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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. It is with deep concern and anxiety that the Secretary-General must once again inform the Security Council that chemical weapons continue to be used in the conflict between the Islamic Republic of Iran and Iraq. Indeed, in their letter of transmittal of the attached report on the investigation in Iran, the two specialists say that "chemical weapons continue to be used on an intensive scale against Iranian forces" in spite of the provisions of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and that "the use of such weapons in the present conflict has been intensifying and has also become more frequent".

2. The Secretary-General already dispatched missions to investigate allegations of the use of chemical weapons in that conflict in March 1984, April 1985, February/March 1986, April/May 1987 and in March/April this year. 1/ The circumstances of the first three missions were summarized in the Secretary-General's note on the report of 1986. 2/

3. In connection with the conclusions of the last of those missions, the Security Council adopted unanimously, on 9 May 1988, resolution 612 (1988), by which it affirmed the urgent necessity of strict observance of the above-mentioned Geneva Protocol of 1925, condemned vigorously the continued use of chemical weapons in that conflict contrary to the obligations under the Geneva Protocol, expected both sides to refrain from the future use of chemical weapons in accordance with their obligations under the Protocol, called upon all States to continue to apply or to establish strict control of the export to the parties to the conflict of chemical products serving for the production of chemical weapons, and decided to remain seized of the matter and expressed its determination to review the implementation of the resolution.

4. On 19 May 1988, Iran charged that Iraq had again used chemical weapons on 17 and 18 May against a number of Iranian villages. 3/ In that letter, Iran stated that those latest incidents illustrated "the disastrous effects of lack of

effective punitive and preventive measures on the part of the international community". It requested the dispatch of a United Nations mission to investigate the matter. It also stated that the Security Council, in the light of paragraph 5 of resolution 612 (1988), was duty-bound to take effective punitive and preventive measures. In a letter dated 25 May 1988, 4/ Iran transmitted further information about those alleged attacks.

5. In light of the fact that, on the basis of the report of the mission he had dispatched to Iran and Iraq in March/April 1988, 5/ the Security Council had adopted resolution 612 (1988), the Secretary-General considered it appropriate to obtain the views of the members of the Council regarding the above demarche of the Islamic Republic of Iran.

6. On 16 June 1988, Iran submitted a letter 6/ in which it reiterated its request that a mission be dispatched to investigate its allegations made in May and its view that the Security Council, under paragraph 5 of resolution 612 (1988), was duty-bound to take practical measures in order to implement that resolution. In further letters dated 16 and 17 June 1988, 7/ Iran stated that further resort to chemical warfare had taken place on 14 June against Iranian villages.

7. On 17 June 1988, the President of the Security Council informed the Secretary-General that members of the Council, while unanimously reaffirming the condemnation of use of chemical weapons in the conflict, considered that the Security Council could not act on the basis of allegations by one side and that an independent and technical confirmation of the accusation was indispensable for the Council to act. In that connection, the members of the Council requested the co-operation of the Secretary-General.

8. On the basis of the position of the members of the Security Council, the Secretary-General decided to dispatch a mission to Iran to investigate its latest allegations of the use of chemical weapons. In accordance with the arrangement contained in the exchange of letters in April/May 1985 between the President of the Security Council and the Secretary-General, the Secretary-General requested three specialists who had conducted preceding field investigations to undertake this mission, namely, Dr. Gustav Andersson (Sweden), Dr. Manuel Dominguez (Spain) and Colonel Ulrich Imobersteg (Switzerland). The mission was ready to begin travel to proceed to Iran when, on 22 June, the Government of Iran informed the Secretariat that it was not in a position at that time to receive the mission because it could not provide assurances for the safety of the mission.

9. On 25 June, the Secretariat was informed that the Government of Iran was ready to receive the mission. The same three specialists were immediately contacted. Dr. Dominguez was able to participate in the rescheduled mission, but it was not possible for the other two members to reschedule their previous commitments. Under the circumstances, Dr. Andersson and Col. Imobersteg were requested to nominate their alternates and Dr. Andersson was able to name his colleague, Dr. Erik Dahlgren.

10. Thus, the mission consisted of the following two specialists:

Dr. Erik Dahlgren
Deputy Head, Department of NBC Defence
Swedish Defence Research Institute
Umea, Sweden

Dr. Manuel Dominguez
Colonel, Army Medical Corps, and specialist in nuclear, biological and chemical weapons injuries
Professor of preventive medicine
Universidad Complutense de Madrid
Madrid, Spain

Mr. Vicente Berasategui, Director, Department for Disarmament Affairs, United Nations Secretariat, accompanied the specialists to co-ordinate their work and ensure appropriate liaison with the Government of the Islamic Republic of Iran. The specialists submitted their joint report to the Secretary-General on 8 July 1988.

