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## Foreword from the CEO

In this 20<sup>th</sup> issue of GeoWatch we present a recent modernisation and standardisation on the state-of-the-art PC-based portable seismic recorder GSR-12/16PC. Our continuous efforts to meet the industry requirements, expanding with the evolving technology, yield new developments in our product range, which we find challenging and inspiring to enhance our capabilities even further.

We are content to observe that our equipment operates in compliance with or exceeding the expectations of our clients. An example is the brief report provided within this issue, on a recent earthquake in Switzerland registered by our seismic instrumentation system in the Beznau Nuclear Power Plant.

Structural monitoring is also a major topic in our product line, which also involves analysis of monitored structure.

We suggest and encourage the usage of Output Only Modal Identification technique especially because it does not require any artificial excitation of the structure. For this purpose we have developed a co-operation with Structural Vibration Solutions ApS, Denmark, for the usage of their ARTEMIS software suite in conjunction with our measuring instruments. Please feel free to [download an evaluation copy of the software](#) (~38 Mbyte) and the [Getting Started Manual](#) (~1 Mbyte) to see for yourself the straightforward and easy procedure. If you already own a GeoSIG monitoring system, you can immediately conduct a trial modal analysis on any structure.

As a final point, I would like to take this opportunity to officially announce that recently our street is renamed, and our new address is Europastrasse 11, 8152 Glattbrugg, Switzerland.

Christoph Kündig

## GeoSIG Modernises the Versatile PC-Based Portable Seismic Recorder GSR-12/16PC

The GSR-12/16PC Seismic Recorder is a high performance portable PC-based Data Acquisition and Analysis System for a wide application field using the GeoDAS data acquisition and data analysis software. GeoDAS offers data acquisition facilities as well as comprehensive data analysis tools. It provides a complete solution to researchers for seismic profiling, after shock studies, noise measurements, vibration measurements and structural monitoring.

The GSR-12/16PC is capable to perform both continuous and event-based recording of data. These recording facilities in combination with the reliable, field-proven GeoDAS data analysis tools make this instrument one of the most accurate and versatile among portable recorders available today. This unique combination of highest performance digitiser and the powerful software allows for the acquisition of micro seismic, broad band and strong motion signals in a single field unit.

The standard GSR-12/16PC recorder accepts signals from seismometers, accelerometers or geophones to be acquired using a 12 Bit or 16 Bit Digitiser.

Level Triggering, STA/LTA triggering as well as permanent recording can be configured as per the demand of the particular application.



Figure 1. The new GSR-12/16PC Recorder with two sensors attached

The GeoDAS software runs under Windows 2000/XP. The GSR-12/16PC supports up to 15 channels.

It facilitates therefore monitoring of a complete structure with just one recorder. Using the standard Windows networking tools TCP/IP access from the office to a remotely operating GSR-12/16 is possible for both data retrieval and the configuration of the recorder.

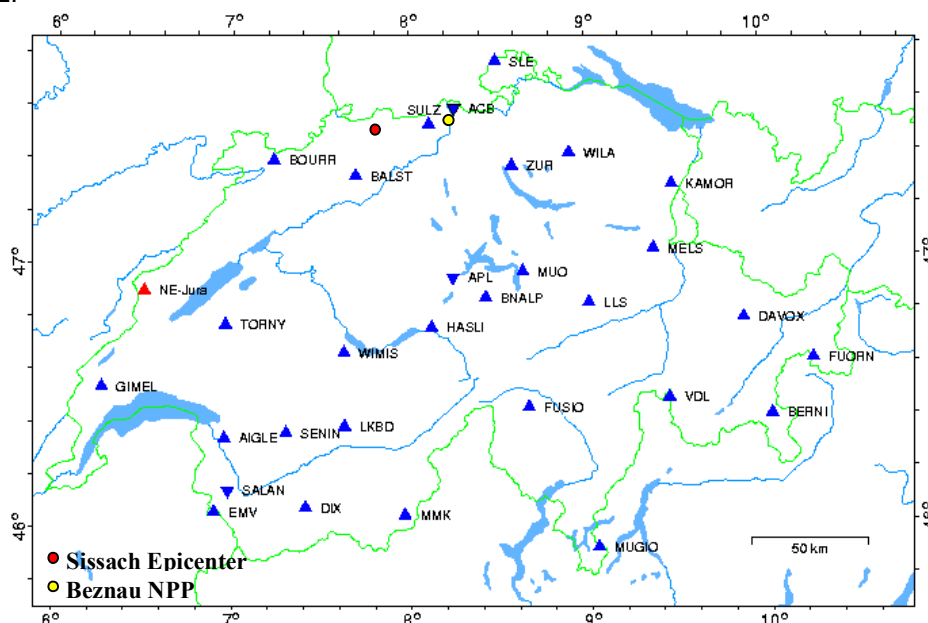
Different output options are available such as data streaming, alarm signals, alert and notification messages through SMS or E-Mail.

