

Annual Report '89

PRAKLA-SEISMOS AG



The Group and AG at a Glance

Development in the last 10 years — Group (Mio DM)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Number of employees at year's end	1 718	2 023	2 065	1 964	1 975	2 230	1 955	1 682	2 700*)	2 252
Sales	270.0	406.7	426.8	367.6	359.6	459.5	390.1	246.2	336.2	319.0
Personnel expenditure	89.1	123.6	144.8	123.2	128.7	148.6	143.5	134.0	153.6	155.5
Depreciation of tangible fixed assets	22.6	36.9	52.5	49.6	47.7	58.1	65.1	59.4	53.4	55.7
Fixed Assets	87.9	136.0	155.6	137.7	143.0	171.1	180.4	153.9	145.7	187.9
Investments	55.9	91.7	83.7	35.4	57.8	89.0	77.1	38.9	46.6	100.3
Equity	62.1	78.7	88.8	94.6	99.3	105.7	83.1	63.1	85.0	82.1
Profit or loss for the year	9.2	12.3	12.1	8.0	6.7	9.5	./24.4	./40.0	./10.1	./14.9

Development in the last 10 years — PRAKLA-SEISMOS AG (Mio DM)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Number of employees at year's end	1 344	1 598	1 676	1 607	1 623	1 849	1 597	1 336	1 417	1 457
Sales	239.4	356.7	363.7	318.3	309.6	408.7	334.2	217.4	290.4	266.1
Personnel expenditure	74.3	104.0	121.2	104.2	109.2	126.0	120.9	112.4	120.7	121.4
Depreciation of tangible fixed assets	18.5	30.0	44.0	40.3	39.2	49.9	54.8	49.3	43.3	45.9
Fixed Assets	76.2	117.7	139.3	121.6	131.9	158.0	162.5	135.7	127.2	157.4
Investments	48.3	78.4	77.1	26.1	53.3	78.4	61.8	27.4	35.9	77.6
Equity	65.4	75.1	83.8	88.7	88.8	95.8	74.5	55.0	75.2	71.4
Profit or loss for the year	9.2	11.7	10.6	7.0	5.3	8.1	./24.4	./39.8	./10.1	./15.8

*) Extension of companies included in consolidation by foreign group companies and inclusion, for the first time, of PRAKLA-SEISMOS AG employees engaged abroad.

Cover

Coverage map of a seismic 3D survey. The colour coding indicates the varying degree of coverage. The blue areas at the edges were sampled just once to four times, whereby the violet colouring at the centre depicts more than 14-fold seismic coverage. Such coverage maps are drawn up in the field so as to enable zones with poor coverage to be recognized in good time.

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Executive Bodies

Supervisory Board

Professor Dr Bruno Kropff
Ministerial Director in the Treasury
Bonn-Bad Godesberg
Chairman

Berhard Braubach
Ministerial Director in the Ministry of
Trade and Industry
Bonn-Duisdorf
Vice-Chairman

Jonny Hartleben
Hannover
Vice-Chairman

Manfred Beinsen
Eicklingen

Richard Beißner
Hessisch Oldendorf

Uwe Brandt
Burgwedel

Dipl Ing Ulrich Grotowsky
Mining Director (retired)
Gelsenkirchen-Buer

Professor Dr Martin Kürsten
President of the Federal Institute for
Geosciences and Natural Resources
Hannover

Kurt Lauenstein
Ministerial Director in the
Lower Saxony Treasury
Hannover

Dr Günter Nastelski
Member of the Board of Directors of
the Industrieverwaltungs-
gesellschaft AG
Bonn-Bad Godesberg

Friedrich Späth
Member of the Board of Directors of
Ruhrgas AG
Essen

Herbert Sporea
President of the Board of Directors of
Hagenuk GmbH
Kiel

Board of Directors

Dr Franz Xaver Führer
Hannover
President of the Board

Dr Siegfried Ding
Hannover

Dipl Ing Bernhard Fiene
Pattensen

Report of the Supervisory Board

The Board of Directors regularly informed the Supervisory Board both orally and in writing about the business trend and the situation of the company as well as about the intended business policy. Based on these reports the Supervisory Board consulted with the Board of Directors regarding important questions of business management. The situation and development of the company and in particular the long-term corporate company planning as well as major capital expenditure projects were discussed.

The PRAKLA-SEISMOS AG annual financial statement presented by the Board of Directors as well as the group annual financial statement as of 31 December 1989, together with the management report of PRAKLA-SEISMOS AG and the group management report for the business year 1989 were audited along with the accounts by the auditors TREUARBEIT Aktiengesellschaft Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft, Hannover. The auditors issued an unqualified audit certificate.

The Supervisory Board was informed orally and in writing of the outcome of the audit. No objections were raised by the Supervisory Board subsequent to their examination of the annual financial statement of the company and the group as well as of the management report and group management report.

Consequently, the Supervisory Board agrees with the results of the auditor's report, and approves of the resulting annual accounts.

The Board of Directors drew up a report on the relationships to group enterprises pursuant to § 312 of the German Stock Corporation Act and presented this to the Supervisory Board together with the auditor's report by TREUARBEIT Aktiengesellschaft Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft, Hannover. The auditors issued the following certification remark:

»Subsequent to our audit in accordance with professional standards we confirm that

1. the statements as contained in the report present a true and fair view,
2. with respect to the legal transactions listed in the report, the company's performance was not inappropriately high,
3. with respect to the measures listed in the report, there are no circumstances which indicate an assessment differing significantly from that of the Board of Directors.«

The review of this report by the Supervisory Board did not reveal any cause for objections. Consequently, the Supervisory Board agrees with the result of the audit presented by TREUARBEIT Aktiengesellschaft Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft, Hannover. The Supervisory Board declares that after concluding its examination there is no cause for objections to the statements made by the Board of Directors on the relations to group enterprises.

The Supervisory Board expresses its thanks for and appreciation of the efforts made by the Board of Directors and all staff members.

Hannover, 29 June 1990

The Supervisory Board

Professor Dr Kropff
Chairman

Group Management Report and Management Report of PRAKLA-SEISMOS AG

Business Trend and Economic Position of the Company

The uncertainty about the future development of the oil price at the end of 1988 led to a downturn on the international geophysics market during the first half of 1989. Only later in the year did the international oil companies adopt recognizable strategies with longer term positive development. All the same the expenditure for geophysics was no higher than in the previous year. Despite the modest recovery in the second half of the year the strong competition between the geophysical contractors and the consequent pressure on the prices have continued unabated.

The Dollar continued to trade at a very low level during the report period and constituted an additional strain on the earning situation.

In order to supply the high performance demanded by our clients it was necessary to maintain a very high standard of equipment in the crews and on the ships as well as in the data processing, and of personnel training.

The PRAKLA-SEISMOS AG group comprises in addition to the parent company the following subsidiaries: PRAKLA-SEISMOS Geomechanik GmbH, Hannover, Ricerche ed Interpretazioni Geofisiche (RIG) in Milan, PRAKLA-SEISMOS Nigeria Ltd in Lagos and PRAKLA-FRANCE in Stiring-Wendel, which is involved solely with personnel acquisition for PRAKLA-SEISMOS AG. Furthermore, the acquisition at the end of the year of two British seismic crews fully equipped with modern equipment enabled PRAKLA-SEISMOS (UK) Ltd based at Dorking, Surrey to start up operations once again. This company was for the first time incorporated in the group financial statement.

The economic situation of the group is determined to a large extent by the development of the parent company. As much as 83 per cent of the group earnings originates from PRAKLA-SEISMOS AG.

The parent company achieved earnings of DM 266.1 million, DM 24.3 million (8.4 %) below that of the previous year. Increased earnings by some of the subsidiaries could not offset this and the group earnings fell by approximately 5 % to DM 319 million. This led to a group loss of DM 14.9 million and to a loss of DM 15.8 million for the parent company.

In alignment with the continuation of the recognizable positive market trend PRAKLA-SEISMOS AG initiated an expansionary policy. This is reflected in parent company capital spending which rose from DM 35.9 million in 1988 to DM 77.6 million in 1989. The capital spending of the group in tangible assets were DM 100.3 million, which was more than twice as much as in 1988. The funds were used in the parent company amongst other things to set up a large seismic crew for operations in desert areas. Other crews were fitted out with improved equipment. One of the shallow-water ships was lengthened at the end of 1989 to enable 24-hour operation in two shifts without having to transfer any crew. The geophysical data processing centre was almost completely renewed with high performance vector computers. The group's capital spending was also on drilling rigs, vibrators as well as equipment for two crews for the subsidiary company in the United Kingdom.

In the last financial year, cash flow in the group was DM 28.7 million (previous year DM 49.7 million). The cash flow of the parent company was DM 18.9 million (previous year DM 34.3 million). The variation in the amounts of cash flow compared to 1988 was mainly a result of the annual deficit and changes in provisions. In deriving the cash flow figure, the annual deficit, the depreciation and the alterations in special items with reserve element, as well as the provisions, were considered.

Research and Development

A new division was created to improve the efficiency of **research and development**.

Besides adapting the geophysical software to the new computers and operating systems we have above all further developed our computer programs. The latest developments enable PRAKLA-SEISMOS software to be used in external data centres.

COMSEIS, the interactive interpretation system, was further extended. A newly developed program now allows seismic horizons to be followed automatically.

The development of equipment for transferring seismic data by means of a microwave link was completed in 1989 and prepared for series production.

Earnings and Probable Trends

In the initial months of the 1989 financial year the unexpected low demand for geophysical surveys led to a significant drop in the turnover. Despite increased market activity in the second half of the year this could not be fully compensated for. In spite of the intensive rationalization this development led to an annual deficit for both the parent company and the group.

In spite of the market revival during the latter months of 1989, the initial months of 1990 exhibited renewed substantial variations in the turnover; this put pressure on the earning situation. Although it is expected to be working at full capacity for the second half of the year a positive result for the current business year is not anticipated for the parent company or for the group.

Relations with Group Companies

Pursuant to a decision made by the Federal Court of Justice on 13 October 1977 it is seen that the Federal Republic of Germany can be regarded as the controlling enterprise. A group relationship as understood in § 18 of the German Stock Corporation Act does not exist between the Federal Republic of Germany and PRAKLA-SEISMOS AG. Subsequent to the transformation of the company to a joint stock company (AG), the Federal Government informed us in a letter of 18 November 1985, pursuant to § 20 of the German Stock Corporation Act, that it had a majority holding.

Pursuant to § 312 of the German Stock Corporation Act a management report had to be prepared disclosing relations to affiliated companies. This report concluded with the following statement:

»With respect to the legal transactions and measures listed in the report on relations with group companies, our company received counter performance of an appropriate nature for all legal transactions in the light of the circumstances as we were privy to them at the point in time at which said legal transactions were conducted or the measures taken or waived. The company was not disadvantaged as a result of measures having been taken or waived.«

Hannover, 25 May 1990

The Board of Directors

Dr Führer Dr Ding Fiene

Further Information Regarding the Financial Year

Employees and Safety

Once again in this report year a large number of our employees have worked under extremely difficult conditions. In particular the hard climatic conditions beyond Europe and the severe restrictions to the accustomed living conditions on our deep-sea and shallow-water units. Thanks are due to all employees for their readiness to work under such circumstances. We would also like to thank the employees' representatives, who in the report year always took pains to solve problems, often of a difficult nature, in a cooperative way.