11. The Secretary-General wishes to place on record his deep appreciation to the members of the mission for the exemplary dedication and efficiency with which they completed the assignment, in spite of constraints in time and resources, and under strenuous and often dangerous cond tions. He also wishes to express his appreciation to the Governments of Spain, Sweden and Switzerland for making available the services of these eminent scientists and the facilities of their laboratories.

12. The Secretary-General notes the specialists' view that it may be "necessary to review existing machinery for verification by United Nations teams of the use of chemical weapons in the present conflict in order to ensure the timely presence of experts at the site of alleged attacks". In that connection, he intends to ensure that, should the need unfortunately arise, the Security Council is duly informed of any developments which may assist it in discharging its responsibilities as envisaged in operative paragraph 5 of resolution 612 (1988).

* * *

13. In transmitting to the Security Council the report of the mission of specialists which is annexed to the present note, the Secretary-General cannot but express his deep regret at the mission's conclusions that chemical weapons continue to be used against Iranian forces and positions. He fully shares the specialists' assessment that even more serious consequences than those already experienced may result if the trend of continued - indeed, as the specialists say, intensifying and more frequent - use of chemical weapons continues. The danger of continuing escalation involving the use of those weapons of mass destruction, in violation of the Geneva Protocol and in spite of repeated findings by independent United Nations investigations and numerous appeals, is a frightening possibility which must be fully faced by all concerned and by the international community as a whole.

14. The Secretary-General finds particularly disturbing that, only a few weeks after the unanimous adoption of resolution 612 (1988), he is compelled to submit to the Security Council a report which clearly points to activities that are in violation of the terms of that resolution. The Security Council would no doubt draw its own conclusions from the findings of the present report.

15. At the same time, the Secretary-General cannot stress strongly enough, as he has consistently done, that his paramount objective remains to bring this protracted conflict to the earliest possible end. Security Council resolution 598 (1987) provides the basis for a comprehensive, lasting and honourable settlement that would restore peace to the peoples of Iran and Iraq and stability to the region. Recent developments have brought that possibility closer than ever before and the Secretary-General is determined to move forward vigorously with his efforts, in close consultation with the Security Council. He urges the Governments of Iran and Iraq to respond with renewed determination.

Notes

1/ S/16433; S/17127 and Add.1; S/17911 and Corr.1 and Add.1 and 2; S/18852 and Add.1; and S/19823 and Corr.1 and Add.1

2/ S/17911.

3/ See S/19892.

4/ S/19902.

5/ S/19823 and Corr.1 and Add.1.

6/ A/43/410-S/19942.

7/ S/19943 and S/19946.

Annex

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

CONTENTS

LETTER OF TRANSMITTAL

Geneva, 8 July 1988

Sir,

We have the honour to submit herewith our report on the investigations you requested us to undertake concerning continued allegations by the Islamic Republic of Iran of the use of chemical weapons in the conflict between that country and Iraq.

In order to carry out the investigation, we visited the Islamic Republic of Iran between 1 and 5 July 1988 for the purpose of determining, to the extent possible, if chemical weapons had been used and, if so, the type, extent and circumstances of their use.

In preparing our report, we have taken into account the reports of investigations undertaken at your request in 1984, 1985, 1986, 1987 and earlier this year. These reports have served as useful background information for the present investigation.

We deeply regret to say that, on the basis of evidence gathered during the present mission, and in spite of repeated appeals by the United Nations, chemical weapons continue to be used on an intensive scale against Iranian forces. As highlighted in the reports submitted by previous missions that went to the Islamic Republic of Iran, the continued use of such weapons in the present conflict increases the risk of their use in future conflicts. It is also clear from accumulated evidence that the use of chemical weapons in the present conflict has been intensifying and has also become more frequent. If such trends continue, it may have even more serious consequences than those that have already been experienced.

The use of yperite (mustard gas) was again confirmed both medically and by chemical analysis. It was also possible to determine the degradation components and impurities which that agent contained.

Concerning the allegation that nerve gas and cyanide had been used in the conflict, while the effects of toxic organophosphorous compounds has been confirmed by clinical examination of some patients, the use of nerve gas or cyanide was not confirmed by chemical analysis in the field, no doubt owing to their rapid disappearance. It may thus be necessary to review existing machinery for verification by United Nations teams of the use of chemical weapons in order to ensure the timely presence of experts at the site of alleged attacks.

In undertaking this mission we received support from many institutions and individuals. In particular, we would like to express our appreciation to the Government of the Islamic Republic of Iran for the co-operation and assistance accorded to us in the fulfilment of our task.

We should like to express deep appreciation to the United Nations-designated laboratories in Switzerland and Sweden, which assisted us effectively in the technical aspects of this mission.

