On this mission no unexploded bombs were found. This is not surprising as we were told by a captured Iraqi pilot during interview (see chap. VII) at the Shaheed Baghai Hospital in Ahvaz on 28 February 1986 that impact fuses were now being used in place of time fuses used previously and described in our earlier report. The pilot also stated that due to changes in tactics, chemical bombs were usually dropped from aircraft flying at high altitude instead of low altitude as used previously.

43. The Iraqi pilot also stated that the use of chemical bombs had to be specifically authorized and pilots were not permitted to critically examine those attached to their aircraft prior to undertaking a "special mission". In spite of this restriction, the pilot was able to accurately describe the colour, shape, marking and mass of chemical bombs currently being used in attacks against Iranian forces and his description coincided with our description of the bombs examined by us in 1984. In particular, he indicated that bombs of mass 250 kg were available as standard items.

44. The testimony of the Iraqi pilot, given through an interpreter in the presence of all members of the United Nations team, was obtained without prompting or duress. The evidence is so vital that it cannot be ignored.

45. At the three survey areas near Abadan inspected on 28 February 1986 the debris of exploded chemical bombs was examined.

Survey area A (2 km north-east of Abadan)

46. At this site various parts of bomb casings were recovered. The parts were made of thin steel sheet (about 2.2 mm in thickness), weld lines were present and areas of greenish coloured paint still adhered to one side of the steel. The characteristics of these exploded bomb components were similar to bomb casings found during 1984. A single specimen (about 180 mm long and 70 mm wide) was retained for evidence.

Survey area B (15 km south of Abadan)

47. In this area three bomb craters were examined and all contained debris of bomb casings similar to those seen at survey area A. In addition, a significant single component of a bomb was recovered. This consisted of a heavy steel suspension plate (about 130 mm long, 80 mm wide and 24 mm thick), into which was screwed a steel suspension lug, used to attach the bomb to the aircraft bomb rack. The plate also contained a threaded hole (about 50 mm in diameter) which is used to hold the filler plug. The external surface of the plate was painted green, of colour similar to that used on chemical bombs located in 1984. In the laboratory the suspension plug was removed. The cavity was tested with the CAM and a positive indication of mustard gas was obtained. An instrumental analysis of material from the cavity also confirmed the presence of mustard gas. The recovery of parts of bomb casings and the suspension plate indicated that the craters were caused by the explosion of chemical bombs. Most of the craters were quite large (usually 4 m in diameter and 2-3 m in depth) due to the soft nature of the water-soaked soil.

Survey area C (Hadhrat Fatima (AS) Field Hospital)

48. At this site two bomb craters were inspected, one of which had been decontaminated and refilled with earth as it was adjacent to the entrance of the field hospital.

49. Specimens of bomb casings were provided by the Pasdaran, which they claimed had come from the bombs that caused the craters we had observed. One specimen in particular (about 300 mm long by 200 mm wide) had large areas of greenish paint adhering to one side of the thin steel sheet. This indicated that the item almost certainly was part of a chemical bomb and it was therefore photographed for evidence.

50. Although we were told that artillery shells containing mustard gas had been used against Iranian forces, no evidence of this was found by us or was produced by the Iranian authorities.

VII. TESTIMONY OF IRAQI PERSONNEL

51. On Thursday, 27 February 1986, we interviewed nine Iraqi casualties, from a group of 15 being treated at the Labbafi-Nejad Medical Centre for injuries suffered from chemical weapons in the Al-Faw area about three days before. The interview was conducted by the mission in the presence of two doctors and through an interpreter. The information was provided by the Iraqis voluntarily without duress, with no prompting and in a free manner.

52. The Iraqi personnel gave a consistent account of the attacks that caused their injuries, either after they had been captured by, or had surrendered to, Iranian forces or were in no man's land between the opposing forces. Almost all of the Iraqi personnel claimed that they had been injured by bombs dropped by Iraqi aircraft. When asked how they knew the identity of the aircraft they stated that the aircraft were bombing Iranian positions and were subject to Iranian anti-aircraft fire.