The GSR-12/16PC in combination with GeoDAS is the ideal, compact and extremely cost effective PC-based recording approach.

### GeoSIG Seismic Instrumentation in Beznau NPP Detected a Local Earthquake

On 31 August 2003, at 05:38 UTC (07:38 Central European Summer Time), an earthquake with a magnitude  $ML=3.2$ , according to Swiss Seismological Service, occurred in Sissach (BL), Switzerland. The epicentre of the earthquake, Swiss Digital Seismograph Network (SDSNet) and the associated event report are shown on Figure 2.

Beznau NPP is equipped recently with a GeoSIG seismic instrumentation system, consisting of six (plus one spare) stations and a central processing and alarm/shutdown facility. The system incorporates AC-23 Triaxial Sensors and GSR-18 Strong Motion Recorders in the seismic stations.



**31 Aug 2003 05:38:57.6 47.5N 7.9E 20 ML=3.2 Sissach / Switzerland**

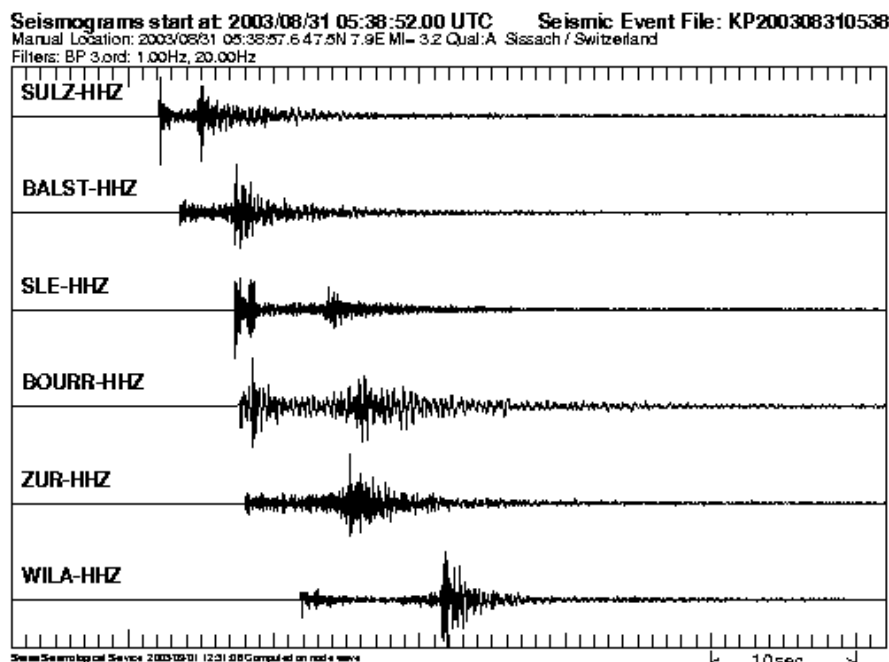


Figure 2. Epicenter of the Sissach Earthquake, Location of Beznau NPP and Swiss Seismological Service Event Report

The earthquake was determined via the freefield station F2, which was set to a very low trigger level for test purposes. This station reported peak acceleration of approximately 1 mg. The report generated by the system for the recording from station F2 is shown on Figure 3.

This minor event has not activated any alarms or associated shutdown operations in the NPP. However, provided a good insight on the operation of the seismic instrumentation system, an overview of the overall power plant behaviour under seismic excitation as well as a valuable experience in handling an earthquake situation in the NPP.

