Schlumberger Annual Report 1977

Schlumberger Limited

THE COVER:
Field engineer Bruce Ganer at the controls of a Cyber Service Unit system during a logging job in Louisiana.

In Brief

	1977	1976	1975
Revenue	$2,205,710,000	$1,839,938,000	$1,587,571,000
Net Income	$ 401,492,000	$ 293,162,000	$ 219,337,000
Net Income Per Share	$4.68	$3.41	$2.61
Dividends Paid Per Share	$0.875	$0.53	$0.40

To the Shareholders

Nineteen seventy seven was another record year. Another year—the fifth in a row—where the progression of net income was over 30%, another year where Schlumberger men and women throughout the world worked harder and better than ever before.

A year ago, in my letter to the shareholders, I listed the four main challenges which will forge the future of Schlumberger. It was not a mere exercise in style. This is where we stand a year later.

1. Wireline or logging services will grow faster than in the previous ten years and faster than the drilling rate, I wrote last year. In 1977, revenue from these services increased worldwide 33%. In North America, the increase was 39%, as significant gains were made in all oil territories, in Alaska, in the Rocky Mountains, and both on land and offshore in the Gulf Coast; during the same period the number of active drilling rigs increased 21%.

Outside North America, wireline activity was particularly strong in Argentina and Venezuela. In the Eastern Hemisphere, the North Sea and the Middle East were the most active sectors both for exploration and development wells. Altogether wireline services revenue increased 30% whereas the drilling activity increased 10%.

The year 1977 will be remembered for two events. The first gave us pride: the fiftieth anniversary of the first electrical log recorded in an oil well. The second gives us great expectations: the introduction in the field of the first fully computerized logging units, the CSU's. Read in the center part of this report what these initials stand for, and what is behind this technical breakthrough.

Capital expenditures for wireline services were $120 million in 1977 and will be $222 million in 1978. These large amounts will permit a sizeable increase in research, engineering and manufacturing facilities. They will enable a faster introduction of the CSU in the field.

2. The technology of drilling will undergo dramatic changes. Forex Neptune had a rewarding year. Land drilling activity was strong in Algeria and in the Middle East, while offshore operations tended to stabilize. The daily rates for large offshore drilling units, particularly for jackups, firmed during the year.

The technical and marketing capabilities of Forex Neptune, of The Analysts—our new undertaking in the mud logging and drilling data field—together with the new Measurement While Drilling (MWD) technique, will enable us to bring a new contribution to the efficiency and safety of drilling. The first lengthy field test—over a hundred hours—of our Measurement While Drilling prototype was made offshore Louisiana. The results were encouraging. Many technical problems will have to be overcome but we are progressing, and we hope to commence limited commercial services in MWD by early next year.

3. The development of production tools and services continued at a good pace. All units in North America, as in the rest of the world, did well. Activities of Flopetrol, Johnston and Macco are growing along three main avenues: production engineering, reservoir testing and workover services.

Dowell Schlumberger (50% owned) is also a major factor in production enhancement through their stimulation services.

4. Measurement & Control operations have a great opportunity for growth, particularly in the area of energy management products.

In North America, progress at Sangamo resulted from higher sales of watthour meters and transformers, triggered by an active construction market. The advanced European technology in electricity load management is in the process of being introduced in the U.S.

All manufacturing, engineering and marketing functions of the Sangamo Weston Energy Management division now located in Springfield, Illinois, will be regrouped in South Carolina and Georgia.

The European economy was not as strong as the U.S. economy. The demand for capital goods and consumer products was sluggish in most European countries, whether they had a high or low inflation rate, whether they had a large surplus or deficit in their balance of payments. Economic stagnation was the common denominator of Europe in 1977. In spite of these circumstances, resulting in almost flat revenue expressed in constant currencies, sales of electricity product lines gained throughout Europe whereas profits improved significantly mainly in England, Belgium and Spain.

To meet these four challenges, the year 1977 was a good start. We are on the right track. I have more concern over the future of the economic environment than over the future of Schlumberger. Businessmen generally tend to overemphasize the political risks. They certainly exist, particularly in a year when countries like France and Italy might experience political changes. However, a much greater danger is economic uncertainty. I believe that, since the end of the Bretton Woods monetary agreement in 1971, the greatest threat to economic progress is the floating of currencies and resulting chaos in the international monetary system or lack of system.

One can never predict the ups and downs of the future, but, whatever the circumstances, a well-knit organization has resilience. I know that Schlumberger is in the right business, that we have the products, the organization, and above all the people to do the job.

JEAN RIBOUD
CHAIRMAN AND PRESIDENT

February 27, 1978

Oilfield Services

Oilfield service revenue was $1.3 billion in 1977, an increase of 30% over the previous year; Wireline or logging services were ahead 33%, Drilling was up 19%, and Production Services 33%. Every major oil producing area had excellent growth in all oilfield service operations.

WIRELINE SERVICES

Wireline services provide the oil and gas industry with essential information they need to discover and produce oil and gas economically. The physical properties of underground formations are measured by instruments lowered into a borehole by an armored electrical cable called a "wireline." Measurements are transmitted to the surface where they are recorded on a graph called a "log." Interpretation of these logs helps to determine the location, and producible quantity of oil and gas.