53. Late on Friday, 28 February 1986, at the Shaheed Baghai Hospital in Ahvaz, we interviewed the Iraqi pilot whose aircraft had been shot down by an Iranian air-to-air missile several days before, causing injuries to his arm. The interview also was conducted by the mission through an interpreter in the presence of two doctors, the pilot responding freely and voluntarily and without any duress.

54. The pilot stated that in the present offensive his task had been to attack Iranian positions in the Al-Faw area. He also stated that he had participated in two "special missions" against Iranian forces using chemical bombs, although when his aircraft was shot down it was carrying high explosive bombs. (Some additional information provided by the Iraqi pilot on munitions aspects is given in chap. VI.) We would like to record that the treatment provided to this casualty for his injuries apparently was of a similar standard to that provided to Iranian injured.

VIII. SUMMARY AND CONCLUSIONS

55. At the specific request of the Secretary-General we visited Iran from 26 February 1986 to 3 March 1986 in order to conduct an investigation into the alleged use of chemical weapons in the Iran-Iraq conflict. Experience, knowledge and results obtained during two earlier investigations conducted in 1984 and 1985 were used to support the present investigation. Although we examined many casualties from the current conflict in the Al-Faw area, we did not visit this war zone. Casualties were seen at hospitals in Tehran and Ahvaz and a visit was made to sites in the area around Abadan.

56. Summary comments in relation to the present investigation are:

(a) Detailed examination of Iranian casualties showed ocular lesions ranging from mild to severe conjunctivitis with intense palpeberal oedema, skin lesions including large vesicles filled with amber fluid, cutaneous separations, dark pigmentations and lesions approximating to second-degree burns. In some of the cases respiratory injuries and reduced leucocyte levels were found. The same features were found in other casualties which were cursorily examined as well as in corpses. All the lesions observed were caused, without any doubt, by mustard gas (yperite);

(b) Using a special instrument designed to detect chemical warfare agents, low concentrations of mustard gas vapour were detected in numerous craters at three sites around Abadan. Contaminated soil collected from a bomb crater (resulting from an attack the previous day on a field hospital) when analysed in laboratories in Europe was found to contain mustard gas. In addition, a hair sample collected from a victim after he had been attacked with chemical weapons was shown to contain mustard gas;

(c) Examination of metal components of aerial bombs, collected from bomb craters around Abadan, showed that the items had come from bombs that were similar to those examined by the team in 1984. (During the present mission we did not find nor were we shown any other type of chemical weapons, such as artillery shells.)

(d) Significant new evidence was provided during interviews in Tehran of Iraqi casualties. They stated that their injuries had been caused by chemical bombs dropped by Iraqi aircraft during attacks on Iranian positions;

(e) Important new evidence was also provided by a captured Iraqi pilot. He confirmed that Iraqi aircraft had been used to attack Iranian positions with chemical bombs and that he had personally participated in two such "special missions".

57. From the present investigation the following are our unanimous conslusions:

(a) In areas around Abadan inspected by the mission, chemical weapons have been used against Iranian positions by Iraqi forces;

(b) Based on medical examinations and testimony of Iranian and Iraqi casualties evacuated from the Al-Faw area, chemical weapons were also used in that war zone by Iraqi forces;

(c) From the evidence examined by the specialists the type of weapons used was aerial bombs;

(d) The chemical used was mustard gas (yperite);

(e) The extent to which mustard gas was used could not be determined within the time and resources available to us. However, from the over 700 casualties actually seen in Tehran and Ahvaz it is our impression that the use of chemical weapons in 1986 appears to be more extensive than in 1984.