The number of permanent employees in the domestic group fell from 1734 on 31. 12. 1988 to 1675. The number dropped from 1396 to 1352 for the PRAKLA-SEISMOS AG. On the other hand the number of temporary employees in the domestic group rose by 112 to 139. This was the result of just one large contract and is therefore of a temporary nature.

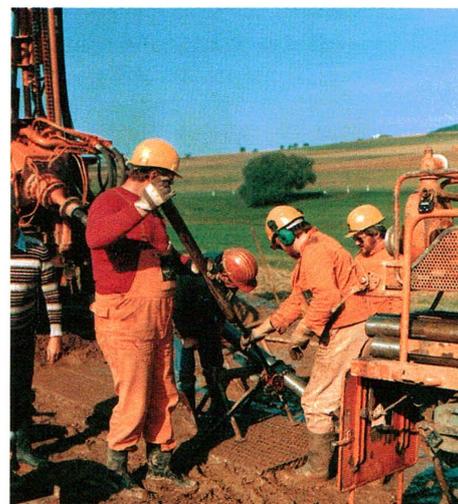
The continued rapid technological development in applied geophysics prompted us to intensify employee training. Owing to fundamental changes in accounting and material management employees involved in administration have also undergone a high degree of training.

The fluctuation in the number of employees continued to decrease. Only 78 employees left PRAKLA-SEISMOS AG in the report year as a result of handing in their notice.

In accordance with the collective agreement made in 1987 the working week was reduced by another hour to 38 hours as of 01. 01. 90. In addition the collectively agreed wages and salaries were increased by 2 % as of 01. 10. 89.

Expenditure for personnel in the group amounted to DM 155.5 million in 1989. This was DM 1.9 million or 1.2 % more than the previous year. In the parent company the costs for personnel rose in the report year by DM 0.7 million (+0.6 %) to DM 121.4 million.

At the end of 1989 there were 218 former PRAKLA-SEISMOS AG employees in retirement or early retirement. Payments to these persons including relations of former employees amounted to about DM 1.5 million in the report year. The group's personnel costs for statutory and other social contributions as well as for payments into the provisions for the company pension scheme were approximately DM 25.2 million (PRAKLA-SEISMOS AG = DM 18.9 million).



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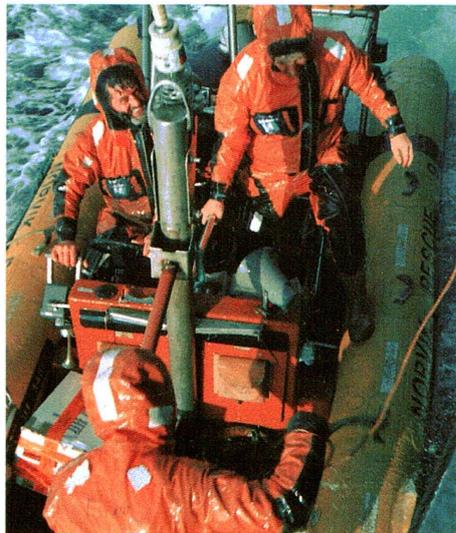
The **safety** of our employees and all persons in the vicinity of where we work has become increasingly important in recent years, especially as our activities are unavoidably involved with a high danger risk.

In order to combat the dangers and reduce the risks full-time safety officers are employed throughout the group. In 1989 we revised our safety policy and presented it to the employees. This revised policy goes beyond the regulations prescribed by law.

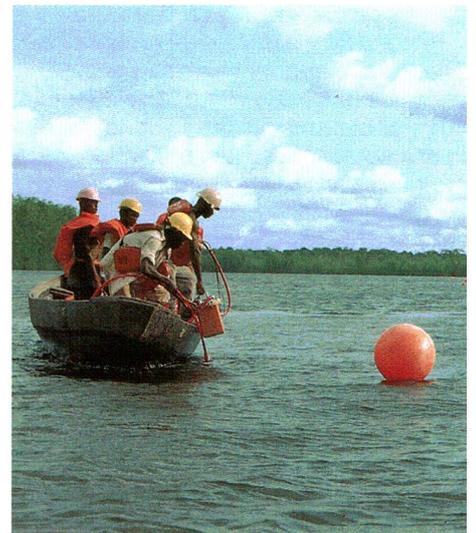
Safety training within the company, and together with our clients, has improved safety awareness. We have clearly been rewarded with success, but realize that continued efforts are required to reduce further the number and severity of accidents.



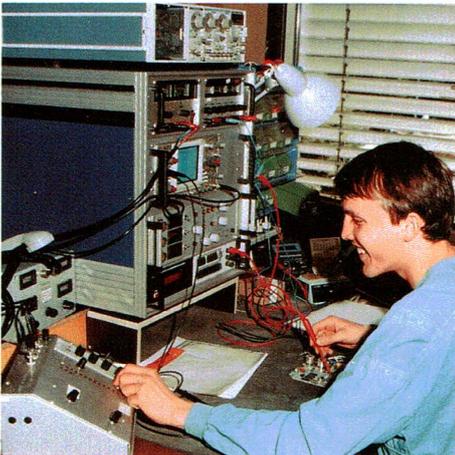
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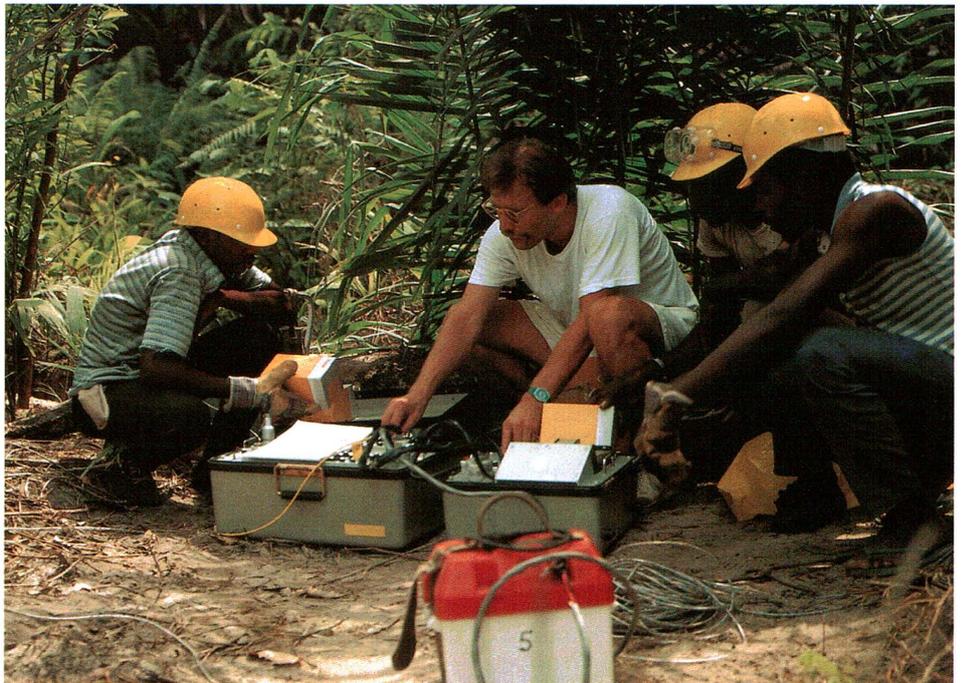
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- 1 Core drilling in Central Europe.
- 2 Computer printout in the data centre.
- 3 Choppy waters.
- 4 Shallow-water surveying.
- 5 On the job in Technical Services.
- 6 On the job in the desert.
- 7 An uphole survey in a tropical rain forest.
Laying out telemetry boxes.

The Various Divisions

Geophysical Operations, Land

Land seismic surveys

The trend in recent years towards 3D seismics has intensified. Now about 40 % of our seismic land activities are in this sector of the seismic reflection method.

On the **domestic** scene two dynamite and two Vibroseis crews operated with 48 to 240-trace recording on 2D surveys. The Vibroseis crews also partly carried out pure dynamite seismic surveys or combined dynamite/Vibroseis work. Operating time working on contracts for German oil and gas companies as well as for the coal industry amounted to 22 dynamite-crew-months and 15 Vibroseis-crew-months.

3D seismic surveys using dynamite and 640-trace recording were performed in North Germany in contracts for German oil and gas companies in autumn and winter. The operating time amounted to nine crew-months. During this work percussion units were used for the first time in Germany on a large scale. This equipment applies the displacement principle without mud circulation.

Commissioned by the Geological Survey of Lower Saxony within the framework of the DEKORP¹⁾ and KTB²⁾ research programmes, a 480-trace 3D survey was carried out using the Vibroseis method in the vicinity of the KTB well at Windisch-Eschenbach/Upper Palatinate. The work lasted over four months. As a result of this survey numerous special surveys were performed in international cooperation with universities and other institutions.



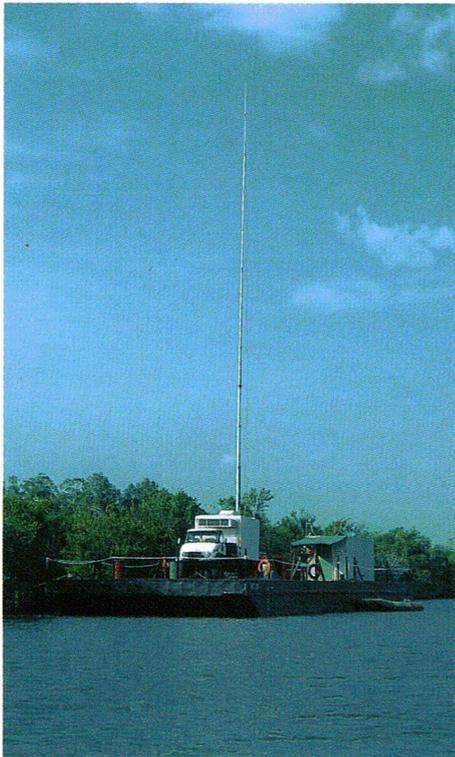
On the **international** front our seismic activities have increased compared to the previous year.

In The Netherlands one 3D crew was employed for the whole of the year with a further crew in operation up to mid April. This crew worked during the day partly applying dynamite seismics and at night using Vibroseis. In France an uphole crew operated from September, and in October it was extended and continued work as a Vibroseis crew. Three Vibroseis crews were in operation in Austria, one throughout the year, another from March and the third for six months in the Alps. In Italy up to three dynamite crews were employed, one of which was a 3D crew operating the whole year in the Po valley. One Vibroseis unit complete with specialist personnel could be rented out in the United Kingdom for six months.

During the surveying season in Turkey from May to November three dynamite crews and one drilling crew were in operation. In Syria one crew was involved throughout the year in 2D and 3D surveys, whereas another 3D crew started work in December. One Vibroseis crew was in operation for the whole year in Libya; the contract for the second Vibroseis crew ran out in May. Subsequent to the shallow-water surveys in Nigeria the crew performed 2D and 3D surveys using the dynamite method.