Exploration and development of oil and gas expanded throughout the world. Wireline services gained from this growth, and from the continued upgrading of technical services that provide clients with more comprehensive and accurate information.

In Abu Dhabi, Schlumberger field engineer Alain Citerne discusses a log with customer Jacques Cachan (foreground) of Abu Dhabi Petroleum Co. In the background, helpers Cyril McLure (left) and Mohammed Korshid.

A Schlumberger crew prepares a combination tool for logging a well in the U.S. This tool permits three different wireline services to be run on a single trip in the well.

Major developments during 1977 were:
—More than 60 Cyber Service Units operated in North and South America and the Eastern Hemisphere. The CSU is the new generation mobile laboratory incorporating a computer. With this unit, the engineer can provide a basic wellsite evaluation of the producing capabilities of an oil well. The most sophisticated tools are run with the computer performing the routine tasks leaving the engineer free to analyze results. Efficiency and quality of operations are improved by automatic calibrations, reduced set-up times and high accuracy digitized information.

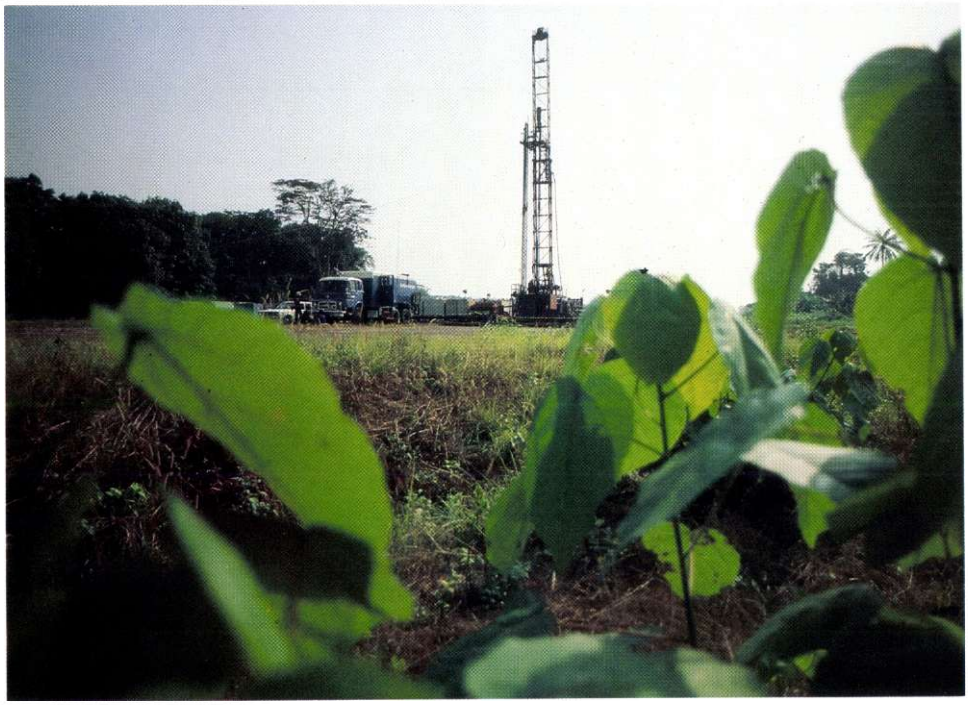
Introduction of the CSU will be accelerated and by 1982 all logging operations will be performed with CSU's (see report on CSU on page 19).

—Demand for all types of computed log products has increased significantly throughout the world. This has been stimulated by the improving quality of computed results, the introduction of a number of new interpretation answers, and the necessity to extract as much information as possible from logging data. The Schlumberger computer network was further expanded and decentralized to provide better service in this rapidly growing sector of the wireline market. Every division in North America is now equipped to communicate with large scale computers in Houston. In addition, some locations have autonomous processing capability. Outside the U.S., field log interpretation centers were opened in the Middle East and South America and the capabilities of the computing centers in the North Sea area, Europe and the Far East were further expanded.
—To expand facilities for wireline logging research, a $7 million project was approved to enlarge the Schlumberger Doll Research Center in Ridgefield, Connecticut. Another $7 million expenditure has been authorized for additional manufacturing capabilities in Houston beginning in 1978. An expansion of Schlumberger engineering laboratories in Houston was completed in late 1977.

North America

Wireline revenue in North America increased 39% as strong gains were made in every division. Particularly good results were recorded in the southwestern and western U.S., Alaska, and offshore Gulf Coast. There were no weak spots during the year and the normally high last quarter was stronger than usual: 2400 drilling rigs were active, the highest number in 17 years. In Canada at year end the rig count was up 23%.

Fifty Cyber Service Units were



A wireline logging job in Nigeria.

operating in North America by the end of 1977, and due to high customer demand, more than twice as many will be introduced in 1978.

The number of computer processed interpretation products delivered to clients in 1977 increased by 27%. Several wireline services showed substantial gains:

—Revenue from the High Resolution Dipmeter was up 48% as a result of growing oilfield requirements for stratigraphic interpretation and for fracture identification. The dipmeter, by measuring the dip of formations, helps the geologist determine the location of subsequent wells.