58. After having conducted the examination of various sites, weapons components and numerous casualties in our investigations undertaken in 1984, 1985 and 1986 according to the guidelines given by the Secretary-General, together with circumstantial evidence, we unanimously conclude that:

(a) On many occasions, Iraqi forces have used chemical weapons against Iranian forces;

(b) The agent used has mainly been mustard gas although on some occasions nerve gas was also employed.

Notes

1/ S/16433.

2/ S/17127.

3/ S/15934, S/16128, S/16140, S/16154, S/16235, S/16340, S/16378, S/16380, S/16384, S/16397, S/16408, S/16416, S/16446, S/16447, S/16481, S/16498, S/16508, S/16572, S/16652, S/16656, S/16664, S/16690, S/16827, S/16941, S/16987, S/17027, S/17028, S/17031, S/17046, S/17088, S/17089, S/17095, S/17096, S/17129, S/17143, S/17181, S/17217, S/17342, S/17606, S/17782, S/17790, S/17822, S/17829, S/17833, S/17835, S/17836, S/17843 and S/17858.

4/ S/16193, S/16240, S/16407, S/16438, S/17611, S/17824 and S/17826.

5/ S/16454 and S/17130.

APPENDIX I

Chronology of activities

Tuesday, 25 February 1986

- Mission assembles in Vienna

Wednesday, 26 February 1986

- Departure from Vienna (via Frankfurt) (1020)
- Arrival in Tehran (2105)

Thursday, 27 February 1986

- Meeting in Ministry of Foreign Affairs, Tehran
- Examination of and interviews with patients in the Labbafi Nejad Hospital, Tehran

Friday, 28 February 1986

- Departure for Ahvaz for surveys in the war zone (0615)
  - . Survey of three sites in the Abadan area, examination of weapon debris and craters and collection of soil samples
  - . Examination of and interviews with patients in a field hospital in the Abadan area
  - . Return to Ahvaz
- Examination of and interviews with patients at the Shaheed Baghai Hospital, Ahvaz

Saturday, 1 March 1986

- Visit to the Sayed-o-Shehada Infirmary, Ahvaz
- Return to Tehran (0545)
  - . Examination of and interviews with patients in the Baghiyat-Allah Hospital, Tehran
  - . Visit to Coroner's Office and to Mortuary, Tehran for examination of cadavers and collection of material for analysis

Sunday, 2 March 1986

- Visit to the Val Fajr Infirmary Azadi Stadium, Teheran

Monday, 3 March 1986

- Departure from Tehran (0500)

  . Arrival in Spiez, Switzerland (1958)