¹⁾ German Continental Reflection Seismic Programme

²⁾ Continental Deep Drilling Programme



2



3

- 1 In the Syrian Desert. Heavy VVFA vibrators developed by PRAKLA-SEISMOS Geomechanik.
- 2 In a rain forest. The recording truck is brought to position by a pontoon.
- 3 Two intersecting lines in the Nigerian rain forest.
- 4 A gravimetric crew before setting off for the survey area.

Engineering geophysics, now including non-seismic well surveying and geoelectrics, achieved a turnover equivalent to the previous year's.

Potential field methods

In the **gravimetry** and **magnetometry** departments the turnover fell compared to 1988 as a result of the completion of a contract for a gravity crew in January and for the other two crews at the end of May. As of September one crew is again operating in North Germany. During January and February magnetic surveying from a helicopter was performed in Antarctica as part of the GANOVEX V project. Moreover magnetic measurements were made in southern Germany in the investigation of waste disposal sites.

In the field of **geodesy** preparations were made for the introduction of the GPS system for surveying purposes connected with 3D seismic surveys.



4

Special surveys

Substantially increased activity could be achieved in the field of **cavity surveying**; here the turnover increased by approximately 25% compared to 1988. Noteworthy are the successful recapture of part of the market in England as well as the permanent operation of a crew in the USA. In addition, survey crews performed contracts in Germany, France, Iraq, Austria, Thailand and in The Netherlands.

In the field of **well seismics** last year's turnover could be slightly improved upon although the work was limited to the Federal Republic of Germany and The Netherlands.

Geophysical Operations, Marine

Deep-sea surveys

A total of 66 120 seismic line kilometres and 4410 gravimetric line kilometres were surveyed; an area of 920 km² was covered with 3D seismics. Our two deep-sea ships operated as follows during the report year:

SV MINTROP carried out extensive 2D and 3D seismic surveys off Africa at the beginning of the year and again in autumn. During the summer months the ship was brought to the North Sea to perform four 3D contracts in dual streamer/dual source operation in Norwegian, English, Dutch and German waters. These surveys were interrupted in order to work on a seismic research contract in the Baltic Sea in which a line was surveyed from the German coast into the Gulf of Finland.

SV PROSPEKTA first of all concluded the programme off Angola and then completed two contracts off Namibia. Subsequently work was performed off Sicily, in the Baltic Sea as well as in Norwegian and British waters of the North Sea. A seismic research contract in the North Atlantic and in waters off Newfoundland followed. After her return in autumn the ship was re-equipped in Kiel with the most up to date tow and shear equipment for dual streamer/dual source surveying.

The equipment is similar to that on the MINTROP. At the end of the year the ship began an extensive contract off Nigeria.

Shallow-water surveys

The shallow-water units surveyed a total of 3560 line kilometres with the streamer technique, 718 km with DIGI-SEIS and 111 km using the MYRIASEIS/baycable technique. An area of 114 km² was covered with 3D seismics. Our four shallow-water groups operated as follows:

MS FLORA and SV FLUNDER performed streamer and combined streamer/MYRIASEIS surveys in Egyptian waters of the Gulf of Suez and in the Mediterranean Sea.

SV INGRID operated as a shooting boat during an extensive DIGISEIS survey off the Dutch coast and afterwards as a shooting boat off Emden for a land crew.

SV MANTA carried out three streamer surveys off The Netherlands and another in the Elbe estuary. She operated as a shooting boat during a 3D survey performed by SV MINTROP. The MANTA returned to the Lindenau shipyard in Kiel in November so that the ship's hull could be lengthened and an airgun sheering system fitted.

SV SOLEA completed extensive 3D surveys off Nigeria which were started in the previous year, and then carried out spec surveys off Gabon. In October she started a 2D survey off Nigeria.



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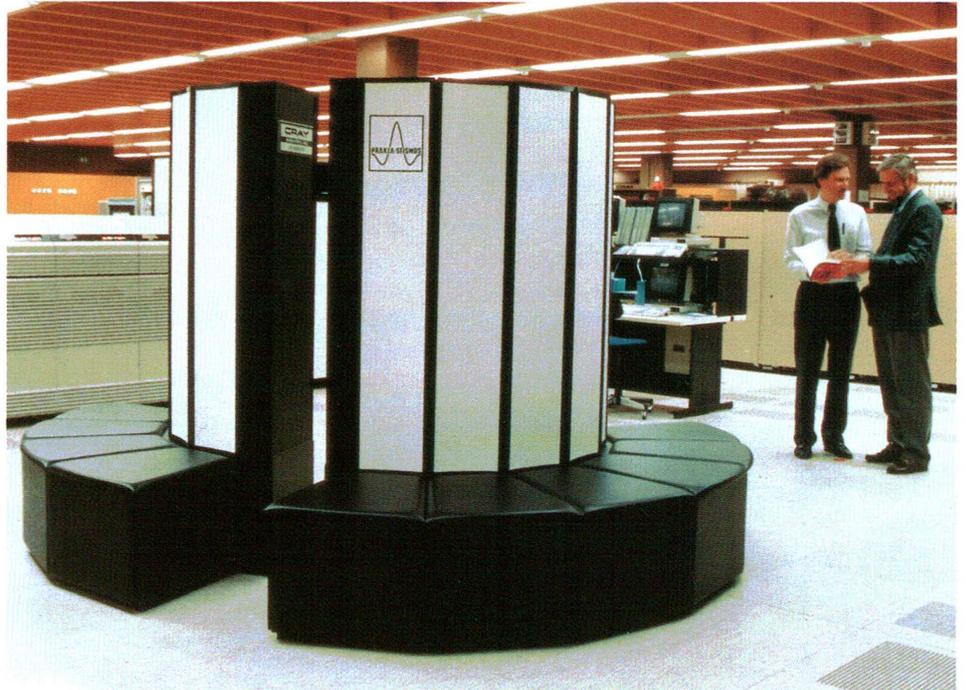
- 1 Shallow-water ship SV MANTA.
- 2 SV PROSPEKTA and SV MANTA in a joint operation undershooting a drilling platform.
- 3 SV PROSPEKTA off a production platform in the North Sea.
- 4 Deep-sea vessel SV MINTROP.

Geophysical Data Processing

The work in our geophysical data centre in 1989 was marked by the reorganization of the hardware and software. This was the result of analyses for improving the earning situation of the Hannover data centre.

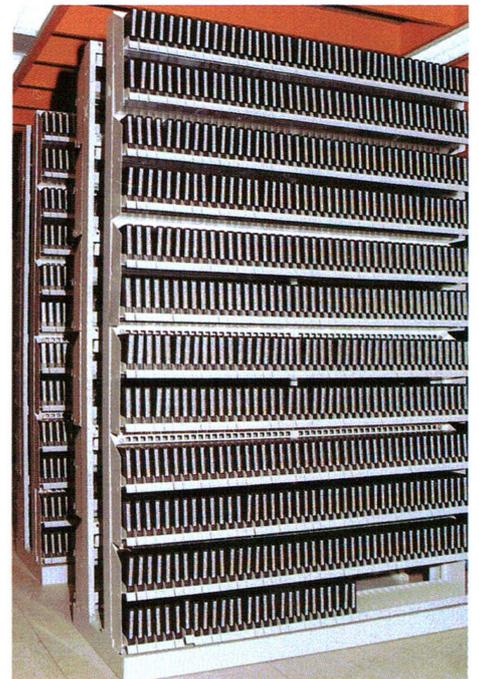
Subsequent to thorough evaluation of intensive benchmark tests on various vector computers it was found that the optimal configuration for our purposes was a high performance CRAY X-MP/18 in connection with a CONVEX of the C2 series. The CRAY system manages the main load of seismic processing, whereas the CONVEX performs software development, tests as well as special processing, in addition to serving as a reference system for external data centres. Both systems were installed at the same time in mid 1989. Besides renewing diverse peripheral equipment, a high resolution laser plotter was put into operation during the last quarter.

The software work was of particular use for standardizing and completing the in-house developed GEOSYS system and for the necessary adjustment to the UNIX operating system for CRAY and CONVEX. The integration of graphic elements in GEOSYS improved the efficiency for production processes. Moreover the prototype of a general seismic databank was made available to users. In November a client was supplied with the first version of the new GEOSYS system.

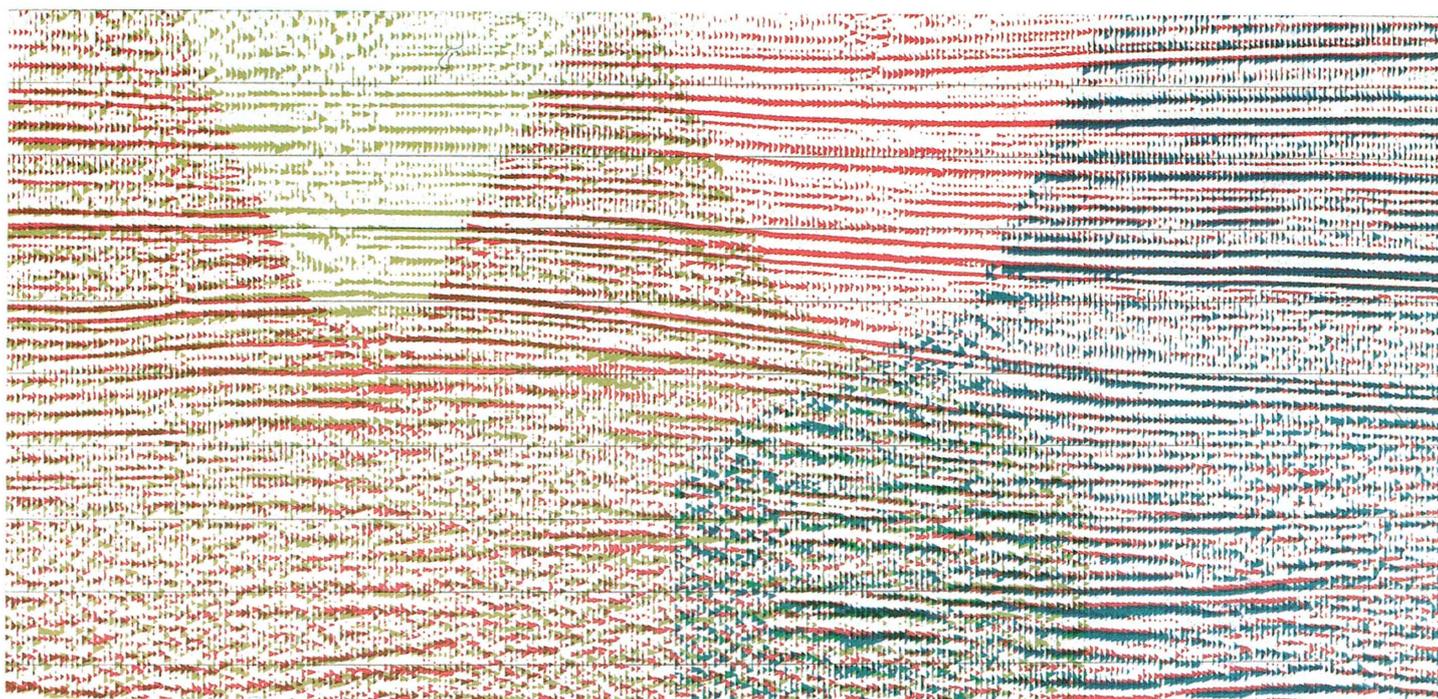


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In the report period the geophysical data processing throughput increased significantly. In particular there was a sharp rise in the amount of data, the largest part of which was 2D marine data. Nevertheless a general growing trend to 3D seismics could also be recognized. As a consequence of the increased number of contracts all production departments were working at capacity, including the special processing groups.