—Sonic revenue increased 44% due in large part to applications of Sonic Logging in the interpretation of seismic data. Sonic tools emit high-frequency sounds and the transit time of these sounds through the rocks brings information on porosity and other characteristics.

—The Compensated Neutron/Formation Density combination service grew substantially again in 1977 because of intensified gas exploration. This service delineates gas bearing zones, provides improved porosity determination, and also helps identify rock type.

—The high growth rate of cased-hole revenue again matched that of open hole in 1977. Revenue from initial completion of new wells increased more than 50%, mainly from perforating guns used to shoot holes through casing and cement to let oil or gas flow from the formation into the well bore, and from the Cement Bond Log, a service designed to evaluate the quality of the cement used to isolate producing zones from other formations. Workover, which involves the evaluation and recompletion of older wells, grew by more than 20%. Largest increases were in Thermal Decay Time logging which provides knowledge of the production potential of older wells, and Production Logging services used to evaluate dynamic flowing conditions.

Eastern Hemisphere & South America

Wireline revenue grew 30% while the number of drilling rigs went up 11%. Major gains were recorded in Africa, Europe, the Middle East, and South America.

—In Africa, activity increased everywhere, particularly in Libya, Nigeria, and also Cameroun where oil production started during 1977.

—In Europe, offshore activity picked up in the British and Norwegian sectors of the North Sea where most of the increase came from development platforms.

—In the Middle East, the most active areas were Saudi Arabia, Egypt and the United Arab Emirates.
—The Far East was a region of mixed trends; activity was up in Australia, Japan, Malaysia and the Philippines while it declined in Burma, Indonesia and Thailand.
—In South America gains were on a broad front with only Peru showing a decline. Argentina and Venezuela were particularly strong.

Cyber Service Units were successfully introduced in continental Europe, the North Sea, Saudi Arabia, Iran and Venezuela.

Data processing revenue grew 46%. Three new interpretation products were introduced: Geodip for geological interpretation, Geogram survey for seismic analysis, and the Reservoir Management Log for reservoir monitoring. The Field Studies activity is expanding very rapidly. Field Studies are computer analyses for an entire oilfield based on wireline measurements and other data taken from every well drilled in the field. Four studies were completed in 1977 and five more are being processed.

Wireline services which made the most significant gains were: Well Seismic Service for obtaining data used to aid in seismic interpretation; Repeat Formation Tester for recovering formation samples and taking pressure measurements; and the Compensated Neutron/Formation Density combination. Also, oil companies are emphasizing completion and production methods; consequently, the Production Logging services and Thermal Decay Time logs were in greater demand for new well completions and workovers.

DRILLING & PRODUCTION SERVICES

Forex Neptune

Revenue in 1977 increased 19% over the preceding year. Several factors contributed to the improved results: all 76 land and offshore rigs operated by Forex Neptune worked close to full capacity and daily rates for jackup rigs firmed up.

Largest gains were made in the Mediterranean and the Middle East. The expansion continued both on land and offshore: slightly higher on land; 62% of revenue originated from land operations.

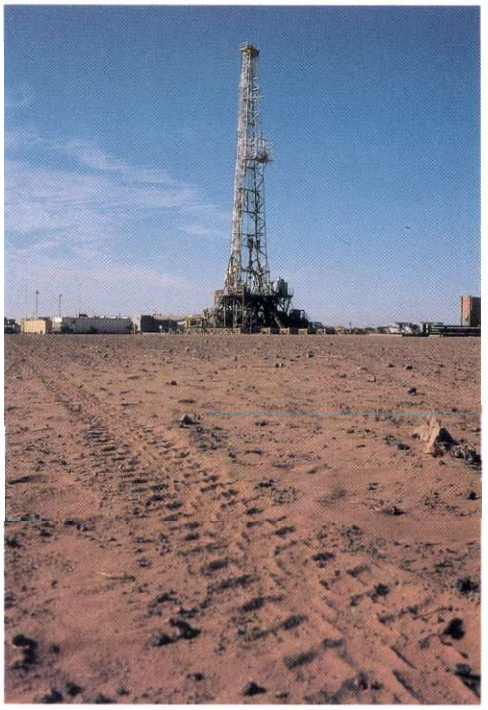
Significant developments offshore were:

—Trident II, the newest jackup, was active during the full year in the Middle East.

—Pentagone 81, a semisubmersible unit, was moved offshore Libya after completing its drilling contract in Tunisia.

—Two other Pentagones are drilling in the North Sea; also Unifor I, a compact platform rig, began a long-term contract in the Frigg field, offshore Norway.

Driller Albert Baqué controlling rig operations from his shelter on a new Forex Neptune rig drilling near In Amenas, in Algeria.



Forex Neptune rig drilling in Algeria.

—Pentagone 90 is drilling offshore Argentina under a labor contract.

On land, a recently completed rig was contracted to work early in 1978 in Libya.

During 1977, several units were overhauled and renovated between operations. This was the case for Grand Large, a tender rig drilling in Malaysia, Unifor I, before its transfer to the Frigg field, and Neptune I, a jackup rig due to start operating in Nigeria.

In 1977, $36 million was spent on capital items for drilling operations. A new jackup rig, Trident III, was ordered to be built in a Singapore shipyard for delivery early in 1979.