We also wish to thank Mr. Vicente Berasategui, Director, United Nations Secretariat, who accompanied us to the Islamic Republic of Iran and assisted us in the preparation of the report, for his co-operation and advice.

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

Yours sincerely,

(Signed) Erik DAHLGREN

(Signed) Manuel DOMINGUEZ CARMONA

I. TERMS OF REFERENCE

1. The Secretary-General decided, in continuation of the investigations undertaken in 1984, 1985, 1986, 1987 and earlier in 1988, to dispatch a mission to the Islamic Republic of Iran to investigate allegations by its Government of the use by Iraqi forces of chemical weapons in the conflict between that country and Iraq. He requested the mission to determine, to the extent possible, whether such weapons had been used and, if so, the type, extent and circumstances of their use. A senior United Nations official accompanied the mission to co-ordinate its work and ensure appropriate liaison with the Government of the Islamic Republic of Iran.

II. REVIEW OF DOCUMENTATION

2. In preparation for the drafting of the present report, we reviewed the following United Nations documents:

(a) Report dated 26 March 1984 of the specialists appointed by the Secretary-General to investigate allegations by the Islamic Republic of Iran concerning the use of chemical weapons; a/

(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); b/

(c) Report dated 12 March 1986 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; c/

(d) Report dated 8 May 1987 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; d/

(e) Report dated 25 April 1988 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; e/

(f) Letters concerning chemical weapons from the Government of the Islamic Republic of Iran since the issuance of the report dated 25 April 1988; f/

(g) Letters concerning chemical weapons from the Government of Iraq to the Secretary-General since the issuance of the report dated 25 April 1988; g/

(h) Security Council resolution 612 (1988) of 9 May 1988.

3. We also referred, during the drafting of the report, to the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925. h/

III. METHODOLOGY

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

(a) Interviews with government officials in Tehran in order to obtain information regarding the alleged use of chemical weapons, as well as with Dr. Foroutan, Director of the Medical Association for Victims of Chemical Warfare, and Dr. Mirzai of the same Association;

(b) Visits to the war zone some 40 km south-west of Ahvaz in order to examine evidence of alleged chemical attacks and to collect samples for chemical analysis in specialized laboratories;

(c) Clinical examinations of, and interviews conducted with, a number of patients who were allegedly exposed to an attack of chemical warfare agents supplemented by briefings by the medical specialists. The clinical examinations were conducted in hospitals in Bakhtaran and Ahvaz, to which patients had been evacuated.

5. We must point out that the intervals between the alleged attacks and our actual arrival in the areas to collect samples for chemical analysis resulted in the degradation and evaporation of chemical agents. In order to facilitate such analysis it is important that sampling be done as quickly as possible.

6. The same type of sampling, detection and protective equipment used by earlier missions (and described in the report of 1986) ç/ was again used during the present mission. This equipment included the Chemical Agent Monitor (CAM) which was used for the first time in 1986.

7. The team spent four days in Iran - one day more than planned owing to a cancellation of all flights from Tehran (for the chronology of activities, see appendix I). In Tehran we paid a visit to the Ministry of Foreign Affairs to meet the Deputy Minister for International Affairs, Mr. Lavassani. During our mission we were accompanied and assisted at all times by representatives from the Ministry of Foreign Affairs. In Bakhtaran and Ahvaz we also had briefings with local authorities.

8. During our visit in the war zone at the site of the alleged attack with chemical weapons, we were provided with adequate protective equipment by the local military authorities. The weather conditions with temperatures in the range of 48 to 50°C favoured fast evaporation and degradation of chemical agents. That made our mission more difficult and also stresses the importance of inspections taking place shortly after alleged attacks.

IV. MEDICAL ASPECTS

A. General information

9. According to statements made by the patients visited by the mission, they had been affected by chemical weapons in two sectors. The 20 patients examined at the "Khatam" hospital in Ahvaz said they had been affected by bombs dropped in the vicinity of Hamid, south-west of Ahvaz, and by artillery and air attacks in Koushk and the Majnoon Islands, all on 25 June 1988.

10. According to those patients as well as the reports of doctors at the hospitals visited and the Chief of the Medical Service of the Ahvaz military region, 2,000 people had been affected on the Majnoon Islands. They are islands in marsh areas which had previously been taken by Iranian forces. Only two cases from that group were available for medical examination, since the others either were in the hands of the opposing forces or had been evacuated to several other hospitals and the lack of time prevented the mission from visiting them. The persons affected and the reporting doctors said that the attack had been carried out by Iraq.

