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FINAL REPORT OF THE UNITED NATIONS COMISSION OF EXPERTS ESTABLISHED PURSUANT TO SECURITY COUNCIL RESOLUTION 780 (1992)

ANNEX XII
RADIOLOGICAL INVESTIGATION (UNPA SECTOR WEST, CROATIA)
OCTOBER/NOVEMBER 1993

Under the Direction of:

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Member and Rapporteur for On-Site Investigations,
Commission of Experts Established Pursuant to
Security Council Resolution 780 (1992)

Prepared by:

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I. GENERAL

1. On request of the United Nations Commission of Experts, two Nuclear, Biological and Chemical (NBC) specialists were temporarily attached to the Royal Netherlands Army UNPROFOR Support Detachment, in order to conduct a preliminary radiological survey in United Nations Protected Area (UNPA) Sector West. The team deployed to Croatia on 18 October 1993 and to the Sector on 20 October. The team conducted its investigation in the Sector until 3 November, redeployed to Zagreb on 3 November, and returned to The Netherlands on 4 November. An initial debriefing was held on 3 November at UNPROFOR Hqs. Zagreb.

II. PERSONNEL

2. The NBC team was formed by two instructors of the NBC School of the Royal Netherlands Army, Captain J. J.H.M. Limbourg and Sergeant-Major C.C.L. Daelman.

III. EQUIPMENT

A. Radiological equipment

3. For the radiological survey, the team used the KL PDR 7000 radiological monitor, fitted with both an internal and external sensor. This radiation monitor proved to be an excellent tool for the mission, as it was capable of measuring the normal background radiation in Gamma mode, in Beta/Gamma mode, and to indicate the nuclear activity in water and soil samples. This meter is the standard radiological survey meter in the Royal Netherlands Army (RNLA), as well as the Royal Netherlands Air Force (RNLAF). In addition, a civilian gamma monitor was used.

4. For personal protection, the team was equipped with several personal dosimeters, named a "filmbadge" and two electronic dosimeters. The maximum dose allowed was 5 cGy for the NBC team and 0,5 cGy for any other personnel involved.

B. Additional equipment

5. Vehicular: UN Jeep Cherokee, fitted with VHF radio.

6. Communications: A satellite communication system with built-in Global Positioning System was provided. For back-up communication with the NBC School in The Netherlands, telephone communications were used from UNPROFOR Communications Centre in the Sector.

IV. EXECUTION

A. General

7. The locations of alleged dumping were given to the examining team only after their arrival in Zagreb. However, the information provided was hardly sufficient to conduct a thorough examination of the areas stated, as each of the mentioned areas covered at least 120 square kilometres. The team, as ordered by the Ministry of Defence in The Hague, only covered UNPA Sector West. Before deployment, the team conducted a very detailed map study. This, combined with information obtained from UN Civilian Police, UNPROFOR, and the

local population enabled the team to operate in the Sector.

B. Locations

8. The main area of the survey was UNPA Sector West, with Sector Hqs. at Daruvar. Within UNPA Sector West, two areas were indicated in the information given to the team. These two areas, PSUNJ mountains and PAPUK mountains, were of main interest. In addition, other areas in the Sector were covered, with special attention towards abandoned mine shafts, rockeries, and domestic waste dumps en route. Furthermore, the radiological situation at the gravesite in UNPA Sector West (Pakracka Poljana) was closely monitored as well, in order to eliminate rumours of possible dumping of radiological waste near the alleged mass graves.

9. Due to the increasing activities and the large movements of troops of the warring factions in the area of the Cease Fire Zone, combined with the increasing threat of snipers, the team was not able to examine the PSUNJ area. This was decided in conjunction with the Sector Commander and his staff in Daruvar.

C. Mode

10. The survey was held by mobile patrol, with both internal and external sensors. In the immediate area of measuring points, patrols by foot were conducted; i.e., one member of the team leaving the vehicle, vehicle moved away at least 50 metres, then reading the monitor. This, combined with the reading of the vehicle monitors, gave the most accurate results.

11. On five locations, soil samples were taken, to be investigated by the TSD laboratories in The Netherlands. Two of the samples were taken at the mass gravesite in UNPA Sector West (#1 and #5). The examination report is set out at page 4 of this report.

12. In total, 1,800 kilometres of roads were covered in the Sector, of which approx 1,100 kilometres non-metalled (gravel and sandpaths). Many minefields, possible locations and mine warning signs were seen and reported to UNPA Sector West Headquarters.

V. RESULTS

13. The normal, natural radiation ("background radiation") in the mission area proved to be approximately 0,25 uGy/h. This was an average, monitored throughout the team's stay in the mission area. In UNPA Sector West, the level of nuclear activity proved to be between 0,05 uGy/h (location rockery 33TXL773533) and 0,45 uGhy/h (location 33TXL 86685281, soil sample #2). All other readings were within this range.

14. Further investigation of possible dumpsites, such as rockeries, waste dumpsites and abandoned villages showed no physical presence of nuclear waste.

VI. CONCLUSIONS

15. The nuclear activity, measured at UNPA Sector West, proved NOT to be any higher than the normal background radiation. In addition, examination of the five soil samples proved that the quantity of radioactive materials in the samples can be considered as normal. These radioactive materials contribute

to the level of background radiation.

16. There were no signs of any nuclear waste in the areas searched.

17. The mission proved to be too short to conduct an investigation in the other areas. However, the team is willing to return, to examine the other areas.

Vught, 14 December 1993,
OIC NBC
Royal Netherlands Army
UNPROFOR Support Detachment

Appendix I

ANALYSIS RESULTS OF SOIL SAMPLES BY TSD

Captain RNLA
J. J.H.M LIMBOURG

Sample Nuclide	#1	#2	#3	#4	#5
Ra-226	80.2	73.9	0*	0*	31.4
Pb-214	21.4	20.1	24.1	25.2	16.9
Bi-214	35.0	22.1	24.7	29.7	19.9
Pb-210	104.2	121.1	118.7	133.9	80.5
Cs-137	5.4	25.0	22.4	8.1	1.6
K-40	339.7	334.4	378.4	377.1	442.1
Ac-228	34.4	35.5	46.7	37.5	27.8
Pb-212	29.9	24.9	35.5	33.4	24.9
Bi-212	33.7	20.3	4.7	48.2	17.7
Tl-208	51.5	4.4	18.9	5.1	4.2
TOTAL	725	711	585	647	697

Units used in this table: Bq/kg (Becquerel per kilogramme)

Conclusion: There was no radioactivity found in the samples which was considered to be higher than that of the constant available "natural occurring radioactivity".

The first four nuclides mentioned are daughters of the parent nuclide Uranium, the last four of the parent nuclide Thorium. K-40 (potassium) is another naturally occurring nuclide, while the very small amounts of Cs-137 will be present anywhere in Europe because of the Chernobil accident.

The results are presented graphically in Appendix II.

(Dated 13 December 1993) (Signed Eng. A. Klerk)

* The method used caused a negative result.