Flopetrol

Flopetrol provides services and tools for oil well completion, production and secondary recovery projects.

Revenue increased 27%, as a result of strong expansion of oilfield activity, particularly in the North Sea, the Mediterranean and South America.

Well testing remains Flopetrol's leading service and continues to grow.

However, the fastest developing service is Early Production Facilities. This service provides customers with the equipment and personnel to put newly discovered offshore fields into production, long before a permanent installation can be made. Two new operations, one in Brazil and the other in Spain, were started in 1977.

During the past year, two snubbing units were put in service in Algeria and Saudi Arabia. Snubbing is a technique which allows various workover and repair services to be performed in an oil well without having to kill the well. This is achieved by running a special tubing string into the live well against pressure.

Routine operations for downhole maintenance and measurements in production wells have also expanded, as Flopetrol increased its share of the market.

The main developments in Research and Engineering were a High Accuracy Pressure Measurement system and a fully integrated Early Production Facility including marine support.

To keep pace with anticipated expansion, Flopetrol hired and trained over 250 engineers and technicians in 1977. Seven Flopetrol training schools are located in major oil producing countries in the world.

Johnston

In the United States and Canada, Johnston offers drilling tools, equipment and services for well testing, completion and production.

Revenue in 1977 increased 17% over 1976.

Spurred by high drilling activities in North America, formation evaluation services, known in the oilfield as drill stem testing, expanded strongly. This

Johnston Service Engineer Kirk Beasley (left) at the controls of Teleflow instrumentation during tests on a Louisiana well. Looking at results is R. McMichael representing Anadarko Production Company.

service increased more than 30% over the prior year and accounts for 40% of the company's business. In 1977 Johnston introduced the Teleflow Drill Stem Test Service. The Teleflow system provides an analysis of well behavior. While surface valves are closed, the well is permitted to flow in the limited volume of the drill stem. Pressure build-up monitored by a microcomputer gives information on whether the well is producing gas, oil or water, and how much. The Teleflow system is inherently safer and more efficient than usual testing practice. Industry acceptance of Teleflow has been encouraging.

Production testing and Packer Services showed substantial gains.

The highlight of 1977 service activities was the successful performance of testing services on exploration wells drilled in the Beaufort Sea in the Canadian Arctic. A complete line of Johnston equipment was used for the tests and a methanol injection system was specially designed to flow natural gas under the extreme environmental conditions encountered.

Rental of drilling equipment, such as the Shock Guard and fishing equipment, showed a modest growth.

The Analysts

In July, Schlumberger acquired the remaining interest in The Analysts, a Houston based oilfield service company. The Analysts offers traditional mud logging services to oilfield operators at the drilling site. Drilling mud is examined for shows of gas and the cuttings are analyzed for lithology. The Analysts also pioneered computer analysis of the drilling process based on data obtained from surface measurements of various drilling parameters.

Measurement While Drilling

Measurement While Drilling (MWD), a major project developed by Schlumberger, was added to The Analysts' activities. MWD is designed to show the direction of the borehole and to collect formation parameters downhole and transmit them continuously to the surface while drilling. Advantages for the operator are in rig time saved and advance warning of potential well control problems.

Prototype MWD systems, now field tested, include sensors for deviation, gamma ray, resistivity, mud temperature and weight on bit. Data is sent uphole by means of mud pressure pulses, created by a downhole transmitter located inside the drill string.

Following two years of prototype evaluation, two sets of MWD tools have been tested offshore Louisiana during the second half of 1977. These tests indicated that the transmission system works and that the sensors are accurate.

Ten additional sets of equipment are being built. Plans are to put them into commercial service offshore Louisiana and in the North Sea by the end of 1978.

Macco

Macco provides gas-lift equipment used to flow oil to the surface artificially when reservoir pressure is not strong enough to raise the oil naturally.

Macco also has gained recognition in production technology for analysis and design of gas-lift systems. In addition, through 1977 acquisitions in the field of piano wireline and workover services, Macco now provides installation and complete servicing of its own manufactured products.

In July, headquarters and manufacturing facilities were moved into new buildings in Sugar Land, near Houston, Texas.

Dowell Schlumberger (50% Owned)

Dowell Schlumberger offers cementing, stimulation, drill stem testing, fishing and directional drilling services to the oil industry.

Revenue was up 28% from 1976. All regions showed improvement except the Far East, which was down slightly, but turning upward at year end.