Tuesday, 4 March 1986

- Preparation of report

Wednesday, 5 March 1986

- Preparation of report
- Receipt of results of laboratory analysis at Spiez

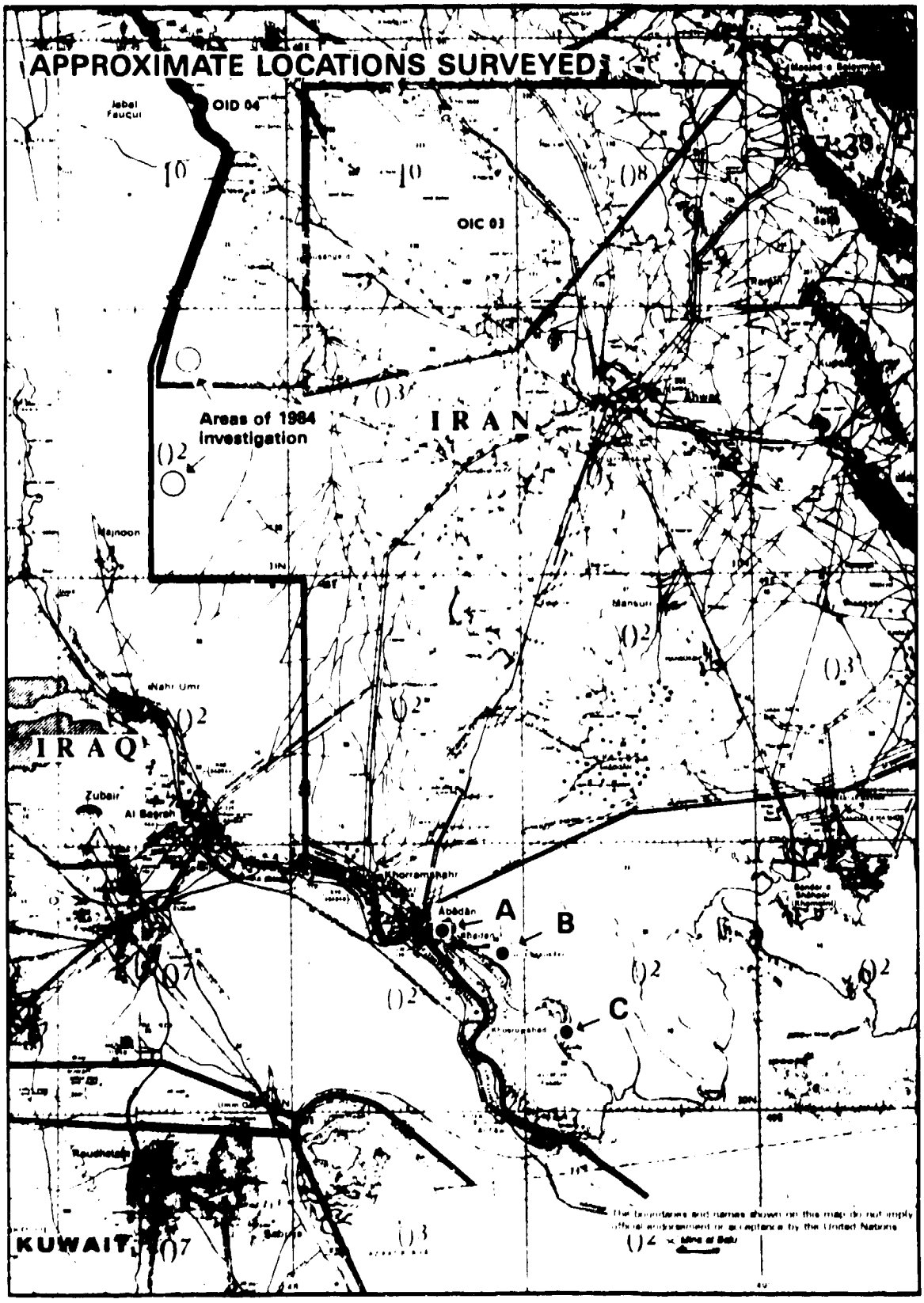
Thursday, 6 March 1986

- Travel to Geneva
- Preparation of report
- Receipt of results of laboratory analysis at Umea

Friday, 7 March 1986

- Finalization of report
- Mission disperses from Geneva

APPENDIX II


APPROXIMATE LOCATIONS SURVEYED
Areas of 1984 investigation
IRAN
IRAQ
KUWAIT
A
B
C
Abadan
Khorramshahr
Zubair
Al Basrah
Majnoon
Nahr Umr
Mansuri
OID 04
OIC 03

APPENDIX IV

Spiez, 5 March 1986

Analysis of a soil sample from Iran

1. Rapid verification

1 g of the soil sample was mixed with 1 g of anhydrous Na_2SO_4, filled into a 3 ml syringe and extracted with 3 ml of dichloromethane.

The extract was analysed by GC/MS (HP 5988A).

According to retention time and mass spectrum the main constituent is bis-(2-chloroethyl)-sulfide (sulfur-mustard).

2. Detailed analysis

10 g of the soil sample were mixed with 15 g of anhydrous Na_2SO_4 and extracted for 1.5 hours with 50 ml of dichloromethane (Soxhlet-apparatus).

According to a quantitative analysis by GC (external standard) a concentration of 1-2 mg of sulfur-mustard per g of soil was calculated.

