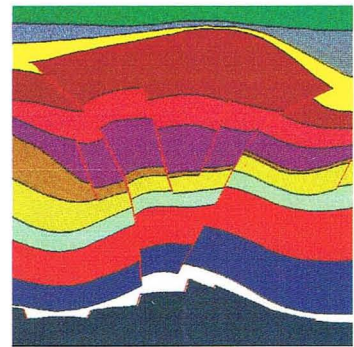
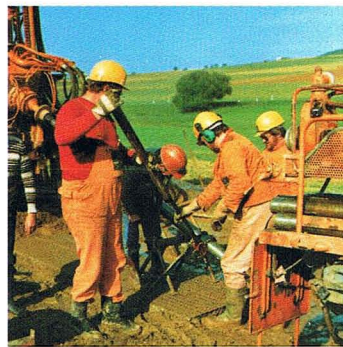
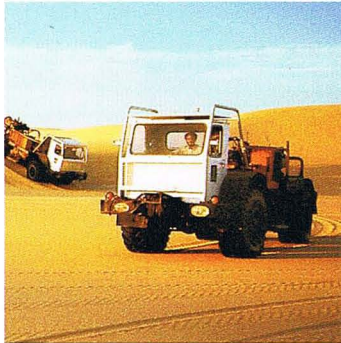


Geophysics

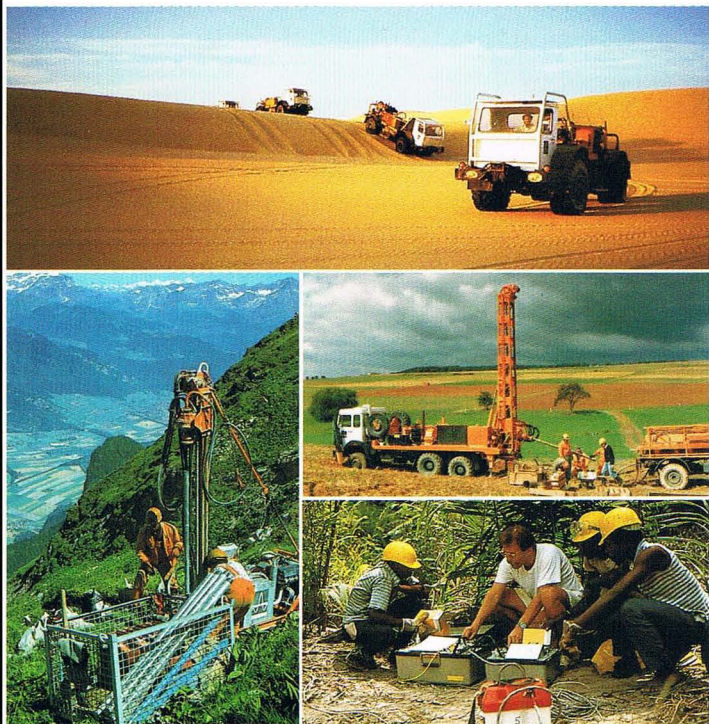
made in Germany
applied worldwide



PRAKLA-SEISMOS AG



ONSHORE GEOPHYSICS



Geophysical land operations, especially 3D and 2D seismic surveys for the exploration industry, are conducted on a worldwide scale, using the best materials our workshops and the international market are in a position to offer at any particular moment. Heavy-weight vibrators and drilling rigs as well as medium-weight and even heliportable systems allow flexible operation in the most difficult areas of our globe.

- ▷ Seismic surveys
 - 3D and 2D reflection seismics
 - undershooting
 - refraction seismics
- ▷ Potential-field surveys
 - gravimetry
 - magnetics
- ▷ Geodetic surveys
- ▷ Special surveys
 - cavity surveillance
 - geoelectrics, environmental work

Vice-President: G Fromm
 Domestic seismics: H J Ueberschar
 International seismics: E Schwarz
 Reg. management: P Dismar, Dr B Nosseck,
 G Schmidt, Dr P Stras, E Tiegs
 Potential methods: E Zenke, Dr H C Bachem
 Special surveys: E Zenke, Dr U Scharf
 Technical advice and seismic QC: A Mittermair
 Supervision: H Arnetzl, H Blümer, W Leuschner,
 H Werner
 Internal Affairs: D Heitland

OFFSHORE GEOPHYSICS



Deep-sea surveys are executed by PRAKLA-SEISMOS's own vessels SV MINTROP and SV PROSPEKTA as well as by additionally chartered ships with similar dimensions and outfit. All vessels are furnished with the most up-to-date equipment. For the recording of seismic data mainly the SYNTRAK¹ system for dual- or triple-streamer operations is used. The purpose-built shallow-water vessels FLUNDER, MANTA and SOLEA are able to execute streamer surveys in shallow waters up to 2-3 m as well as stand-alone or combined transition-zone operations in waters up to 1 m depth using DIGISEIS² or MYRIASEIS³ as recording systems and an airgun-pontoon as energy source. For land connections either explosives or vibrators are used. The survey vessels operate in connection with mother ships stationed directly in the survey area.