11. The Chief of the Medical Service of the region further said that, on 25 June, between 0300 and 0500, there had been a massive attack by Iraqi forces which had begun with artillery fire using chemical ammunition and lasted for approximately two hours. Later, aeroplanes and helicopters had joined the attack. According to the same source, the frontline had been attacked with cyanide and organophosphorous compounds. Logistic units, command posts and reserves had also been attacked but with mustard gas. Four emergency medical centres and one hospital in the zone had been attacked with chemical weapons, although there had not been victims, owing to the protective measures adopted. In the Chief of the Medical Service's opinion, which was supported by others present, the use of nerve gas was limited to the frontline, as its effects dissipated quickly and facilitated the advance of attacking troops. On the other hand, he said, mustard gas was being used against rear echelons near Hamid to disrupt possible counter-attacks, because of its lasting effects on troops, equipment and environmental conditions. He said that there were 50 casualties in the Hamid area, of which two had died up to 1 July.

12. The 22 patients examined in the "22 Bahmann" hospital in Bakhtaran said they had been among those affected by chemical agents in attacks that took place in the northern sector between 27 and 30 June 1988: those attacks occurred at Shakheshmiran on 27 June and by artillery fire at Khormal on 30 June - both mountainous areas close to Halabja (Iraq) which were occupied by Iranian forces at the time - and by artillery shells and bombs dropped from helicopters over Sheikh Saleh (Iran) on 27 and 28 June.

B. Medical information

13. Investigations conducted by the mission's medical specialist are based on interviews and clinical examinations of 42 patients reportedly affected by aggressive chemicals. Twenty-two of them were examined in the "22 Bahmann" hospital in Bakhtaran on 1 July 1988, and 20 patients in the "Khatam" hospital in

Ahvaz on 2 July 1988. Four of those patients interviewed in Bakhtaran were of Iraqi nationality serving with Iranian forces.

14. The 22 patients examined at the "22 Bahmann" hospital were selected at random from a total of 56 said to have been affected by aggressive chemicals, all of them hospitalized in a large ward on the ground floor of the building.

15. The 20 patients seen on 2 July 1988 at the "Khatam" hospital in Ahvaz were all said to have been affected by chemical attacks on 25 June 1988. They came, according to information supplied to the mission, from Koushk, Majnoon and largely from the vicinity of Hamid, a district about 40 km south-west of Ahvaz.

16. A brief examination was also made of a further 34 patients at the "22 Bahmann" hospital in Bakhtaran.

17. Similarly, the dead bodies of two patients who had been treated at the "Khatam" hospital in Ahvaz were examined, and a further 22 dead bodies kept in two cold-storage trucks were inspected at Merdj Syedo-shohada (outskirts of Ahvaz), a mortuary, which had two other cold-storage trucks containing a total of 64 bodies in coffins; but those were not inspected.

18. The patients' medical examination described in the present report was conducted personally by the medical specialist of the mission. The patients' medical history, their names and ages, as well as the date and place of the alleged attack and the first symptoms that had led them to believe that they had been exposed to chemical agents, were obtained by questioning the patients through an interpreter. There may be slight errors or inconsistencies in the spelling of names and geographical locations, which varies frequently according to the maps used. There may also be slight errors in the dates on which the alleged attacks took place, since the patients, because of their mental condition, the time elapsed since the attack and the need to convert dates from the Islamic to the Gregorian calendar, sometimes were not precise about the information supplied.

19. The typical casualty could be described as a male soldier, 18 to 48 years of age, mostly in his 20s, the average being 24, who suffered the effects of chemical agents contained in artillery shells or in bombs which exploded on the ground between 4 and 200 m away. Seventy-seven per cent used a gas mask.

20. At least two kinds of agents have been used. One was a vesicant type which, as in the case of previous missions and according to the findings of the analyses made, is yperite or mustard gas. The other was an organophosphorous compound.

21. Thirty-six of the patients examined in detail showed symptoms of exposure to yperite (see annex III, medical histories Nos. 4, 8 to 40, 43 and 44). Also affected by yperite were a further 34 patients at the "22 Bahmann" hospital in Bakhtaran, who were looked at only briefly but adequately, since it is an agent that leaves easily identifiable, characteristic skin lesions and a detailed examination is not needed.

22. The aspect of the lesions differed according to the time elapsed between the attack and the examination. Most patients were examined some time after the attack had taken place.

23. After a period ranging from one minute to eight hours (an average of one hour 44 minutes), the yperite produced significant symptoms in the person affected. The shorter periods, from one hour to 20 minutes, were for casualties who were not wearing a gas mask. There were two cases - medical histories Nos. 22 and 34 - who put their gas masks on when they noted signs of poisoning, after 10 and 3 minutes respectively. Among the people protected by a gas mask, the first symptoms emerged after 1 hour 5 minutes to 8 hours, the average being 3 hours 25 minutes.

24. The first symptoms consisted of a burning in the eyes and various parts of the body, conjunctival irritation, photophobia and vomiting. Those were followed by erythema until the skin turned violet and vesicles of various sizes emerged, some very large, which were separated and contained a liquid that filled the blister tight. After a few days, the blisters open and yield an amber fluid, leaving a surface similar to that produced by second-degree burns.