The extract was then concentrated to a volume of 1.5 ml and analysed by GC/MS.

The following additional compounds could be detected:

- bis-(2-chloroethyl)-disulfide (traces)
- bis-(2-chloroethyl)-sulfoxide (approx. 5%)
- 1,2-bis-(2-chloroethylthio)-ethane (sesqui-mustard, approx. 2%)
- 2,2'-bis-(2-chloroethylthio)-diethylether (oxygen-mustard, approx. 1%)
- Hydrolysis products

The structures of some further compounds (traces) are not yet determinated.

The analysed sulfur-mustard is of rather high purity. The detected trace components are usual byproducts originating in industrial production.

The identified sulfur-mustard looks very similar to the sample analysed in March 1984.

Chromatograms and spectra are enclosed in the appendix.

AC Laboratory Spiez

(Signed) Dr. A. Niederhauser

APPENDIX V

FORSVARETS FORSKNINGSANSTALT
National Defence Research Institute
ABC Research Department (FOA 4)

1986-03-06

REPORT ON ANALYSES OF SAMPLES FROM IRAN FOR THE PRESENCE OF CHEMICAL WARFARE AGENTS

1. The samples were received in Umea, Sweden, 1986-03-03 at 10 p.m.

2. The samples consisted of:

- A plastic 250 ml vessel, labelled "Soil sample No. 1". Embedded in activated charcoal in the vessel was a 100 ml screw-capped glass vessel filled with a brownish solid material having the appearance of slightly moist soil;

- A plastic test tube labelled "Hair Badolla habibi Z 1", sealed with parafilm and adhesive tape, containing a material with the appearance of hair;

- A plastic test tube labelled "Hair Ghosh chehreh Z 2", sealed with parafilm and adhesive tape, containing a material with the appearance of hair;

- A plastic 1-litre screw-capped container, labelled "Soil Samples (4) 28 Feb 86", filled with activated charcoal in which four glass tubes, containing soil-like material, were embedded. These samples were, in an accompanying letter, stated to be duplicates of "Soil sample No. 1".

3. In the head-space of "Soil sample No. 1" mustard gas (bis-(2-chloroethyl)-sulfide) was identified by means of gas chromatography retention times and by comparison of mass spectra with spectra of an authentic mustard gas sample. Furthermore, 2-chloroethyl-vinyl-sulfide was tentatively identified on the basis of mass spectral data.

The concentration of mustard gas in the head-space was estimated to be 0.18 $g \cdot m^{-3}$.

4. In a dichloromethane Soxhlet extract of 10.0 grams of "Soil sample No. 1", the presence of mustard gas was demonstrated by means of gas chromatography retention times, by comparison of mass spectra with spectra of an authentic mustard gas sample, and by ^{13}C-NMR and ^{1}H-NMR spectrometry data.

The concentration of mustard gas in the soil sample was estimated to be 1.6 $mg \cdot g^{-1}$.

/...

Furthermore, the following compounds were tentatively identified, mainly on the basis of mass spectral data, as present in trace quantities in the extract:

2-chloroethyl-vinyl-sulfide

bis-(2-chloroethyl)-disulfide

2-chloroethyl 2 -hydroxyethyl sulfide

bis-(2-chloroethyl)-sulfoxide

sesquimustard gas (1,2-bis-(2-chloroethylthio)-ethane)

Further chlorine-containing compounds are present as traces in the extract. The identity of these compounds have not yet been ascertained.

5. In a dichloromethane extract of 0.58 g of sample marked "Hair Badolla Habibi Z 1" the presence of mustard gas was demonstrated by means of gas chromatography retention times and by comparison of mass spectra with spectra of an authentic mustard gas sample.

The concentration of mustard gas in the hair sample Z 1 was estimated to between 0.5 - 1.0 ug . g^{-1}.

National Defence Research Institute
Division of Chemistry

(Signed) Sten-Ake Fredriksson (Signed) Lars Rittfeldt