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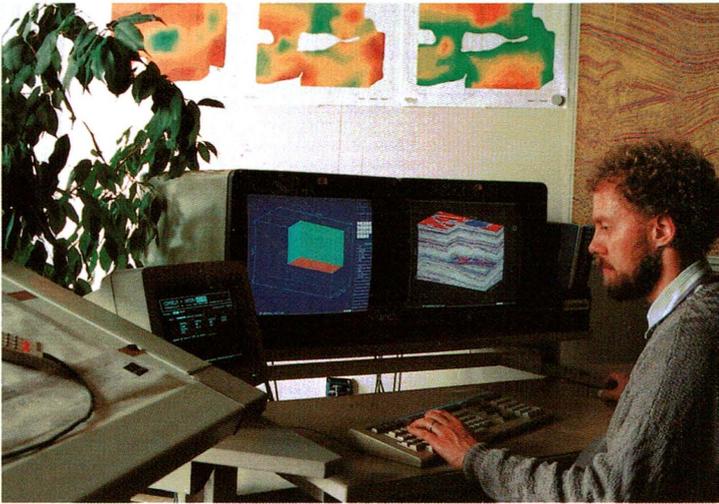
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- 1 High performance vector computer CRAY X-MP/18.
- 2 Cartridge racks.
- 3 Earth's crust under a shallow-water area as revealed by seismics. The difficult terrain necessitated the use of different energy sources: airguns (green), vibrators (red) and dynamite (blue). Data processing had the task of matching the different seismic echo signals to one another by means of a special filter so that distinct reflections could be interpreted as geological horizons.
- 4 CONVEX C210 used for software development, tests, special tasks and as a reference system for external data centres.

4

Interpretation



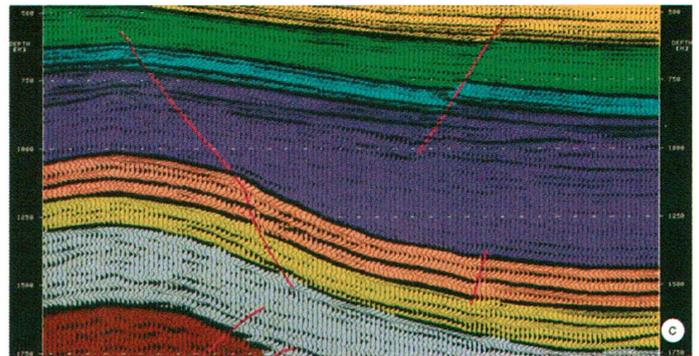
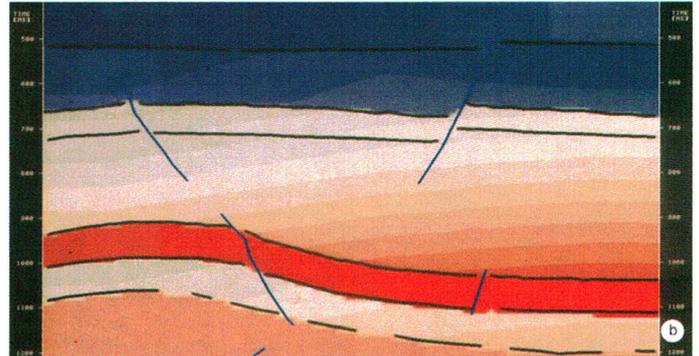
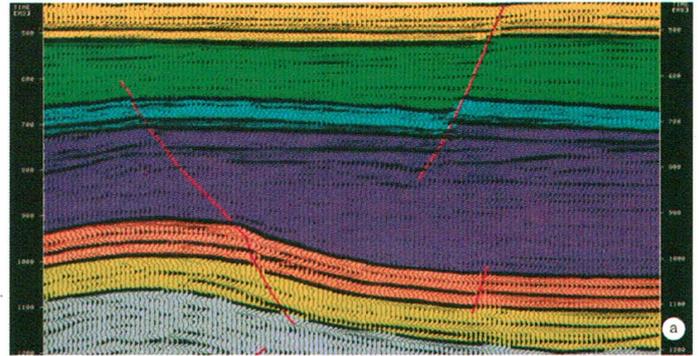
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Employees of the Interpretation Division mainly worked on contracts for national and international oil companies, but also for the coal mining as well as the electricity industry and for governmental geoscientific institutions. Our geoscientists were employed in Germany, in other European countries as well as in Africa and Asia.

After a long preparatory period we were able in September to install our interactive seismic interpretation system COMSEIS® for the first time in Leipzig at VEB-Geophysik. A cooperation agreement was set up with TERRASCIENCES Inc, Denver, USA so as to enable supplementary Terra-software to be integrated into the COMSEIS software package. Moreover a COMSEIS demonstration station was installed at our subsidiary company in Houston by TERRASCIENCES Inc. This partnership improves our chances for global marketing, especially in the American sector. The development of

»geological software« for COMSEIS was continued (see »Research and development«, page 16)

The number of seismostratigraphic contracts increased.



2

- 1 A COMSEIS workstation. The interpreter can display on the monitor any desired cross-section through a 3D seismically surveyed part of the subsurface; interpretation on this section is then performed interactively.
- 2 Section »a« through a piece of the Earth's crust in the time domain. A seismically determined and interactively improved velocity field »b« is used to convert the layering complex in »a« to its true position in depth (»c«).

Technical Services

The Technical Services Division with approximately 150 employees not only sold equipment, but also had to render services to the divisions of »Geophysical Operations, Land« and »Geophysical Operations, Marine«.

For the **Geophysical Operations, Land** Division this essentially comprised service work at home and abroad, the equipping and converting of recording trucks, repair and maintenance of seismic equipment (instruments, telemetry boxes, radio and auxiliary equipment, cables, geophone chains) as well as the training of technicians and electronics engineers. Other divisions were advised as required regarding the purchase of equipment. Noteworthy are the introduction of the seismic digital 480-trace monitor camera DFM 480 from OYO and the supply of two field recording systems for SERCEL telemetry boxes. Such systems enable a trained technician to repair on site 70 to 80 % of telemetry boxes which malfunction during surveying.

Work for the **Geophysical Operations, Marine** Division included the manufacture and repair in the streamer workshop of analog and digital streamers as well as compass sections, stretch sections and lead-in sections.

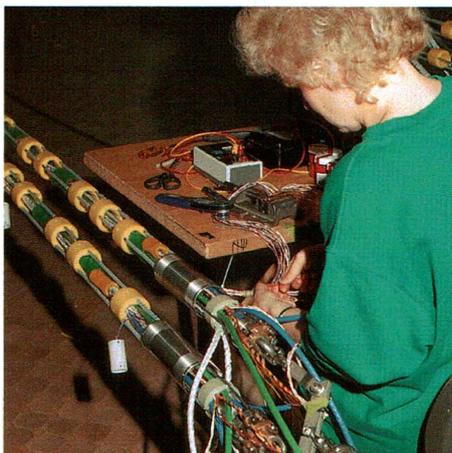
The sale of instruments and spare parts for streamers, airguns and vibrators realized an income of DM 5.1 million.



1



2



3

- 1 Around 2000 telemetry boxes and 100 km of survey cable have to be tested and made ready for a single 3D crew.
- 2+3 The manufacture of streamers demands not only know-how, but also adroitness and plenty of room.

Research and Development

In order to intensify, control and coordinate the research and development projects within the company a Research and Development Division (R&D) was established in mid 1989. The purpose of this division was on the one hand to perform R&D projects. Consequently the »pseudo-gamma-ray log« project and the existing »COMSTAT-GEOSYS« (COMSTAT = COMputer-aided STATic correction system) project were incorporated into the new division. A further area of activity of this division is the group coordination of R&D projects which are carried out in other divisions.

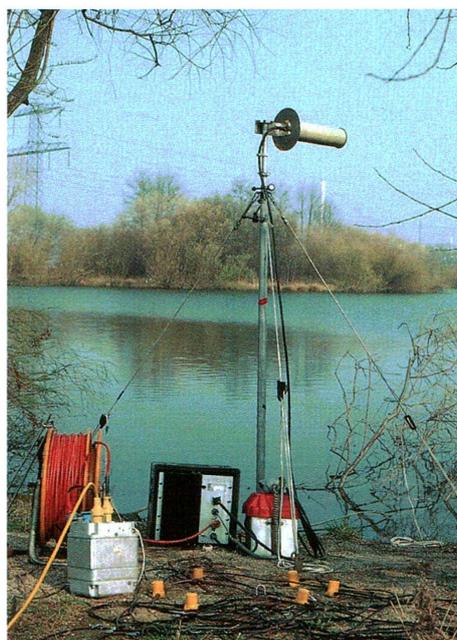
R&D projects carried out under the responsibility of the various divisions focussed on the following points:

Geophysical Data Centre

Despite the considerable load resulting from the installation of new hardware and the related conversion of the GEOSYS software system to this equipment, the various projects could be successfully begun and carried out. For example a 3D DMO method and a program for determining 3D refraction statistics were developed, tested and made available for production purposes. In May development work was started on a software system for the quality control of marine data for use on workstations.

Interpretation

Work on the software for the computer-aided seismic interpretation system COMSEIS was focussed on the development and integration of new applications. In addition a study was concluded on the development of systems concerned with the increasingly important litho-stratigraphic interpretation. In this respect a group of highly



1

qualified employees worked on the possibilities of applying modern workstation technology to the development of new interpretation software.

Technical Services

An important development aspect was the equipping of our shallow-water fleet with the new HYDRODATA installation together with a compact colour graphic information system. The performance of this system approaches that achieved by the navigation and data acquisition system NAVDATA 3000 on our deep-sea ships. Development work on the microwave data transfer link MIDAS and the shot release unit ZXDH was advanced to such an extent that both systems will be ready for the 1990 survey season.