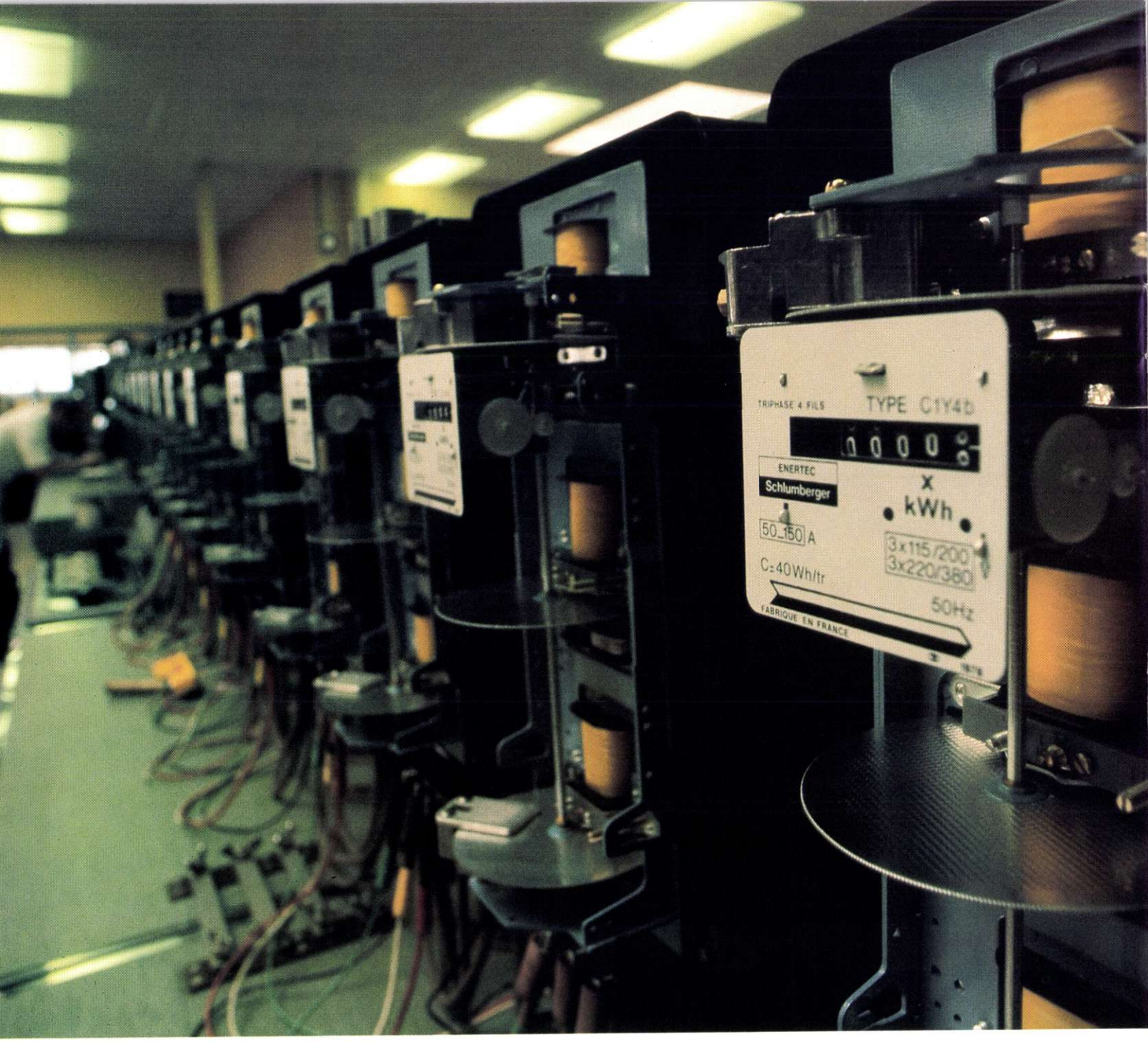
The largest gains were made by pumping services, together with sales of related products, which constitute the bulk of Dowell Schlumberger business. These services consist of pumping either cement behind the casing of an oil or gas well to seal it for production, or fluids into formations to stimulate production.

New bases were opened in Colombia, Egypt and the Philippines.

Other services, such as fishing and directional drilling, were substantially ahead of 1976.

A fleet of seven offshore service vessels is now in operation. Another ship, Bigorange X, is under construction and will be delivered in 1978. This new unit, powered by diesel-electric engines, will be the most modern of its kind.

Several new products were introduced to improve oil and gas production:
—For stimulation, a high strength propping agent used to hold fractures open even under high closure stresses of deep wells.
—For cementing, a new fluid—Spacer 1000—improves the displacement of drilling mud by the cement slurry, insuring a successful operation.
—For well treatment, a pollution free water based fluid—Sandlock V—places resin-coated gravel in unconsolidated formations for sand free production.



Measurement & Control

EUROPE

Revenue of European Measurement & Control operations continued to improve in 1977. Progress was most noticeable in the United Kingdom, Spain and Belgium. Electricity meter sales expanded throughout Europe.

Sales improved by 9% expressed in local currency. However, translated to U.S. dollars the increase was 4% because of the relative weakness of the French franc in 1977 compared to the first half of 1976.

