UNITED NATIONS

General Assembly

Distr.
GENERAL

A/45/129/Add.1
27 September 1990

ORIGINAL: ENGLISH

Forty-fifth session
Agenda item 56 (a)

GENERAL AND COMPLETE DISARMAMENT

Notification of nuclear tests

Note by the Secretary-General

Pursuant to General Assembly resolutions 41/59 N of 3 December 1986 and 42/38 C of 30 November 1987, a communication has been received from Australia, dated 25 June 1990, which is reproduced in the annex to the present: note.

ANNEX

Information provided bv States

AUSTRALIA

[Original: English]

[25 June 1990]

1. I have the honour to refer to resolution 42/38 C, entitled "Notification of nuclear tests", paragraph 3 of which requests States that, while not themselves conducting nuclear explosions, possess data on such events to make those data available to the Secretary-General.

2. In accordance with that request, I have the honour to attach details of nuclear explosions detected by Australia carried out from April 1989 to June 1990 (see appendix I), as well as an explanatory memorandum (appendix II).

APPENDIX I

Quarterly reports on presumed underground nuclear explosions

April-June 1999

Month 1989	Day	Universal time	Locality	Estimated body-wave magnitude	Estimated yield (kilotonnes)	Sequence number
April	nil					
May	11	1645	Mururoa	5.6	20-80	89/7
May	15	1310	Nevada	4.4	<10	89/8
May	20	1759	Mururoa	4.5*	2	89/9
May	26	1807	Nevada	3.7	<10	89/10
June	03	1730	Mururoa	5.0	10-40	89/11
June	10	1730	Fangataufa	5.5	20-80	89/12
June	22	2115	Nevada	5.2	20-80	89/13
June	27	1530	Nevada	4.9	10-40	89/14

July-September 1989

Month 1989	Day	Universal time	Locality	Estimated body-wave magnitude	Estimated yield (kilotonnes)	Sequence number
July	08	0346	East Kazakhstan	5.5	20-80	89/15
August	nil					
September	02	0416	East Kazakhstan	5.0	5-20	89/16
September	14	1500	Nevada	4.7	5-20	89/17

October-December 1989

Month 1989	Day	Universal time	Locality	Estimated body-wave magnitude	Estimated yield (kilotonnes)	Sequence number
October	04	1130	East Kazakhstan	4.7	<10	89/18
October	19	0950	East Kazakhstan	5.9	40-150	89/19
October	24	1630	Mururoa	5.4	10-40	89/20
October	31	1530	Nevada	5.7	>80	89/21
October	31	1657	Mururoa	5.2	10-40	89/22
November	15	2020	Nevada		<10	89/23
November	20	1729	Mururoa	5.3	10-40	89/24
November	27	1700	Fangataufa	5.6	20-80	89/25
December	08	1500	Nevada	5.4	40-150	89/26

January-March 1990

Month 1990	Day	Universal time	Locality	Estimated body-wave magnitude	Estimated yield (kilotonnes)	Sequence number
January	nil					
February	nil					
March	10	1600	Nevada	5.1	20-80	90/1

April-June 1990

Month 1990	Day	Universal time	Locality	Estimated body-wave magnitude	Estimated yield (kilotonnes)	Sequence number
April	nil					
May	26	0800	Lop Nor, China	5.5	20-80	90/02
June	02	1730	Mururoa	5.3	10-40	90/03
June	07	1730	Mururoa	4.3*	<10	90/04
June	13	1600	Nevada	5.6*	40-150	90/05

Noteq: Information in this bulletin was derived from Australian seismological facilities and from institutions in other countries co-operating in the monitoring of earthquakes and nuclear explosions.

Unless otherwise noted, the estimated body-wave magnitude is that published by the United States National Earthquake Information Center and is based on observations of magnitude obtained from around the world, including from Australia.

The yields are estimated using empirical equations, but there is no single agreed formula for the determination of yields.

The yields estimated from these relations are not sufficiently accurate to determine compliance with international treaties.

• Magnitude estimated using Australian seismic data only.

APPENDIX II

Explanatory note

When a nuclear device is detonated underground, seismic waves radiate out in all directions. In order to sstablish that an underground nuclear explosion has taken place, pinpoint its location and estimate the siae or yield of the blast, seismologists attempt to detect and analyse the several distinct types of seismic waves generated by the blast. Many factors affect the strength and clarity of these seismic waves, particularly the efficiency with which the explosion transmits energy to the surrounding earth. This efficiency is, in turn, dependent on local geological conditions such as the hardness and water content of the rock surrounding the explosion. Knowledge of the path through the earth that the seismic signals have travelled is also important.

An international network of seismic stations would add significantly to confidence in the ability to detect and locate the source of underground nuclear explosions, whenever conducted. Australia is actively engaged in the international effort to create such a network and, in addition, has established a number of bilateral links for seismic co-operation. Experts estimate that confidence in an international seismic network would extend to coupled explosions with yields down to about 5 kilotonnes and possibly as low as 1 kilotonne: beyond this, distinguishing nuclear explosions from earthquakes and other seismic "noise" becomes a more difficult task and supplementary measures may be necessary.

Estimating the yield of an underground explosion by remote seismic means is especially difficult on the basis of available data. The relationship between seismic signals and yield is not fixed but subject to the vagaries of geology and a number of other unknown factors. At the present time we do not have openly available the large and authoritative data base of explosions of known yield in various locations and geological conditions necessary to define the relationship with maximum confidence. This is why the footnotes to the tables in this report stress that the estimated yields are not sufficiently reliable to determine compliance with international treaties. All these questions are being actively addressed in international forums.