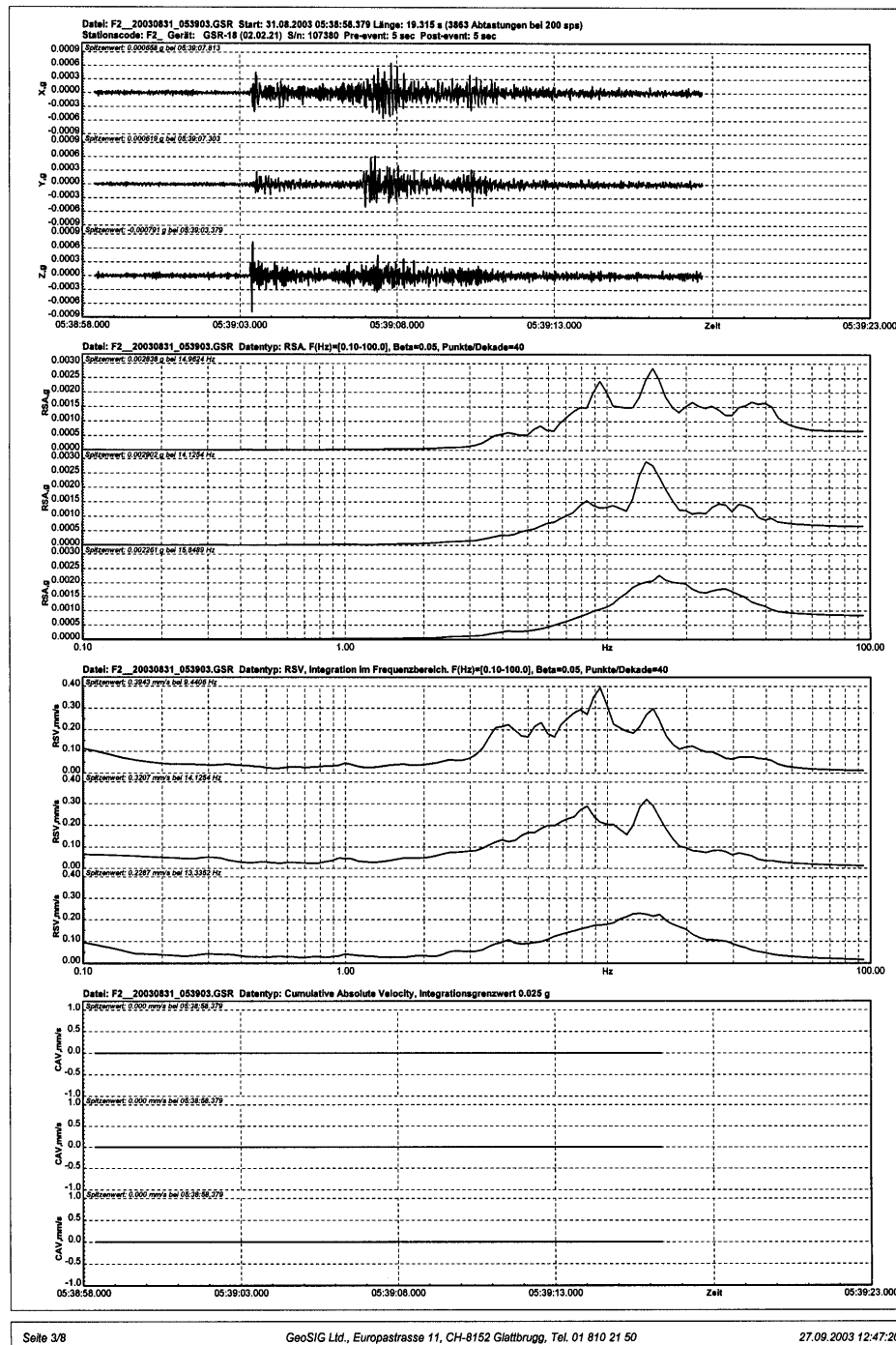


Figure 3. The earthquake as reported by the GeoSIG Seismic Instrumentation System in Beznau NPP

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