- ▷ Seismic surveys
 - 3D and 2D reflection seismics
 - undershooting
 - refraction seismics
- ▷ Potential-field surveys
 - gravimetry
 - magnetics
- ▷ Bathymetric soundings

Vice-President: J Vach
 Operations: P Hengst
 Technical supervision: U Fieguth
 Ship inspections: G Repenning
 Marketing & contracts: W Krause, H-D Miersch

¹ SYNTRAK, trademark

² TERRA MARINE ENGINEERING, Inc trademark

³ CGG-IFP trademark

DATA PROCESSING



State-of-the-art data processing is the task of the company's main data centre in Hannover and smaller external data centres.

The comprehensive software system GEOSYS, a complete application package for 2D and 3D processing, is the result of 30 years' experience in this domain. Its highlights include modules for advanced static corrections, 3D depth migration and signal enhancement. Now, GEOSYS has been transferred to the UNIX environment for CRAY and CONVEX super-computers, providing the necessary capacity and efficiency to cope with modern exploration techniques. GEOSYS is available to users of exploration software in the oil business, for purchase or lease, including full software support, maintenance and updates.

The external processing centres in Vienna and Tripoli are based on VAX systems and DISCO software.

- ▷ Processing of geophysical data
- ▷ Development of geophysical software for own use and for sale (GEOSYS)
- ▷ Geodetic and cartographic calculations, position determination and graphic presentation

Vice-President: W Houba
 Processing: M Papaterpos
 Computer centre: E Hinrichs
 Software development: K Rauch
 Software control: M Morawe
 Research: Dr D Ristow
 Marketing & contracts: H Aurich

DATA INTERPRETATION



Geoscientists of the division do their sophisticated work in the Hannover centre and abroad. The interactive interpretation system COMSEIS® puts at their disposal a software package which offers comprehensive solutions to the hydrocarbon explorationist. COMSEIS handles 2D and 3D survey data and includes a highly sophisticated mapping package comprising intelligent gridding and contouring algorithms as well as the fully integrated SATTLEGGGER 3D map migration. Cooperation was started up with TERRASCIENCES Inc, whose TerraStation software product together with COMSEIS enables log and seismic data to be interpreted in an ideal way. Diverse »intelligent« components of COMSEIS and TerraStation allow the evaluation of even complex gas and oil reservoirs.

- ▷ Interpretation of 2D and 3D seismic data
 - interactive interpretation (COMSEIS)
 - seisstrat interpretation, sequence and signal analysis
- ▷ Software development for seismic, well and geological data (COMSEIS) for own use and for sale

Vice-President: Dr H G Bochmann
 Seismic interpretation: H Dostmann, K Lemcke
 Seisstrat interpretation: J Mau
 Interpretation systems: A Glocke
 Marketing: E Kril, W Richter

TECHNICAL SERVICES/MANUFACTURING

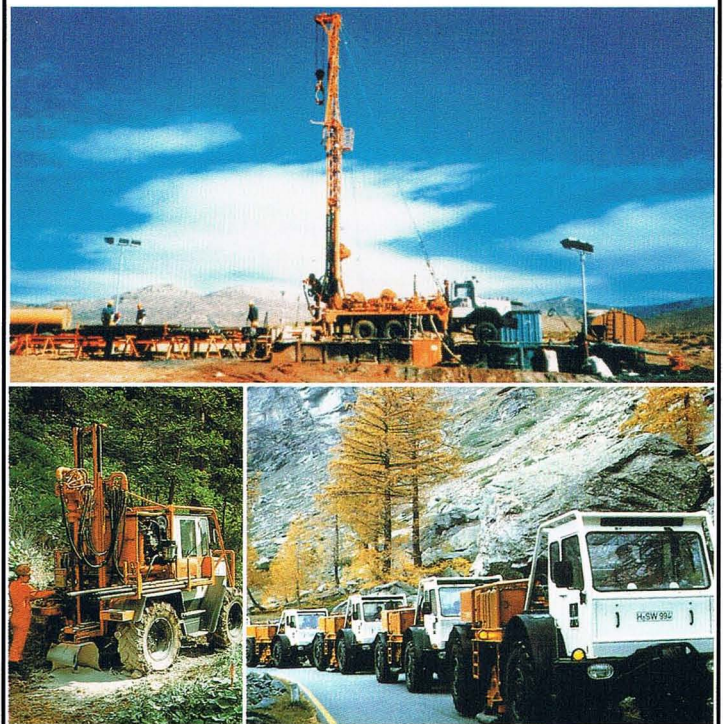


Maintenance of the company's technical outfit is the main task of the division to guarantee the smooth and accurate execution of the company's onshore and offshore operations. In addition to this, electronic tools and geophysical outfit which are not available on the market in the desired quality are tailor-made in the Hannover workshops of the division.