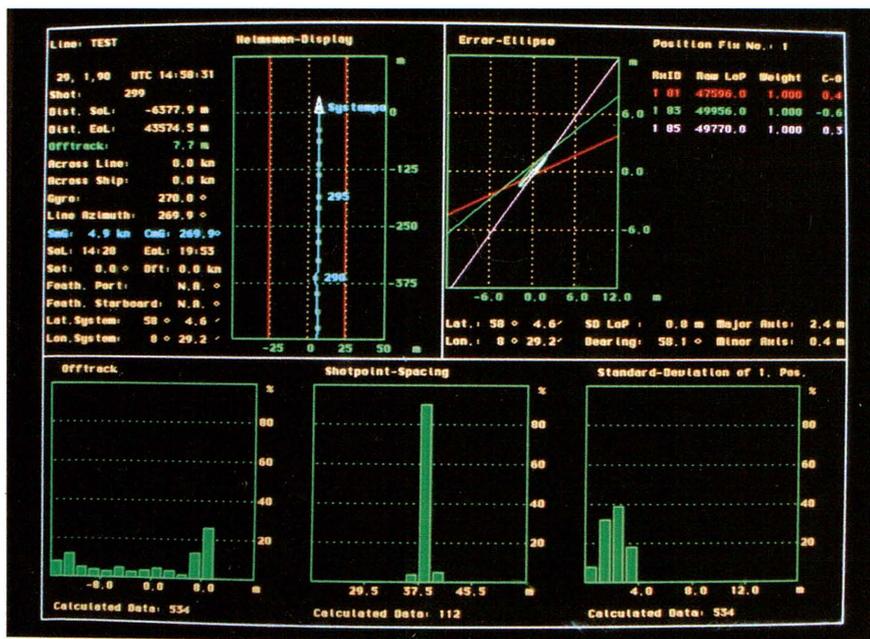


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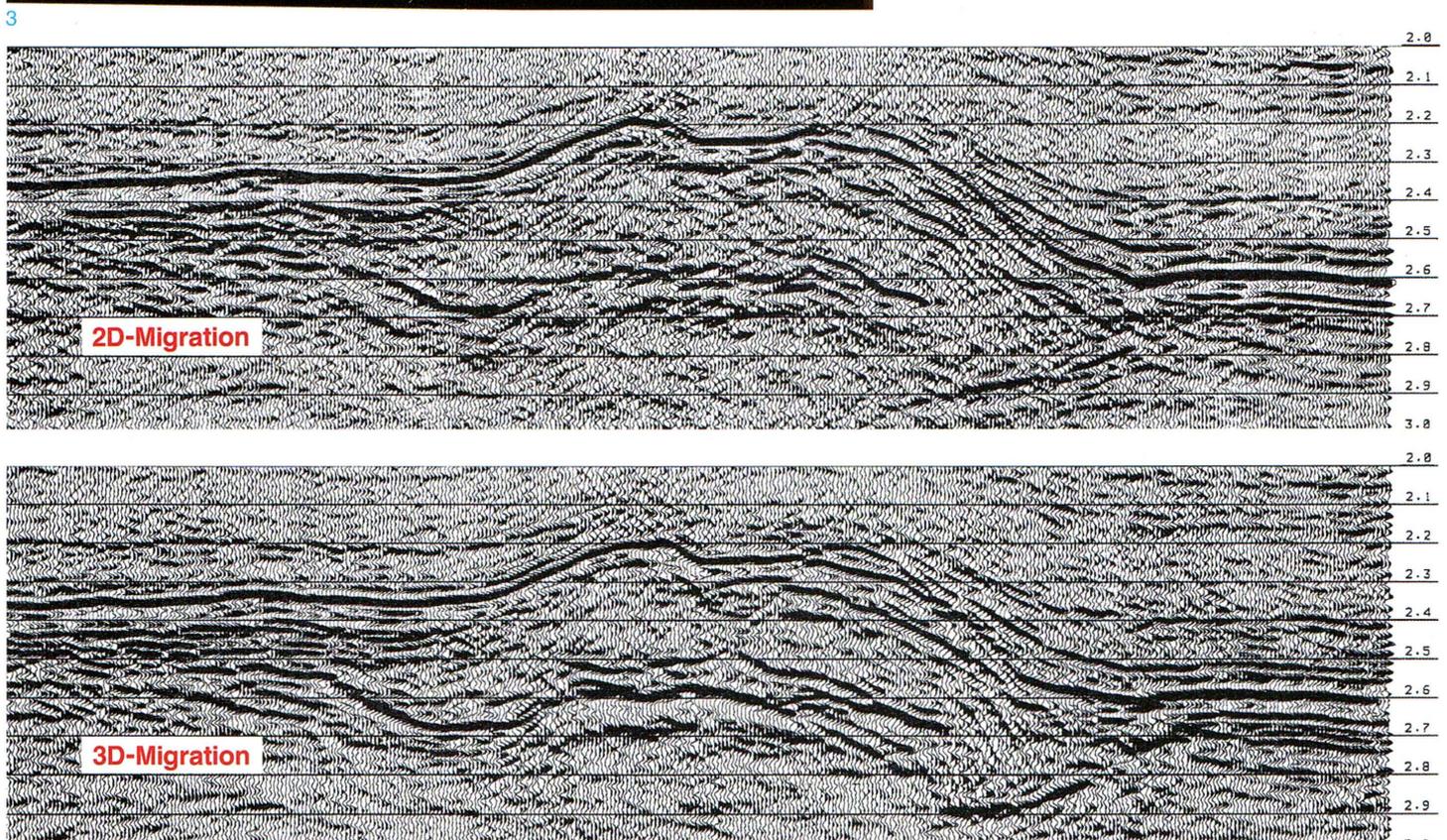
1 The microwave data link system MIDAS permits seismic data to be transferred without cables over obstacles such as rivers, lakes and motorways. The system was developed to fulfil our own requirements, but is also offered for sale.

2 Shot release unit ZXDH, a successful development from Technical Services.

The EMR horizontal well sonde developed for external clients for investigating salt domes was successfully tested in several applications and subsequently handed over. Working for another external client the differential GPS technique was tested using the in-house developed GPS receivers. Here it was proved that differential GPS can often take the place of conventional landing approach guidance.



- 3 Display on the monitor of a HYDRODATA installation. The system is used in shallow-water surveying. It stores and displays all the important survey parameters including error ellipses, course deviations and streamer drift.
- 4 The further development of seismic data processing, especially in the 3D domain, is of the utmost importance for the competitiveness of our data centre. Highly sophisticated 3D migration processes are used to migrate reflection elements to their correct positions — in this case exactly in the plane of the vertical section — whereas laterally dispersed echos are eliminated; this considerably improves the interpretability as well as the agreement with reality of a seismic section, as seen in our example.



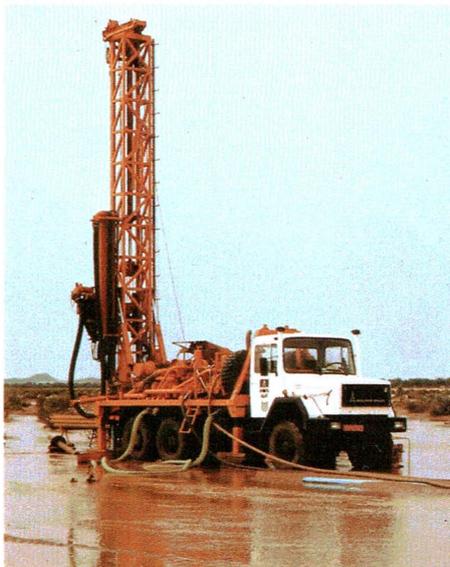
Subsidiaries

PRAKLA-SEISMOS Geomechanik GmbH

Our subsidiary company was able to slightly increase its turnover compared to the previous year to DM 60.2 million. This was in spite of a temporary reduction in the level of work in water exploration drilling abroad. The cause of this reduction is to be seen in the general decline in the number of invitations to tender, in the increased pressure from the competition as well as in delays in the awarding of contracts. Work was carried out in Senegal, in The Gambia, Guinea-Bissau, Guinea Conakry, Sierra Leone, Burkina Faso, Ghana, Chad and South Korea. On the domestic front the turnover was similar to that of the previous year despite the difficult contract situation in North Germany.

The parent company's increased activity in land seismic exploration resulted in a greater demand for shallow wells for seismic surveying. The drilling and Vibroseis work necessary for the seismic activities of the parent company were performed by our subsidiary in Germany, France, Italy, Libya, The Netherlands, Austria, Switzerland, Syria and in Turkey. It also provided a Vibroseis group in England for another contractor company. A corresponding improvement could be recognized in the financial figures for this sector.

Slight increases in turnover were also recorded regarding the sale of equipment and materials as a result of the setting up of a sales department at the beginning of the year.



1

The equipment necessary for the above sectors was developed, manufactured and serviced in the subsidiary's own workshops in Uetze. Moreover, PRAKLA-SEISMOS Geomechanik served as an official service workshop for a large vehicle manufacturer.

The profits were transferred to the parent company within the framework a transfer agreement.

PRAKLA-FRANCE s.a.r.l. Stiring-Wendel; France

As in the past the subsidiary in France supplied the parent company with personnel for its geophysical work in France and other countries.

PRAKLA-SEISMOS (Nigeria) Ltd Lagos; Nigeria

The company was active during the 1989 financial year for Nigerian oil companies. Land and marine surveys carried out by the subsidiary resulted in a small profit.

RICERCHE ED INTERPRETAZIONI GEOFISICHE (RIG), Milan; Italy

In 1989 the company in Italy performed solely 2D and 3D surveys for various clients. The turnover was considerably more than that in 1988 and provided a satisfactory profit.

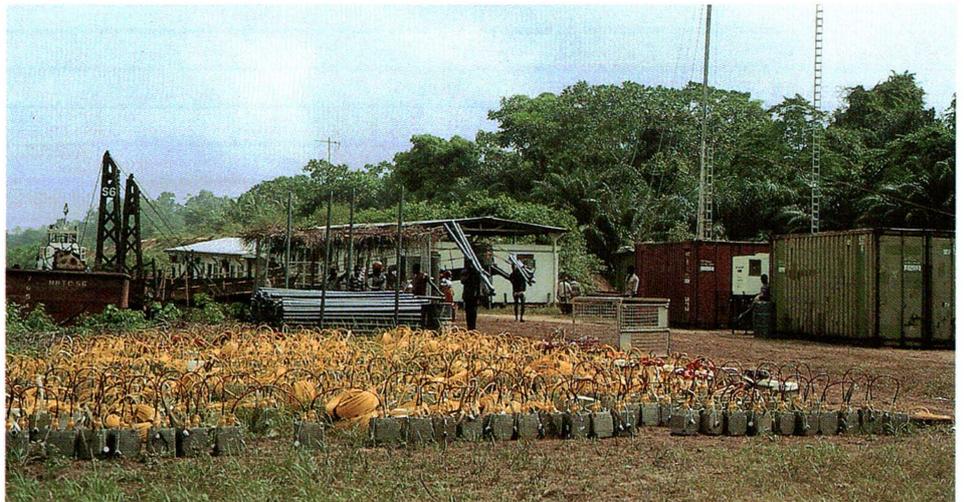
PRAKLA-SEISMOS (UK) Ltd Dorking; England

The British subsidiary took over the equipment for two survey crews as well as the associated personnel from one of our competitors at the end of the year in order to be able to start surveying at the beginning of the 1990 financial year.