25. The skin not affected by blisters goes darker until it is black in some areas, with a darker pigmentation in the armpit and the groin. Among the patients examined on this mission, the darkening was not so severe and it covered smaller areas than those observed on previous missions. As a result of the yperite, the darkening of the dead bodies examined was intense and covered the face and large portions of the body. The darkening, oedema and ulceration of the armpit, groin and genitals was, by and large, less intense than on previous occasions, and hence less sensitive to chafing.

26. On most of the patients, the face was protected by gas masks and therefore unharmed, although the conjunctiva, which are very sensitive, were affected in most cases. For the same reason, there were few cases of any significance of people affected by respiratory lesions.

27. After developing leukocytosis, one patient had leukopenia and when his blood was analysed three hours after his death, the white globules had disappeared.

28. Another group of patients consisted of eight persons (medical histories Nos. 1, 2, 3, 5, 6, 7, 41 and 42). A few minutes after the bomb or shell exploded, they developed symptoms of effects on the nervous system, especially miosis, blurred vision, lachrymation, nausea, vomiting, urinary incontinence in some cases, pulmonary oedema and bronchospasms which caused respiratory distress and effects on the consciousness that ranged from slower mental activity to deep coma. These are due to poisoning with an inhibiting agent of the acetylcholine esterase enzyme, which causes acetylcholine to build up in the intersynaptic spaces of the central and vagal nervous system.

29. The agent is, therefore, an organophosphorous compound, in all likelihood of the tabun type, already used against civilians and military personnel. Medical cases Nos. 1, 2, 3, 41 and 42, when examined, exhibited symptoms which clearly indicated the poisoning they had suffered. In cases Nos. 5, 6 and 7, their medical

histories alone could be used, since they showed no symptoms when they were examined, in view of the time that had elapsed since the attack.

30. It is also very possible that the four soldiers observed in Merdj Syedo-shohada had died as a result of organophosphorous compounds inasmuch as they had no external injuries or skin lesions. On the other hand, they exhibited contractures of the feet (hyperextension) and the hands (clenched fist) and rigor mortis had been very rapid. An attempt was made to obtain blood samples from those bodies by cardiopuncture, but it was not possible because they were in a frozen state.

31. Drs. Foroutan and Mirzai, of the Medical Association for Victims of Chemical Warfare, thought that hydrocyanide gas was used in Majnoon and they reached that conclusion on the basis of three cases with respiratory distress, mydriasis with rigidity of the pupil, coma, reddening of the face and convulsions, which were cured in one case by administering sodium nitrite and sodium thiosulphate, specific medicines for poisoning with that product. Nevertheless, as on previous occasions, it was not possible to verify this, since none of the casualties was available. The medical specialist would add that, whenever allegations have been made about the use of hydrocyanic gas, organophosphorous agents have always been used at the same time, and it is possible that the tabun, which has a molecule containing the CN group, decomposed when the shell exploded, causing characteristic hydrocyanic effects.

V. CHEMICAL ASPECTS

32. During the visit to the "22 Bahmann" hospital in Bakhtaran on Friday, 1 July, we sampled blister liquid from two victims in order, if possible, to confirm which agent had been used. The analysis of these samples is time-consuming, requires special methodology and was therefore given lower priority than the other samples. No results had been submitted at the time of issuance of the present report. Further information on the analysis will be provided as soon as possible.

33. In the afternoon of Saturday, 2 July, the mission visited a military camp at Hamid, about 40 km south-west of Ahvaz, in the war zone. The camp was alleged to have been attacked by aircraft with chemical weapons (mustard gas) one week earlier (see also part IV above).

34. After arrival at the camp we were shown four heaps of soil said to cover exploded chemical bombs. The heaps had a diameter of around 3 m and a height of approximately 1 m. We were told that DS 2 had been used to decontaminate the bombs, but visual inspection and the smell indicated that decontamination powder containing chlorine was present in relatively small amounts around the bomb residues.

35. A heavy truck was used to uncover the bomb residues. The surface of the soil and munition parts were monitored with the CAM (Chemical Agent Monitor) in order to find some indication of the presence of chemical agent. The instrument did not, in any area that was searched, give any response. This was probably due to the high

temperature in the area (around 50°C). However, in tests performed later on some of the samples, the CAM indicated the presence of an H agent. At some sites, especially around and inside a damaged shelter, we could notice a smell reminiscent of mustard gas and degradation products.

36. Soil samples containing shrapnel from the bomb residues and some small parts from bombs were taken and subsequently sent to highly specialized laboratories in Sweden and Switzerland for analysis.