Industrial activities in France are now organized into three separate entities: Enertec, Flonic and Sereg. These companies, together with the U.K., International and Service divisions are the elements of the new Measurement & Control—Europe organization:

ENERTEC

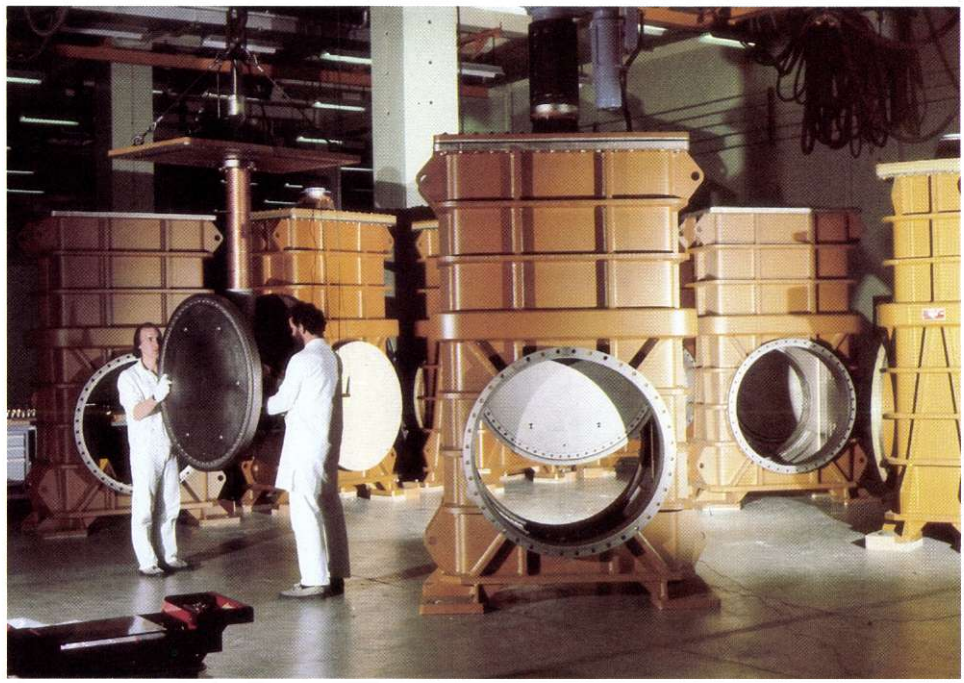
—Electricity distribution (meters and load management)

—Electricity transmission equipment (relays and transformers)

—Instruments and systems (magnetic tape recorders, telemetry, transducers, instruments)

—Broadcasting equipment

Calibration of industrial electricity meters in the Poitiers plant of Enertec.



Assembly of nuclear valves to be installed in a uranium enrichment plant being built in France. This plant, the first of its kind in Europe, will produce uranium to fuel nuclear power stations.

FLONIC
- —Water meters and systems
- —Gas meters and systems
- —Heating equipment
- —Mechanical products

SEREG
- —Industrial control
- —Petroleum valves
- —Nuclear and industrial valves

In the following paragraphs, year-to-year comparisons of revenue are made in local currencies.

Enertec

Revenue increased 11%: sales of electricity meters were strong, while broadcasting equipment business was down, following shipment in 1976 of several major contracts.

Sales of load management systems, mainly ripple-control equipment were ahead. Enertec will help the Sangamo Weston division of Schlumberger to develop load-management techniques in the U.S.

Sales of magnetic tape recorders and test equipment were ahead of the previous year. During 1977, the company acquired the remaining 50% of a small French company, Sefram, which manufactures and sells a line of graphic recorders.

Flonic

Revenue increased only 3%; activities are influenced by the rate of new construction which in 1977 remained depressed throughout Europe.

However, sales of water meters improved. This was in large part due to sales efforts and the introduction of several new products. An investment was made in test equipment to ensure products meet the new European standards for domestic meters. Activity of water systems, mainly water supply and irrigation products, has been satisfactory due to several contracts in the Mediterranean area.

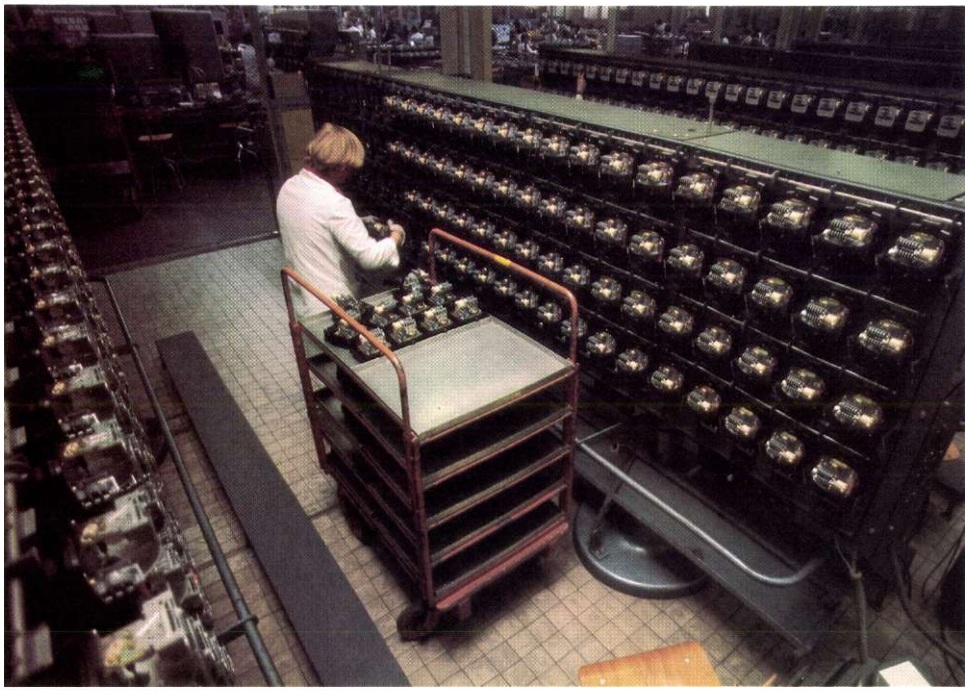
Gas equipment sales were about the same as in 1976: increases in West Germany and the U.K., a decrease in Italy and level in France.