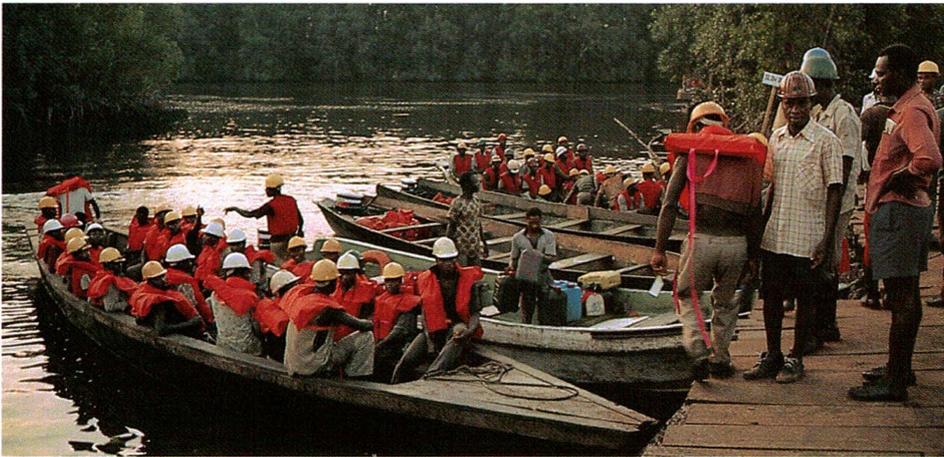
The subsidiaries in Brasil and the USA were not active during the period. We maintained our presence by means of branch offices in the following locations: Abu Dhabi, Apeldoorn, Ankara, Benghazi, Damascus, Cairo, Kuching (Malaysia), London, Singapore, Tehran, Tripoli, Tunis and Vienna.



2



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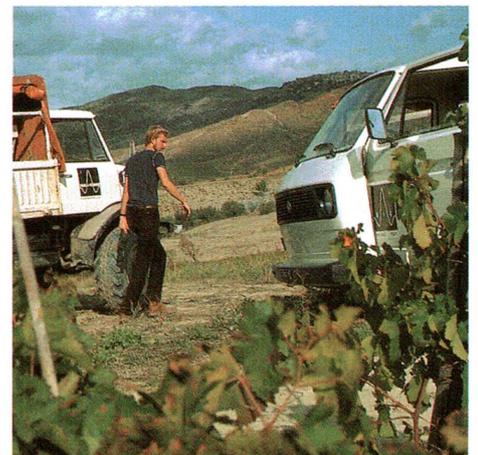


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- 1 Well drilling unit RB 30, developed by PRAKLA-SEISMOS Geomechanik, operating in Chad.
- 2 Flushing (PRAKLA-SEISMOS Nigeria Ltd).
- 3 Camp with telemetry boxes in Nigeria.
- 4 Dawn in Nigeria prior to going into the field. All helpers are fitted out with helmets and life-belts — safety first!
- 5 VVEA vibrators in the rice fields of northern Italy (RIG) during a dual-source survey.
- 6 Seismics in Calabria (RIG).



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6

Financial Statement

Balance Sheet of the Group — 31 December 1989

Assets

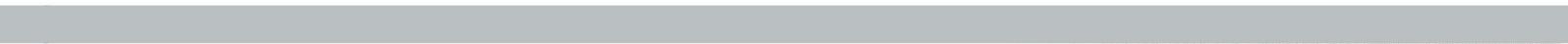
		31 12 1988	
	DM	DM	TDM
A. Fixed assets			
I. Intangible fixed assets		1 730 021.00	1 847
II. Tangible fixed assets		185 773 976.77	143 509
III. Financial assets		359 725.35	386
		187 863 723.12	145 742
B. Current assets			
I. Stocks			
1. Raw materials and supplies	30 563 539.78		28 345
2. Work in process	10 214 636.91		8 121
3. Finished goods, merchandise	5 068 104.75		4 785
4. Payments on account	295 893.57		976
		46 142 175.01	42 227
II. Receivables and other current assets			
1. Trade receivables	79 761 344.08		77 949
2. Receivables from enterprises in which participation is held	29 734.98		4
3. Other current assets	7 968 523.37		6 319
		87 759 602.43	84 272
III. Securities			
1. Own shares		1 251 562.50	1 252
IV. Cash on hand, postal giro accounts, cash at banks		13 623 695.69	7 299
		148 777 035.63	135 050
C. Prepaid expenses and deferred charges		1 389 737.58	1 402
		338 030 496.33	282 194

Liabilities

		31 12 1988
	DM	DM TDM
A. Equity		
I. Subscribed capital	50 000 000.00	50 000
II. Capital reserve	19 713 997.06	23 662
III. Revenue reserves		
1. Legal reserve	405 887.00	406
2. Reserve for own shares	1 251 562.50	1 252
3. Consolidation reserve	10 659 330.42	9 867
4. Shares of third parties	71 972.36	./53
	12 388 752.28	11 472
IV. Unappropriated profits	—.—	./138
	82 102 749.34	84 996
B. Untaxed special reserves	—.—	1 478
C. Provisions and accruals		
1. Pension provisions and similar commitments	46 856 493.78	47 692
2. Tax provisions	19 354 278.01	23 000
3. Other provisions	35 702 052.20	42 708
	101 912 823.99	113 400
D. Liabilities		
1. Liabilities to banks	106 821 619.45	49 723
2. Payments received on account of orders	5 820 481.49	6 036
3. Trade payables	17 031 334.10	11 165
4. Payables to enterprises		
in which participation is held	97 264.36	10
5. Other liabilities	24 236 423.60	15 386
	154 007 123.00	82 320
E. Deferred income	7 800.00	—.—
Liability relations:		
Liabilities from issue and transfer of bills of exchange:		
DM 289 421.82 (previous year TDM 100)		
Liabilities from guarantees: DM 21 090.— (previous year TDM 52)		
	338 030 496.33	282 194

Group Profit and Loss Account 1 January to 31 December 1989

	1988	
	DM	TDM
1. Sales	318 991 975.81	336 237
2. Change in stocks of finished and unfinished goods and services not yet charged	2 048 971.92	./821
3. Other capitalized costs	9 574 682.83	3 193
4. Other operating income	24 466 569.12	33 031
	355 082 199.68	371 640
5. Cost of materials		
a) Cost of raw materials, supplies and merchandise	47 326 429.35	43 705
b) Cost of services utilized	14 608 713.69	18 041
	61 935 143.04	61 746
6. Personnel expenditure		
a) Wages and salaries	130 332 676.66	122 809
b) Social security charges, pension costs and benefits	25 167 755.61	30 798
	155 500 432.27	153 607
7. Depreciation of intangible and tangible fixed assets	56 576 624.96	54 179
8. Other operating expenses	89 963 867.48	103 199
	./8 893 868.07	./1 091
9. Income from lending of long-term fixed assets	769.00	1
10. Other interest and similar income	552 396.79	541
11. Interest and similar expenses	4 724 637.88	3 432
12. Loss on ordinary activities	13 065 340.16	3 981
13. Taxes on income and net assets (Revenue surplus)	+228 203.94	./3 894
14. Other taxes	./2 076 189.76	./2 176
15. Net loss for the year	14 913 325.98	10 051
16. Accumulated losses	137 800.14	341
	./15 051 126.12	./10 392
17. Partial release of the capital reserve	15 948 392.78	10 000
18. Partial release of the consolidation reserve	2 667 072.87	708
	18 615 465.65	10 708
19. Increase in the consolidation reserve	3 456 668.41	525
20. Third parties' shares in earnings	107 671.12	./71
21. Unappropriated profits/accumulated losses	—.—	./138



Balance Sheet of PRAKLA-SEISMOS AG – 31 December 1989

Assets

		31 12 1988	
	DM	DM	TDM
A. Fixed assets			
I. Intangible fixed assets		1 730 021.00	1 847
II. Tangible fixed assets		146 187 022.51	115 795
III. Financial assets		9 507 997.35	9 532
		157 425 040.86	127 174
B. Current assets			
I. Stocks			
1. Raw materials and supplies	20 134 017.19		18 051
2. Work in process	8 370 778.94		4 739
3. Finished goods, merchandise	328 086.26		260
		28 832 882.39	23 050
II. Receivables and other current assets			
1. Trade receivables	62 383 170.44		62 478
2. Receivables from affiliated enterprises	17 973 734.61		8 880
3. Receivables from enterprises in which participation is held	29 734.98		5
4. Other current assets	7 107 242.55		5 324
		87 493 882.58	76 687
III. Securities			
1. Own shares		1 251 562.50	1 252
IV. Cash on hand, postal giro accounts, cash at banks		11 596 392.83	4 128
		129 174 720.30	105 117
C. Prepaid expenses and deferred charges		1 362 038.90	1 226
		287 961 800.06	233 517

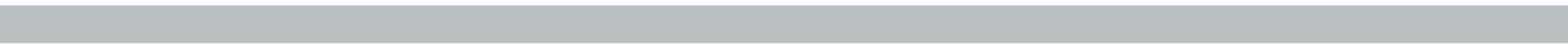
Liabilities

		31 12 1988	
	DM	DM	TDM
A. Equity			
I. Subscribed capital		50 000 000.00	50 000
II. Capital reserve		19 713 997.06	23 662
III. Revenue reserves		1 657 449.50	1 658
IV. Unappropriated profits		—.—	./138
		71 371 446.56	75 182
B. Untaxed special reserves		—.—	1 064
C. Provisions and accruals			
1. Pension provisions and similar commitments	41 235 942.00		42 151
2. Tax provisions	17 600 000.00		22 550
3. Other provisions	27 443 673.00		32 594
		86 279 615.00	97 295
D. Liabilities			
1. Liabilities to banks	94 444 501.38		35 333
2. Payments received on account of orders	4 600 259.61		4 185
3. Trade payables	12 504 954.35		8 548
4. Payables to affiliated enterprises	214 230.24		114
5. Payables to enterprises in which participation is held	97 264.36		10
6. Other liabilities	18 441 728.56		11 786
		130 302 938.50	59 976
E. Deferred income		7 800.00	—

Liability relations:

Profit and Loss Account of PRAKLA-SEISMOS AG 1 January 1989 to 31 December 1989

	DM	DM	1988 TDM
1. Sales		266 141 918.95	290 374
2. Change in stocks of finished and unfinished goods and services not yet charged		3 371 470.42	./2 416
3. Other capitalized costs		2 035 880.49	1 058
4. Other operating income		24 005 547.48	32 243
		295 554 817.34	321 259
5. Cost of materials			
a) Cost of raw materials, supplies and merchandise	33 710 646.77		32 986
b) Cost of services utilized	23 210 008.92		30 232
		56 920 655.69	63 218
6. Personnel expenditure			
a) Wages and salaries	102 545 099.75		97 089
b) Social security charges, pension costs and benefits	18 861 253.34		23 640
		121 406 353.09	120 729
7. Depreciation of intangible and tangible fixed assets		46 741 406.16	44 087
8. Other operating expenses		87 364 436.96	98 027
		./16 878 034.56	./4 802
9. Income from profit transfer agreements		4 174 345.49	2 438
10. Other interest and similar income		536 947.19	637
11. Interest and similar expenses		3 623 745.24	2 764
12. Loss on ordinary activities		15 790 487.12	4 491
13. Taxes on income and net assets (Revenue surplus)		+1 719 360.98	./3 476
14. Other taxes		./1 739 466.50	./1 830
15. Net loss for the year		15 810 592.64	9 797
16. Accumulated losses		137 800.14	341
		./15 948 392.78	./10 138
17. Partial release of the capital reserve		15 948 392.78	10 000
18. Unappropriated profits/accumulated losses		—,—	./138