37. The results of the analyses clearly confirm the presence of mustard gas, bis-(2-chloroethyl)-sulphide in the samples taken in the Hamid camp. The same minor constituents that have been identified in earlier investigations were also found. The results from the AC Laboratory in Switzerland and those from the Swedish Defence Research Establishment, which are similar, are given in appendices V and VI.

VI. MUNITIONS ASPECTS

38. Since the bomb residues were covered with soil on our arrival we could not see any craters. All fragments examined were, however, found approximately at the same level as the surrounding ground.

39. The diameter of the bottom plate was about 30 cm and the casings were 1.5-2 mm thick. The outer surface of the casing had a greenish painting and the inner surface was slightly corroded steel.

40. Two heavy steel suspension plates with lugs, used to attach the bomb to the aircraft, were examined. The plates also contained a threaded filler plug, about 50 mm in diameter.

41. The external appearance of the bomb fragments retrieved in the Hamid area indicated that they might derive from munitions similar to the types seen by the specialists during the 1984, 1986 and 1987 investigations.

VII. SUMMARY OF FINDINGS

42. At the specific request of the Secretary-General, we visited the Islamic Republic of Iran from 1 to 5 July 1988 in order to conduct an investigation into the alleged use of chemical weapons in the Iran-Iraq conflict. The departure of the mission from Tehran was delayed for 24 hours owing to the cancellation of all flights on Monday, 4 July.

43. The experience, knowledge and results obtained in five earlier investigations conducted in 1984, 1985, 1986, 1987 and earlier in 1988 were used to support the present investigations.

44. Casualties were seen in hospitals in Bakhtaran and Ahvaz and a visit was paid to the war zone south-west of Ahvaz.

45. Summary comments in relation to the present investigation are as follows:

(a) It has been possible to determine without any doubt that, in the course of June 1988, Iranian soldiers were affected by yperite (mustard gas). Thirty-six cases which were examined displayed typical symptoms of exposure to this agent including lesions of erythema, darkening of the skin, blisters, like second-degree burns, and respiratory lesions in a few instances. A medullary lesion was observed in one patient, who had died;

(b) On the basis of examination of two patients said to have been among those affected by chemical agents in attacks on the Majnoon Islands, together with another six cases of persons affected at Shakheshmiran, close to Halabja (Iraq), it could be concluded that organophosphorous compounds had also been used;

(c) The effects of these agents are similar to those verified by the medical specialist on previous missions, although among the patients seen during the present mission (not necessarily equivalent to what happened to all of the casualties) the effects were less serious, perhaps as a result of better protection;

(d) Samples of bomb fragments and soil sampled by us in an Iranian military camp south-west of Ahvaz were analysed by highly specialized laboratories in Sweden and Switzerland. It was found that they contained yperite (mustard gas);

(e) Examination of munition parts from the same location indicated that the items had come from bombs similar to those examined by the teams dispatched to the Islamic Republic of Iran in 1984, 1986 and 1987.

VIII. CONCLUSIONS

46. The following are the conclusions from our present investigation:

(a) On the basis of the clinical examinations we conducted in the Islamic Republic of Iran, we were able to determine that patients had been affected by chemical weapons;

(b) The aggressive chemicals used in these cases were yperite (mustard gas) and an acetylcholine esterase inhibiting substance;

(c) In the Hamid area south-west of Ahvaz, inspected by the mission, chemical analysis of soil samples and weapon fragments showed that chemical weapons had been used against Iranian positions. The chemical agent present was mustard gas (yperite);

(d) From the examination of weapon fragments it can be concluded that bombs similar to those used in 1984, 1986 and 1987 have again been used against Iranian forces on Iranian territory, indicating their repeated utilization by Iraqi forces;

(e) While it has not been possible, owing to constraints of time and resources, to make a precise determination of the extent of the use of chemical

warfare agents, the findings of the present mission together with those of preceding missions support the conclusion that such use has become more intense and frequent.

Notes

a/ S/16433.

b/ S/17127 and Add.1.

c/ S/17911 and Corr.1 and Add.1 and 2.

d/ S/18852 and Add.1.

e/ S/19823 and Corr.1 and Add.1.

f/ S/19892, S/19902, A/43/410-S/19942, S/19943, S/19946, S/19954, S/19967.

g/ S/19948, S/19982.

h/ League of Nations, Treaty Series, vol. XCIV (1929), No. 2138, p. 65.