Sales of mechanical products were lower than in 1976; competition has been strong in a shrinking market. However, a new line of Sapratin environmental chambers and Besançon time clocks have had moderate success.

Sereg

Revenue increased 7% in 1977. Industrial control maintained sales volume despite the generally depressed industrial investment market.

Sales of nuclear valves, both to gaseous uranium enrichment plants and to steam nuclear power plants progressed well. Previous losses in nuclear valves were offset by higher sales and im-



Electricity meters being calibrated at Enertec.

proved production efficiency during the year.

The volume of petroleum valves was down 27%. This was a result of a smaller number of refineries and petrochemical plants being constructed in 1977.

Service

Revenue increased 10% in 1977 as the market for gasoline pumps continued to recover. A solid-state gasoline pump was introduced.

Rentals of hot water meters in France were stimulated when a government agency in charge of energy conservation made hot water metering mandatory.

International

This division manufactures and sells electricity, water and gas meters in several countries of Europe and South America.

Sales increased 19% as every country, except the Netherlands, showed progress. Demand for meters was generally good.

In Belgium, sales of electricity meters increased 35%.

In Austria, introduction of a new electricity meter helped to recover market position.

Results were satisfactory in Spain where the domestic market was strong before the devaluation of the peseta. This, on the other hand, helped to secure several important export contracts.

Three South American operations showed notable revenue increases. In Brazil, sales of polyphase electricity meters and water meters moved forward. Production of electrical protective relays began in 1977. In Chile, production of singlephase electricity meters was launched on schedule and medium size water meters were sold for the first time. Sales of protective relays in Argentina were up.

United Kingdom

Although difficult economic conditions prevailed throughout the year, U.K. Measurement & Control operations continued to make good headway.

During 1977, the minority interest in Sangamo Weston (U.K.) was purchased and all U.K. operations were reorganized as part of Schlumberger Measurement & Control (U.K.) Ltd. Membrain Limited was acquired in December; this company manufactures and markets computerized automatic test equipment. This is for the assembly line testing of printed-circuit boards and electronic subassemblies.

Solartron revenue increased 23% mainly because of higher export sales of training simulators and improved sales of scientific measuring instruments,

Mireille Richard in the testing area of the Enertec plant in Poitiers.

both in the U.K. and abroad.

During 1977 Solartron introduced the first microprocessor-based, programmable digital voltmeter which further extended the 7000 series of precision digital measuring instruments.

Sangamo Weston (U.K.) revenue increased 20%. This was due to higher shipments of programmable time-switches for central heating control, industrial gauging transducers, and both aircraft and industrial instruments. Deliveries of electricity meters to utilities showed only marginal improvements because of economic conditions.

NORTH AMERICA

Revenue and net income of Measurement & Control operations in North America improved at Sangamo Weston but Heath was down slightly. Sangamo Weston benefited primarily from the strength of the U.S. economy, while Heath was affected by the phasing-out of correspondence school contracts.

SANGAMO WESTON

All units of Sangamo Weston, except data recorders, reported revenue increases, and several had record sales. Overall, revenue was 15% higher than 1976. Both order rates and backlog were significantly higher than the previous year. The sales of the three main divisions of Sangamo Weston—Sangamo, Weston, and EMR—grew at approximately the same pace reflecting the growth in the U.S. economy and increased capital spending.

Sangamo

Because of expanded residential construction, shipments of Sangamo singlephase watthour meters were higher than in 1976. Sales of polyphase

Brenda Stancil works on assembly of an industrial polyphase watthour meter at the Sangamo Weston plant in Oconee, South Carolina.

Part of the assembly line for residential singlephase watthour meters at the Energy Management division of Sangamo Weston in South Carolina.

watthour meters, used mainly in commercial and industrial applications, and of other types of meters and instrument transformers, also increased. In Canada, revenue improved 13% over-all; sales of meters used in apartments significantly increased as utilities began metering each apartment rather than the entire building.

To encourage electrical energy conservation during peak demand periods, Sangamo will introduce a new line of multi-rate meters in 1978 for residential and commercial applications. These meters record total electricity consumed during specific periods of the day; charging different rates depending on power consumed and time of day gives customers an incentive to use power during the lower cost off-peak periods.

During 1978, energy management operations will be moved from Springfield, Illinois to a 250,000 square foot manufacturing plant being constructed near Clayton, Georgia. An engineering and administrative facility is being built in suburban Atlanta, Georgia.

Capacitor sales were at an all-time high; demand by the computer industry was particularly strong.