Appendix

Development of the Fixed Assets — Group

	Purchase and production costs			
	Balance 1. 1. 1989 DM	Additions DM	Disposals DM	Transfers DM
I. Intangible fixed assets				
1. Software	5 244 952.75	797 305.—	380 171.04	—.—
II. Tangible fixed assets				
1. Freehold land and capitalized long-term leases of land including buildings on land by third parties	72 429 889.42	719 633.—	—.—	588.—
2. Technical plants and machinery	366 953 297.51	69 507 779.—	30 902 492.39	2 055 107.—
3. Other plants, furniture, fittings and equipment	74 801 798.19	24 960 151.14	5 954 908.32	681 544.—
4. Construction in progress	3 055 776.49	5 078 727.—	10 830.—	./2 737 239.—
Total	517 240 761.61	100 266 290.14	36 868 230.71	—.—
III. Financial assets				
1. Shares in affiliated enterprises	4 185 260.—	—.—	—.—	—.—
2. Participations	429 662.12	1 587.23	25 000.—	—.—
3. Other lendings	16 200.—	—.—	3 600.—	—.—
Total	4 631 122.12	1 587.23	28 600.—	—.—
Fixed assets	527 116 836.48	101 065 182.37	37 277 001.75	—.—

Balance 31. 12. 1989 DM	Depreciations			Disposals DM	Balance 31. 12. 1989 DM	Remaining book value	
	Balance 1. 1. 1989 DM	Additions (annual depr.) DM				Balance 31. 12. 1989 DM	Balance 31. 12. 1988 DM
5 662 086.71	3 397 758.75	886 498.—		352 191.04	3 932 065.71	1 730 021.—	1 847 194.—
73 150 110.42	24 473 710.79	2 194 062.—		—.—	26 667 772.79	46 482 337.63	47 956 178.63
407 613 691.12	286 368 052.55	43 598 730.46		29 650 594.42	300 316 188.59	107 297 502.53	80 585 244.96
94 488 585.01	62 890 122.39	9 897 334.50		4 906 574.—	67 880 882.89	26 607 702.12	11 911 675.80
5 386 434.49	—.—	—.—		—.—	—.—	5 386 434.49	3 055 776.49
580 638 821.04	373 731 885.73	55 690 126.96		34 557 168.42	394 864 844.27	185 773 976.77	143 508 875.88
4 185 260.—	4 185 258.—	—.—		—.—	4 185 258.—	2.—	3.—
406 249.35	57 691.—	—.—		—.—	57 691.—	348 558.35	371 971.12
12 600.—	2 204.—	—.—		769.—	1 435.—	11 165.—	13 996.—
4 604 109.35	4 245 153.—	—.—		769.—	4 244 384.—	359 725.35	385 970.12
590 905 017.10	381 374 797.48	56 576 624.96		34 910 128.46	403 041 293.98	187 863 723.12	145 742 040.—

**Development of the Fixed Assets —
PRAKLA-SEISMOS AG**

	Purchase and production costs			
	Balance 1. 1. 1989 DM	Additions DM	Disposals DM	Transfers DM
I. Intangible fixed assets				
1. Software	5 244 952.75	797 305.—	380 171.04	—.—
II. Tangible fixed assets				
1. Freehold land and capitalized long-term leases of land including buildings on land by third parties	62 842 163.12	—.—	—.—	—.—
2. Technical plants and machinery	291 714 852.13	64 221 166.—	29 186 056.73	311 958.—
3. Other plants, furniture, fittings and equipment	54 258 340.35	11 011 800.—	3 297 394.89	504 722.—
4. Construction in progress	1 133 072.49	2 324 385.—	8 685.—	./816 680.—
Total	409 948 428.09	77 557 351.—	32 492 136.62	—.—
III. Financial assets				
1. Shares in affiliated enterprises	13 375 453.55	—.—	—.—	—.—
2. Participations	429 662.12	1 587.23	25 000.—	—.—
Total	13 805 115.67	1 587.23	25 000.—	—.—
Fixed assets	428 998 496.51	78 356 243.23	32 897 307.66	—.—

Balance 31. 12. 1989 DM	Depreciations			Disposals DM	Balance 31. 12. 1989 DM	Remaining book value	
	Balance 1. 1. 1989 DM	Additions (annual depr.) DM				Balance 31. 12. 1989 DM	Balance 31. 12. 1988 DM
5 662 086.71	3 397 758.75	886 498.—	352 191.04	3 932 065.71	1 730 021.—	1 847 194.—	
62 842 163.12	20 371 146.63	1 906 107.—	—.—	22 277 253.63	40 564 909.49	42 471 016.49	
327 061 919.40	226 263 587.17	38 206 160.46	27 934 158.76	236 535 588.87	90 526 330.53	65 451 264.96	
62 477 467.46	47 518 548.65	5 742 640.70	3 247 411.89	50 013 777.46	12 463 690.—	6 739 791.70	
2 632 092.49	—.—	—.—	—.—	—.—	2 632 092.49	1 133 072.49	
455 013 642.47	294 153 282.45	45 854 908.16	31 181 570.65	308 826 619.96	146 187 022.51	115 795 145.64	
13 375 453.55	4 216 014.55	—.—	—.—	4 216 014.55	9 159 439.—	9 159 439.—	
406 249.35	57 691.—	—.—	—.—	57 691.—	348 558.35	371 971.12	
13 781 702.90	4 273 705.55	—.—	—.—	4 273 705.55	9 507 997.35	9 531 410.12	
474 457 432.08	301 824 746.75	46 741 406.16	31 533 761.69	317 032 391.22	157 425 040.86	127 173 749.76	

A. General

As in the preceding year, individual items of the fixed assets and equity capital were summarized in the balance sheet and broken down in the appendix. The prescribed notes on individual items in the balance sheet and the profit and loss account are also included in the appendix.

The drawing up of the balance sheet was carried out after offsetting the net loss for the year by releases from reserves.

Companies included in the consolidation comprise PRAKLA-SEISMOS AG as parent company, the 100 % subsidiary PRAKLA-SEISMOS Geomechanik GmbH, Hannover, and four foreign subsidiaries. The companies included in consolidation have been extended by a foreign subsidiary. The comparability of the group financial statement with that of the previous year has not been affected significantly by this.

The **capital consolidation** of the enterprise included in the financial statement for the first time was carried out on the basis of the figures on the books as of 31 December 1989. The asset and liability side differences resulting thereby are shown in the consolidation reserve and are given in the appendix.

Receivables and liabilities between group companies were offset. Sales and other earnings from trade receivables between the individual group companies were offset against the expenditure attributable to them.

Interim profits occurred in the fixed assets; they were accordingly eliminated.

For the **currency conversion** of foreign group companies, the exchange rates as they applied on 31 December 1989 were used for the balance sheet values. Individual items on the profit and loss account were converted at the annual average exchange rates in each case, and annual results were converted at the rate applying on the balance sheet date.

B. The balance sheet and valuation principles

Intangible and tangible fixed assets are given at purchase/production costs less scheduled and unscheduled depreciations.

The production costs for plants manufactured within the group include direct and indirect costs for the production and material and appropriate parts of administrative costs, including depreciations.

Planned depreciation was carried out almost exclusively according to the straight-line method, in individual instances (assets with a long life) the diminishing-balance method was used. The useful life was as provided for in tax legislation: For the moveable assets, it varies between two and five years, and in the group, between two and ten years. For assets purchased in the first half year, full annual depreciation is calculated, and for those purchased in the second half year, half of this figure. Low value goods are completely written off in the year of acquisition.

Financial assets are given at acquisition costs and, where appropriate, less depreciations.

Raw materials and supplies are given at the most recent purchase costs applying in each case and, in some instances, according to the average cost method.

Stock risks were sufficiently taken into account by means of appropriate individual and general value adjustments.

The valuation of the unfinished and finished goods was carried out at manufacturing costs, which were derived on the same principles as for the fixed assets. The unfinished production of the data centre is valued at production costs, which include personnel and machine costs with pro rata overheads in the data centre. The production costs for the unfinished goods of the drilling operations are calculated retrospectively from the operating results. The products and services are valued, overall, free of loss.

Receivables and other current assets are valued at the nominal value or at the lower value attributable, and own equities at the purchase costs. There are appropriate general value adjustments to take account of non-performance and valuation risks.

The equity capital items are valued at the nominal amount.

The pension commitments were worked out using a modified going concern value, with regard to entry into the pension scheme and pension age, on the basis of a calculatory interest rate of 5.5 %.

The other provisions take all recognizable risks into account. Liabilities are carried as the amount repayable.

Foreign currency receivables and liabilities have been converted to the average rates at the time they arose or at the lower (higher) average rates on the balance sheet date.

C. Notes on the group financial statement and group profit and loss account and on the balance sheet and profit and loss account of PRAKLA-SEISMOS AG.

The classification and development of the **fixed assets** on the group balance sheet and on the balance sheet of PRAKLA-SEISMOS AG can be seen in the investment record concerned on pages 28/29 and 30/31.

Receivables with a residual period to maturity of more than one year include:

	Group		PRAKLA-SEISMOS AG	
	1989	1988	1989	1988
	in TDM			
Trade receivables	533	823	—	434
other assets	260	359	260	359

Of the **receivables shown in the PRAKLA-SEISMOS AG statement against group companies**, TDM 5 787 (previous year TDM 1 977) were accounted for by trade receivables.

Holdings of **own shares** continue to be 50 000 items with a nominal value of DM 50 each; the share taken by these equities in share capital is 5 %. The reserve as laid down pursuant to the law is carried in the amount of the balance sheet value of own equities.

In the year under review, the **equity capital** has developed as follows:

	Balance 1. 1. 89	Additions	Releases	Balance 31. 12. 89
		in TDM		
Subscribed capital	50 000	—	—	50 000
Capital reserves	23 662	12 000	15 948	19 714
Revenue reserves				
legal reserves	406	—	—	406
reserves for own shares	1 252	—	—	1 252
	1 658	—	—	1 658
	75 320	12 000	15 948	71 372
Balance sheet loss	138	15 810	15 948	—
Total	75 182	13 810	—	71 372

The fully paid-up **subscriber capital** is made up as follows:

	TDM
1. 31 800 shares payable to bearer of series Litera A at a nominal value of DM 1000.— each	31 800
2. 364 000 shares payable to bearer of series Litera B at a nominal value of DM 50.— each	18 200
Total	50 000

The **capital reserve** comes exclusively from payments by the sole shareholder.

There is **approved capital** of the order of DM 10 million which is limited to 31 August 1990.

The **consolidation reserve** (TDM 10 659) contains the differential amounts on the assets side (TDM 914) and liability side (TDM 13 942) from the capital consolidation which were offset against the intra-group profits (TDM 2 369) eliminated in the fixed assets.

The **other provisions** were principally for personnel expenditure and losses threatened by pending business. In addition, the group financial statement includes provisions for maintenance measures not carried out and which are to be executed in the following business year.

