Progress Report No 14

for the project

Norwegian National Seismic Network

For the period January 1st to June 30th, 1999

Sponsored by

Oljeindustriens Landsforening

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Institute of Solid Earth Physics
University of Bergen
Allegaten 41, N-5007 Bergen

and

NORSAR
Boks 51, N-2007 Kjeller

1. Introduction

This 14th progress report, under the project Norwegian National Seismic Network (NNSN), covers the first half of 1999. The purpose of this report is to describe the current technical operation of the stations, the data recorded, the costs and the budget for the project for the reporting period. A separate report is given on the seismicity of Norway and surrounding areas in which the data recorded is presented (Appendix 1). A report for the NORSAR arrays is given in Appendix 2.

2. Operation

The operational stability for each station is shown in Table 1. The average downtime for all 13 stations is 1.2 %. while it was 3.5% for the last reporting period. This is an improvement relative to the previous periods. The goal is to keep downtime below 2 %.

Table 1. Downtime in % for the time period January to June, 1999 for each station of the NNSN.

Station	Downtime in %
Karmøy (KMY)	0
Odda (ODD1)	0
Blåsjø (BLS)	0
Høyanger (HYA)	0
Sulen (SUE)	0
Molde (MOL)	8.1
Florø (FOO)	6.7
Namsos (NSS)	0
Mo i Rana (MOR8)	0
Lofoten (LOF)	1
Tromsø (TRO)	0
Kautokeino (KTK)	0
Bjørnøya (BJO1)	0

For the Bjørnøya station, the downtime is estimated based on triggers transferred to Bergen and the data read from tape. It seems that the station has been running since no triggers are missing and there are no reports of technical failure. At certain times the data has been very noisy. This noise problem seems to come from the sensor, however it has never been observed when visiting the station. For the last 2 months, there has almost been no noise problems. The amount of data from BJO has been above average compared to previous periods.

3. Field stations and technical service

The technical changes for each stations, are listed below. It is noted if these changes are not related to a visit of the UiB technical staff. When a station stops working, tests are made to locate the problem, like failing power etc. Sometimes the reason cannot be found and the cause of the problem will be marked as unknown.

Bjørnøya (BJO1)

No visits or technical changes.

Florø (FOO)

17.01.99 Not possible to log in to the station.
20.01.99 The problem at the station was located and the PC was brought to Bergen.
27.01.99 New PC, new GPS and lightning protection were installed.
01.03.99 Station restarted by the local operator. The cause of the problem is unknown.
04.05.99 installation of un-interruptible power supply (UPS) and remote control power off/on.

Høyanger (HYA)

29.01.99 Installation of a new GPS clock and lightning protection.
05.05.99 Installation of new 3 component seismometer, a Sprengnether SP seismometer model S-6000. Also a remote control power on/off was installed.
14.06.99 Seislog version 8.0 was installed from Bergen.

Karmøy (KMY)

No visits or technical changes.

Lofoten (LOF)

No visits or technical changes.
30.06.99 The station was down for 5 hours, reason unknown.

Mo i Rana (MOR8)

No visits or technical changes.

Molde (MOL)

04.02.99 Station down due to lightning.
17.02.99 Installation of a new PC, Cisco box and digitizer.

Namsos (NSS)

No visits or technical changes.

Tromsø (TRO)

No visits or technical changes.

Sulen (SUE)

15.01.99 The Cisco box was defective, no data was however lost since Seislog was running.
28.01.99 Installation of a new Cisco box, a Garmin GPS clock and lightning protection.
03.05.99 A new 3 component seismometer, a Sprengnether SP seismometer model S-6000 was installed. Also a remote power control was installed.
14.06.99 Seislog version 8.0 was installed from Bergen.

Odda (ODD1)

No visits or technical changes were made.

Blåsjø (BLS)

09.06.99 The VME system was replaced by a PC (QNX) system. Installation of modem, GPS clock and UPS.

Kautokeino (KTK)

No visits or technical changes.

Other technical matters

For the stations Kautokeino and Mo i Rana it is still not possible to get ISDN connections and the stations have to remain operated with modems. The Blåsjø station will get ISDN during the fall of 1999.
In order to improve the technical stability uninterruptable power supplies (UPS) will be installed on unstable and/or remote stations. UPS has, during this reporting period, been installed at FOO and BLS.
For the same reason, remote control power on/of devices will be installed. These allow, via a telephone, to turn power on and off separately on all devices. The on/off switch has been installed on ODD and SUE (during 1998) and FOO, HYA, SUE and BLS (during this reporting period).

Reinstallation of the Bjørnyøa station

The most difficult technical problem has been to access the sensor and digitizer in the winter or generally in bad weather condition. This is important since the noise problem seems to come from either unit, however it has never been observed when visiting. It was therefore planned to install the sensor in a large fibreglass tank during the summer. The tank was almost shipped, when we got the message from Bjørnøya that it was impossible to dig the hole. It was assumed that the hole could be made with the existing equipment, however when starting digging, it turned out that the hole only could be made with explosives. Since none of the staff at Bjørnøya or the visitors had a licence to use explosives, the underground installation has been abandoned for the time being. It would have been far out of our budget to send specialised personal to Bjørnøya. In order to improve the situation, a large wooden box is now being built around the sensor box (of aluminium). This should make it possible to at least

access the sensor in the winter which not could be done previously. A visit is planned to Bjørnøya in the beginning of November to do more tests and install a spare sensor.

4. Data

An overview of the seismic activity in Norway and surrounding areas for the first half of 1999 is given in Appendix 1. The data recorded by the seismic stations were collected and monthly bulletins were prepared and distributed. Since there was no event in Norway of magnitude larger than 5.0 during the first half of 1999, no special report has been written.