Appendix I

CHRONOLOGY OF ACTIVITIES

Thursday, 30 June 1988

Mission assembles in London (1530)

Departure from London (1910)

Friday, 1 July 1988

Arrival in Tehran (0615)

Meeting with Mr. Tabatabai, Director-General for International Political Affairs, Ministry of Foreign Affairs (0630-0745)

Departure for Bakhtaran (1300)

Examination of, and interviews with, patients at "22 Bahmann" hospital in Bakhtaran (1530)

Return to Tehran (2115)

Saturday, 2 July 1988

Departure for Ahvaz (via Omidyé) (0830)

Arrival at Omidyé (1215)

Departure for Ahvaz (1300)

.rrival at Ahvaz (1345)

Examination of, and interviews with, patients at "Khatam" hospital in Ahvaz (1500)

Survey of sites within the war zone in the area of Hamid and examination of weapon debris (1630)

Departure for Tehran (2150)

Arrival in Tehran (2300)

Sunday, 3 July 1988

Meeting at the Ministry of Foreign Affairs with Mr. Lavassani, Deputy Minister for International Affairs (1600)

Presentation by members of the Women's Society of the Islamic Republic of Iran (1915)

Working dinner with Mr. Tabatabai, Director-General for International Political Affairs (2030)

Monday, 4 July 1988

Cancellation of all flights leaving Tehran

Tuesday, 5 July 1988

Departure from Tehran (0930)

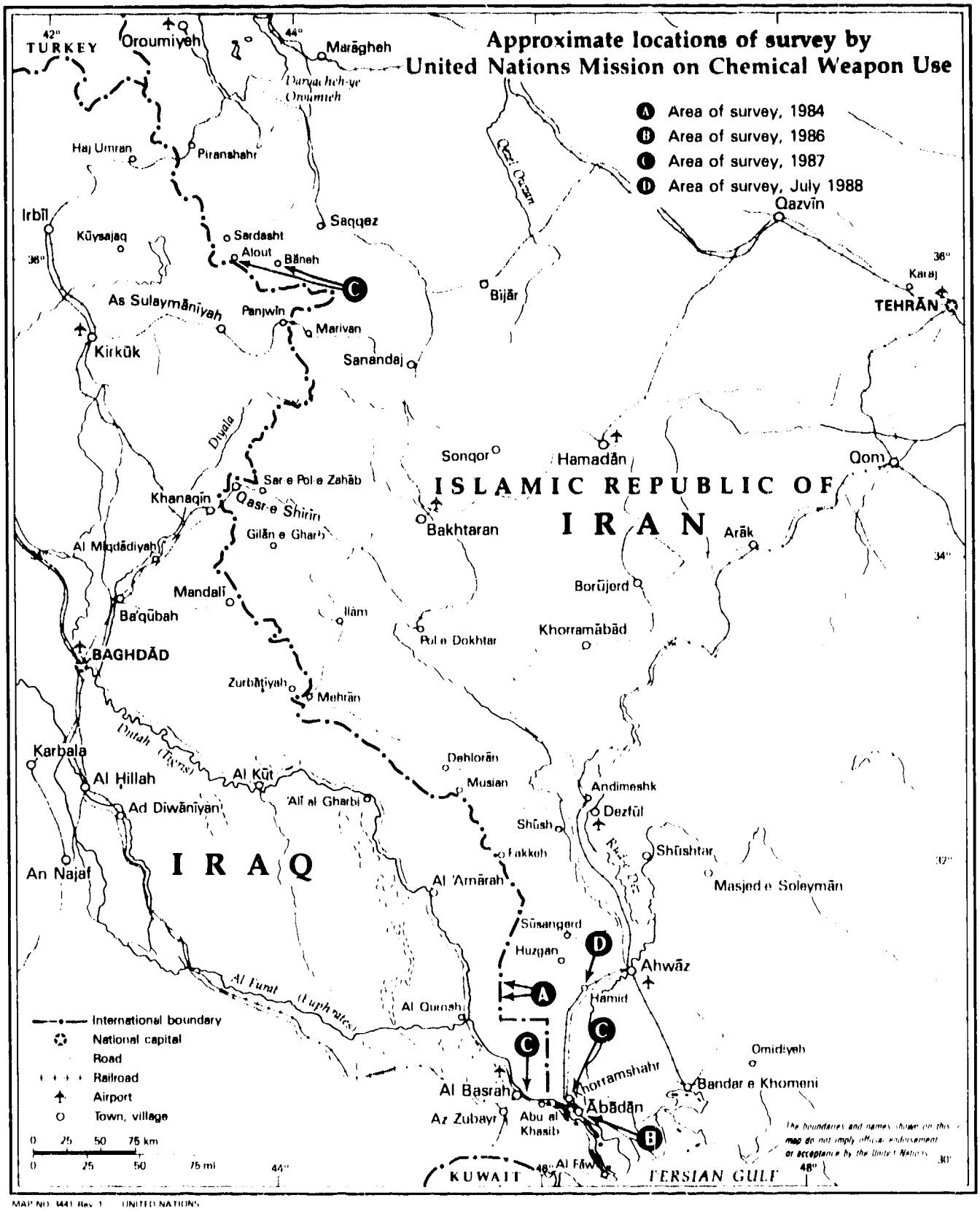
Arrival at Geneva via Frankfurt (1815)

Wednesday, 6-Friday, 8 July 1988

Preparation of the report. Mission concluded.