The **liabilities to group companies** given in the PRAKLA-SEISMOS AG account in the amount of TDM 214 (previous year TDM 114) concern exclusively trade payables.

The **remaining period to maturity of liabilities** is divided up as follows:

	Group				PRAKLA-SEISMOS AG			
	up to 1 year	from 1 year to 5 years	more than 5 years	total	up to 1 year	from 1 year to 5 years	more than 5 years	total
	in TTDM				in TTDM			
Liabilities to banks	61 822	21 000	24 000	106 822	51 445	19 000	24 000	94 445
Payments received on account of orders	5 820	—	—	5 820	4 600	—	—	4 600
Trade payables	17 031	—	—	17 031	12 505	—	—	12 505
Payables to affiliated enterprises	—	—	—	—	214	—	—	214
Payables to enterprises in which participation is held	97	—	—	97	97	—	—	97
Other liabilities	24 237	—	—	24 237	18 442	—	—	18 442
Total	109 007	21 000	24 000	154 007	87 303	19 000	24 000	130 303

Securities secured by mortgage and alike do not exist.

Of the other liabilities, TDM 5 977 are accounted for in the group by **taxes** and TDM 2 817 on **liabilities in the context of social security** (previous year TDM 3 682 and TDM 3 024 respectively). The other liabilities of PRAKLA-SEISMOS AG contain **taxation commitments** of TDM 5 034 (previous year TDM 3 309) and **liabilities in the context of social security** of TDM 2 292 (previous year TDM 2 210).

Classification of sales in million DM

1. by area of activity:

	Group		PRAKLA-SEISMOS AG	
	1989	1988	1989	1988
Land seismics	169.6	151.4	152.1	140.9
Deep-sea seismics	33.5	33.8	33.5	33.8
Shallow-water seismics	24.4	45.3	24.4	45.3
Data processing	25.3	33.6	25.3	33.6
Interpretation	14.3	14.7	14.3	14.7
Water and exploration drilling	31.0	34.0	—	—
Sales of equipment	9.7	10.5	6.4	8.8
Other*)	11.2	12.9	10.1	13.3
Total	319.0	336.2	266.1	290.4

*) including gravimetry, geodesy, engineering geophysics, geoelectrics, workshop production

2. by markets

	Group		PRAKLA-SEISMOS AG	
	1989	1988	1989	1988
Federal Republic of Germany	119.2	113.8	104.3	106.1
Rest of Europe	85.1	129.5	68.9	90.8
Non-European countries	81.2	59.1	59.4	59.7
Deep-sea surveys	33.5	33.8	33.5	33.8
Total	319.0	336.2	266.1	290.4

Sales in countries outside Europe were attained largely in the Middle East and in North and West Africa.

Other operating revenue includes **revenue from untaxed special reserves**. In the group, these were TDM 1 478 (previous year TDM 286) and at PRAKLA-SEISMOS AG TDM 1 064 (previous year TDM 141).

Expenditure on old age pensions in the group were TDM 2 417 and at PRAKLA-SEISMOS AG TDM 2 071. The corresponding values for the previous year were TDM 7 986 and TDM 7 059 respectively.

Unscheduled depreciation because of what will probably be a value loss on tangible and intangible fixed assets are contained in the group financial statement for a subsidiary in the amount of TDM 60. Group previous year's value in the amount of TDM 580 concerned PRAKLA-SEISMOS AG exclusively.

Other interest and similar earnings in the amount of TDM 180 (previous year TDM 247) and interest and similar expenses in the amount of TDM 28 (previous year TDM 4) originating in relation to **other group companies** occurred at PRAKLA-SEISMOS AG exclusively.

Items unrelated to the accounting period are contained in the other operating income in the amount of TDM 11 664 (previous year TDM 14 318) for the group, and TDM 9 544 (previous year TDM 13 820) for PRAKLA-SEISMOS AG. They largely concern the transfer of provisions and profits/earnings from the sale of fixed/current assets. The other operating income contains amounts for earlier business years in the amount of TDM 1 787 for the group (previous year TDM 4 221) and TDM 1 633 (previous year TDM 3 884) for PRAKLA-SEISMOS AG. After off-setting tax refunds and retransfers of provisions with taxation expenditure, there is an income surplus unrelated to the accounting period remaining in the taxes on income and earnings. At PRAKLA-SEISMOS AG this amounts to TDM 9 452 (previous year TDM 284) and at the group TDM 9 440 (previous year TDM 232). The other taxes of PRAKLA-SEISMOS AG in the amount of TDM 128 concern earlier business years.

D. Other notes

For the business year to come, the group has **other financial commitments** from rental and leasing contracts in the amount of TDM 3 900 (previous year TDM 5 000). As in the previous year, they concern exclusively PRAKLA-SEISMOS AG. Neither in the group nor at PRAKLA-SEISMOS AG is there any significant order commitment for fixed assets.

Number of employees taking the average for the year:

	Group		PRAKLA-SEISMOS AG	
	1989	1988	1989	1988
Domestic permanent staff of PRAKLA-SEISMOS AG	1 419	1 373	1 419	1 373
Internationally employed staff of PRAKLA-SEISMOS AG	242	294	242	294
Other group enterprises domestic	341	330	—	—
international	541	275	—	—
	2 543	2 272	1 661	1 667
Trainees/apprentices	21	22	9	9
Total	2 564	2 294	1 670	1 676
of which part-time employees	58	54	47	44

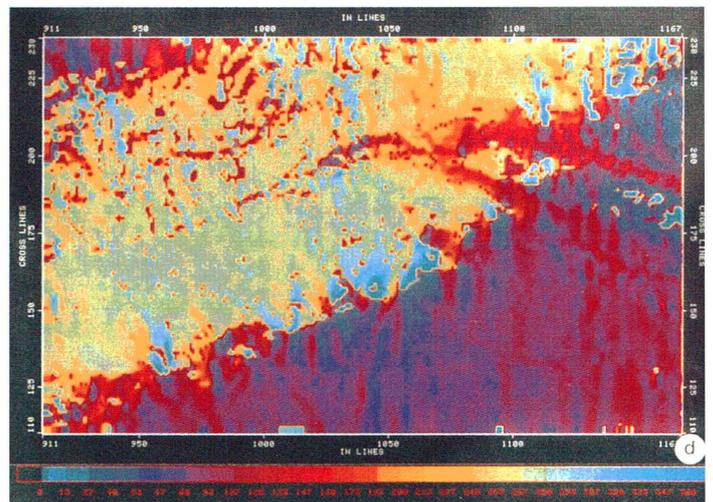
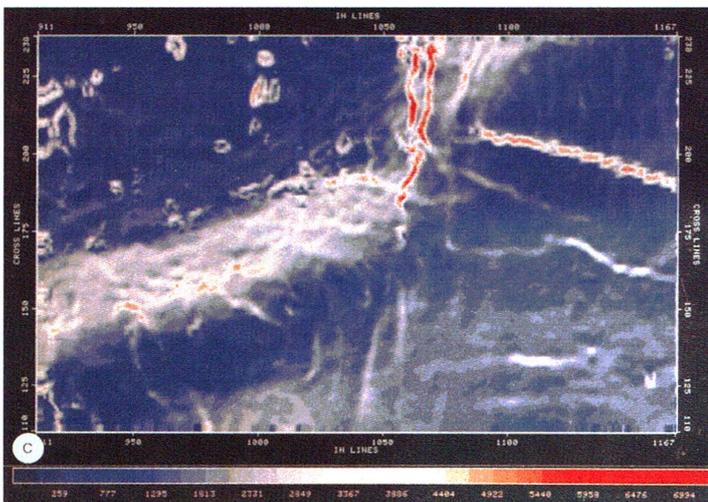
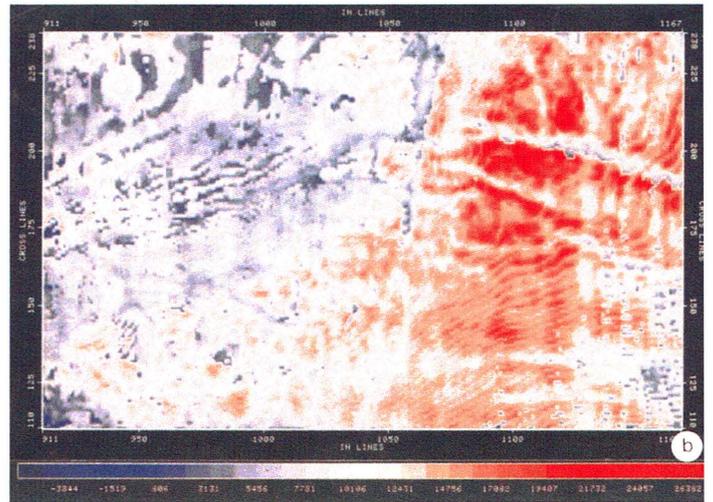
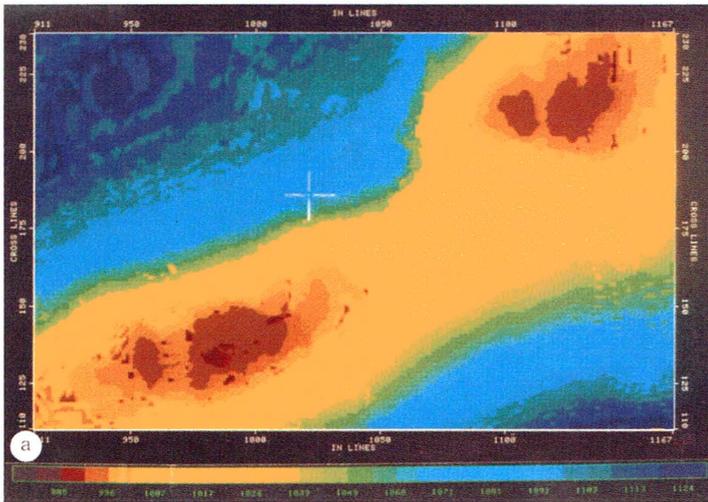
The calculation of the average figures is based on the levels at the end of each of the 12 months.

Members of the Supervisory Board and the Board of Directors are listed on page 2 of the annual report.

The **emoluments of the Board of Directors** for the business year 1989 were DM 895 100 in the group (previous year TDM 1 114) and at PRAKLA-SEISMOS AG DM 873 500 (previous year TDM 1 106).

Current pensions for former board members and their surviving dependants amount in the year under review to DM 466 233.59 (previous year TDM 360); pension commitments for these persons in the amount of TDM 4 508 are contained in their entirety in the pension provisions.

The **remuneration of Supervisory Board members** for the group and at PRAKLA-SEISMOS AG were in both instances DM 62 100 (previous year TDM 64).



- The interactive interpretation system COMSEIS® permits multifarious analyses of the recorded seismic data. Four characteristics of a seismic horizon are investigated here:
- the traveltimes, displayed in colour code (time map),
 - the changes in the amplitudes of the same horizon (amplitude map),
 - the horizon dip in milliseconds per kilometre (dip map),
 - the direction of the horizon dip indicated in degrees (azimuth map).