- ▷ Technical services
 - technical field service
 - maintenance and repair of technical equipment
 - training of observers, technicians and customers
- ▷ Development of geophysical onshore and offshore equipment for own use and for sale
 - integrated navigation systems (NAVDATA 3000, HYDRODATA 3000)
 - digital and analogue streamers
 - special hydroacoustic arrays
 - airguns
 - wireless data links (MIDAS)
 - shot release units (SPARK)

Vice-President: J Klar
 R&D: S Brosch, Dr A Laake, G Pospich
 Services: R Christ, H-W Frommer, D Jachmann
 Workshops: G Baerfacker
 Sales: Dr W Most

PRAKLA-SEISMOS GEOMECHANIK GMBH



The fully-owned subsidiary develops and manufactures seismic and water-well drilling rigs for the parent company, for own use and for sale. This equipment ranges from heliportable units up to heavy mobile systems with drilling capabilities of 1000 m. Water well drilling and exploration drilling for minerals and site investigations, particularly for waste disposal, have gained great importance. The mobile drilling rigs of the RB-series are built and used by GEOMECHANIK for these activities throughout the world, especially in Africa.

- ▷ Development and construction of motorized and fully hydraulic drilling rigs
 - for seismic exploration work
 - for water-well drilling
 - for exploration and prospection drilling
- ▷ Manufacture of drilling accessories
- ▷ Well drilling
 - for seismic work
 - for water, coal and mineral exploration
 - for investigating building sites, waste dumps etc

President: D Hardeland
 Vice-President: W Sandomeer
 Seismic operations: H T Blümel
 Drilling operations: W Thöhle, Dr M Müller
 Development of equipment: Dr O Menck
 Marketing & contracts: J Reichelt, K Fischer

PRAKLA-SEISMOS GROUP



The Board of Directors

Dr F X Führer:	Data Processing, Interpretation, (President) Research and Technical Services
B Fiene:	Geophysical Operations
Dr S Ding:	Finance and Personnel
U Oehus:	Controlling, Materials Management, Organization and Commercial EDP

PRAKLA-SEISMOS is recognized as the oldest contractor company active in geophysics. Founded in 1921 (SEISMOS) and 1937 (PRAKLA) and after absorbing some smaller German geophysical companies, of which the famed EXPLORATION (NAMEX in USA) was the most important, the two companies merged in 1963 to form a group strong enough to overcome the challenges our industry has had to cope with in the last decade.

PRAKLA-SEISMOS has always laid particular stress on being an »integrated« geophysical contractor. Despite the large realm of services, the acquisition of seismic data onshore, in transition zones and offshore, as well as data processing and interpretation for the exploration of hydrocarbons and other natural resources will continue to be the company's dominant activities. In addition to this, water well drilling, exploration drilling and site investigations are steadily gaining ground.

A special strength lies in the company's capability of developing sophisticated software for data processing and interpretation as well as manufacturing essential hardware tools in the Hannover and Uetze workshops. This tailor-made equipment ranges from drilling rigs to streamer, airguns, positioning systems and various electronic instruments.

The company's R&D Department headed by Dr R Marschall is responsible for:

- basic research,
- targeted research which is of direct benefit for the other departments of the group,
- direction and control of R&D programmes performed by these other departments,
- inhouse and external consultation work,
- participation in R&D projects launched by major clients and universities.

Great efforts are made to enhance performance and safety of all worldwide operations conducted for the exploration industry as well as for governments, local communities and consortia in charge of scientific deep-crustal studies.

The PRAKLA-SEISMOS group comprises about 1700 permanent employees. Great emphasis is put on keeping a highly trained and competent staff in order to guarantee our clients high quality service, high-tech equipment, reliability, flexibility and precision, qualities with which the company's name has been associated for 70 years.

Subsidiary Companies — Associated Companies — Branch Offices

External Processing Centres

Subsidiary Companies

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Fax: 5173 693 245
Pres: D Hardeband

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Phone: 55-21-2208029
Res Mgr: Dr A Ribeiro

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Zone Industrielle
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Reps: Dr H Zeissig

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Telex: 0175-506 HOIL, Fax: 265-325572
Mng Dir: A C Kapadia

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Res Mgr: T Mueller

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Mng Dir: F Koch



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