Appendix II

MAP OF APPROXIMATE LOCATION OF SURVEY



MAP NO. 3441 Rev. 1 UNITED NATIONS
JULY 1988

Appendix V

NC-Laboratory Spiez — Spiez, 7 July 1988

Analysis of samples from Iran for CW-agents

(handed over in Geneva on 6 July 1988)

1. Samples

   - Sample Nos. 4 and 6: Soil samples of approx. 25 g each
   - Bomb fragments

2. Rapid verification

   Head space analysis by GC/MS, HP 5988A:

   Sample No. 4: 10 µl of air gave no indication of S-mustard in the SIM-mode (Selectiv Ion Monitoring).

   Sample No. 6: 10 µl of air gave a positive indication of S-mustard in the SCAN-mode (Masses 40-200).

3. Extraction

   - 10 g of the soil sample No. 4 (containing bleaching powder) were mixed with 5 g of anhydrous Na2S04 and extracted for 12 hours with 75 ml of dichloromethane in a soxhlet-apparatus. The extract was concentrated to a volume of 0.5 ml.

   - 5 g of the soil sample No. 6 were mixed with 2.5 g of anhydrous Na2S04 and extracted for 1.5 hours with 75 ml of dichloromethane in a soxhlet apparatus. The extract was analysed without any concentration procedure.

   - The parts from the bomb were extracted with 100 ml of dichloromethane. The extract was concentrated to a volume of 0.5 ml.

4. Results

   4.1. Sample No. 4

   The GC/MS-analysis of the concentrated extract in the SCAN-mode gave no indication for CW-agents.

   The extract contains a lot of not identified chlorinated compounds which seem not to be in connection with S-mustard. A selective analysis of S-mustard and mustard-sulfoxide (possible reaction product in the presence of bleaching powder) in the SIM-mode gave no positive indication for these agents in concentrations larger than approx. 100 mg/g.

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4.2 Sample No. 6

According to GC/MS analysis (see copy of TIC-chromatogram) the following compounds could be identified:

- bis-(2-chloroethyl)-sulfide (S-mustard, peak 1)
- bis-(2-chloroethyl)-disulfide (peak 2)
- bis-(2-chloroethyl)-sulfoxide (peak 3)
- 1,2-bis-(2-chloroethylthio)-ethane (sesqui mustard, peak 4)
- 2,2'-bis-(2-chloroethylthio)-diethylether (oxygen mustard, peak 5)

Various additional chlorinated compounds are present in traces. The estimated concentration of S-mustard is 50 mg/g (GC/FID).

4.3. Bomb fragments

According to GC/MS analysis (see copy of TIC-chromatogram) S-mustard could be identified unequivocally. The same byproducts as in sample 6 were found in traces. The chromatogram is overloaded by various hydrocarbons.

NC-Laboratory Spiez

(Signed) Dr. A. NIEDERHAUSER

Appendix VI

REPORT ON ANALYSES OF SAMPLES FROM IRAN

The samples were received in Umea, Sweden, at 9 p.m., 5 July 1988.

1. The samples consisted of:

   - One 20 ml screw-capped glass vessel wrapped in aluminium foil, containing approx. 5 ml of a faint yellow liquid. The vessel was labelled number 1.

   - Two 50 ml glass containers with plastic lids, wrapped in aluminium foil, containing soil. The containers were labelled numbers 3 and 5 respectively.

   - Two distorted metal fragments weighing 100-200 g apiece.

   The samples were packed in a 1-litre plastic box filled with charcoal. The metal fragments were packed in a latex glove which was wrapped with aluminium foil.

2. In dichloromethane extracts of sample Nos. 3 and 5 and the metal fragments, mustard gas was identified by gas chromatography retention data and by comparison of mass spectra with that of authentic mustard gas.

   The concentration of mustard gas in the soil sample labelled No. 5 was determined to 25 mg/g. Sample No. 3 contained only trace amounts of mustard gas.

   The amount of mustard gas on the metal fragments was determined to 240 mg.

3. Furthermore, in soil sample No. 5 and on the metal fragments minor quantities of the following compounds were tentatively identified as present in the extracts. The identification is based on mass spectral data and gas chromatographic retention behaviour:

   2-chloroethyl 2-hydroxyethyl sulfide
   2-chloroethyl 3-chloropropyl sulfide
   bis(2-chloroethyl)disulfide
   bis(2-chloroethyl)sulfoxide
   1,2-bis(2-chloroethylthio)ethane (sesquimustard gas)
   bis(2-chloroethylthioethyl)ether

4. Sample number 1 has not yet been analysed.

Swedish Defence Research Establishment
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(Signed) Hans-Åke LAKSO