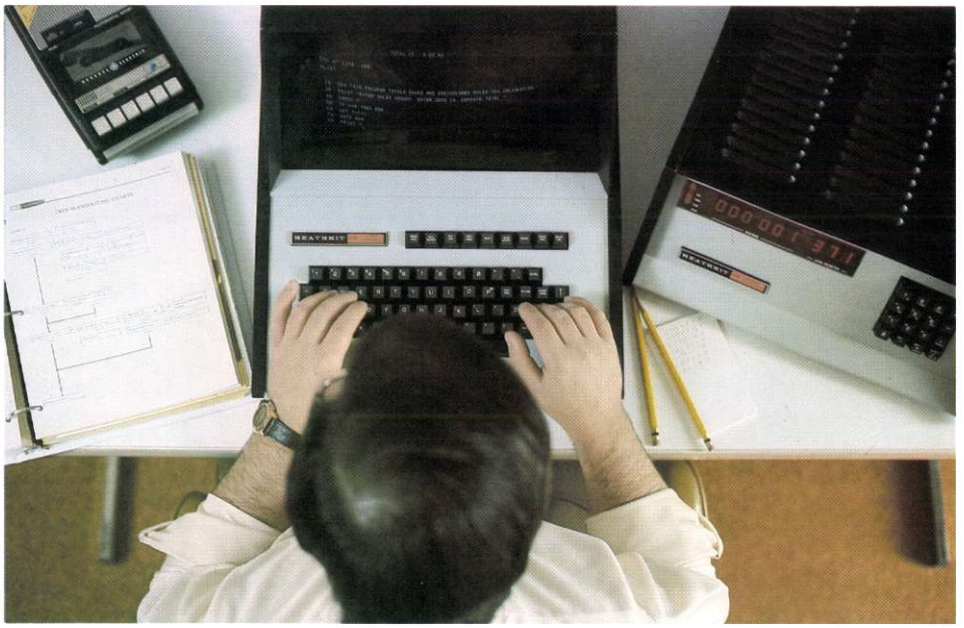
Data recorder sales decreased slightly as a result of declining exports. A new state-of-the-art Sabre X laboratory recorder was introduced, the first to feature a tape transport with microprocessor control. During 1978, data recorder operations, presently located in Springfield, Illinois, will be combined with the operations of EMR Telemetry in Sarasota, Florida.

Weston

Weston instrument revenue improved over the previous year. Sales of the Mustang analog panel meter were almost double; a large order was received for these meters to be used in antenna rotor systems. Weston has supplied instruments for space programs since the first manned flights. Approximately 190 meters and event indicators supplied by Weston were on board the successful space shuttle flight in 1977. A production facility for the assembly of new edgewise panel meters was recently put into operation in the Ponce, Puerto Rico plant.

Weston sales of potentiometers, and of nuclear instrumentation for controlling shipboard nuclear power generators increased substantially. Orders for nuclear instrumentation were strong throughout the year and a record backlog existed at year end. Subcontract orders, mainly for manufacturing Schlumberger wireline instruments, moved up substantially toward year end.

Domestic sales of Engler hubodometers and tachographs were considerably above 1976 and efforts to increase export sales proved successful. Hubodometers and tachographs are instruments sold to fleet operators for recording vehicle performance.



An operator communicating with a Heathkit Computer through the keyboard of its Video Terminal.

EMR

Orders received by EMR Telemetry were approximately twice the 1976 level. All product lines increased; sales of the new supervisory control systems were encouraging. Typical applications of supervisory controls are in electric power, flood control, and pollution control systems, to collect data from a remote site and transmit the information to a central station where data is analyzed and control decisions are made and executed.

A large telemetry system order was received for equipment to be used at the U.S. Navy Pacific Missile Test Center to preprocess telemetry data.

Data modem sales at Rixon (76% owned) increased substantially; modems are an essential component for transmitting computer data over telephone lines.

EMR Photoelectric revenue was significantly higher due largely to increased deliveries of photomultiplier tubes for Schlumberger wireline nuclear logging tools. In the first full year since its introduction, the Comp-Gage, an automated optical inspection system, accounted for approximately 20% of the record order volume.

HEATH

Heath revenue decreased about 3% in 1977; lower sales were recorded for audio and TV home entertainment products and for contract sales to correspondence schools; educational and amateur radio communication lines were higher. A number of significant products were marketed in 1977:

—Computer products introduced in the third quarter are more than an addition to available kits, they put Heath in the emerging, fast growing personal and hobby computer markets. The line is complete with key peripherals, interfaces and memory expansion modules. Extensive software support and complete documentation are offered.

—Additions to the Educational Product lines were: a Microprocessor Course and Trainer that offers "hands on" experience of building a microprocessor trainer while learning about operation, programming and applications; a self-learning course to teach BASIC, the most popular computer programming language; courses to teach Electronic Circuits and to prepare novices for their first amateur radio examination. The Heathkit Educational Products have been a successful and growing business since their introduction two years ago.

Cyber Service Unit

Schlumberger provides oil companies with wireline services in more than 75 countries. These services are essential in the location and production of oil and gas reservoirs. The latest and most far-reaching development in logging technique is the Schlumberger Cyber Service Unit.

In the process of searching for oil, the drilling of a well is periodically interrupted so that a Schlumberger field laboratory can measure the physical properties of the geological formations traversed by the drill. First, a series of measuring devices are lowered

Inside a wireline logging truck: the Schlumberger engineer is sitting in front of the Cyber Service Unit system. Wireline winch controls are in the foreground.

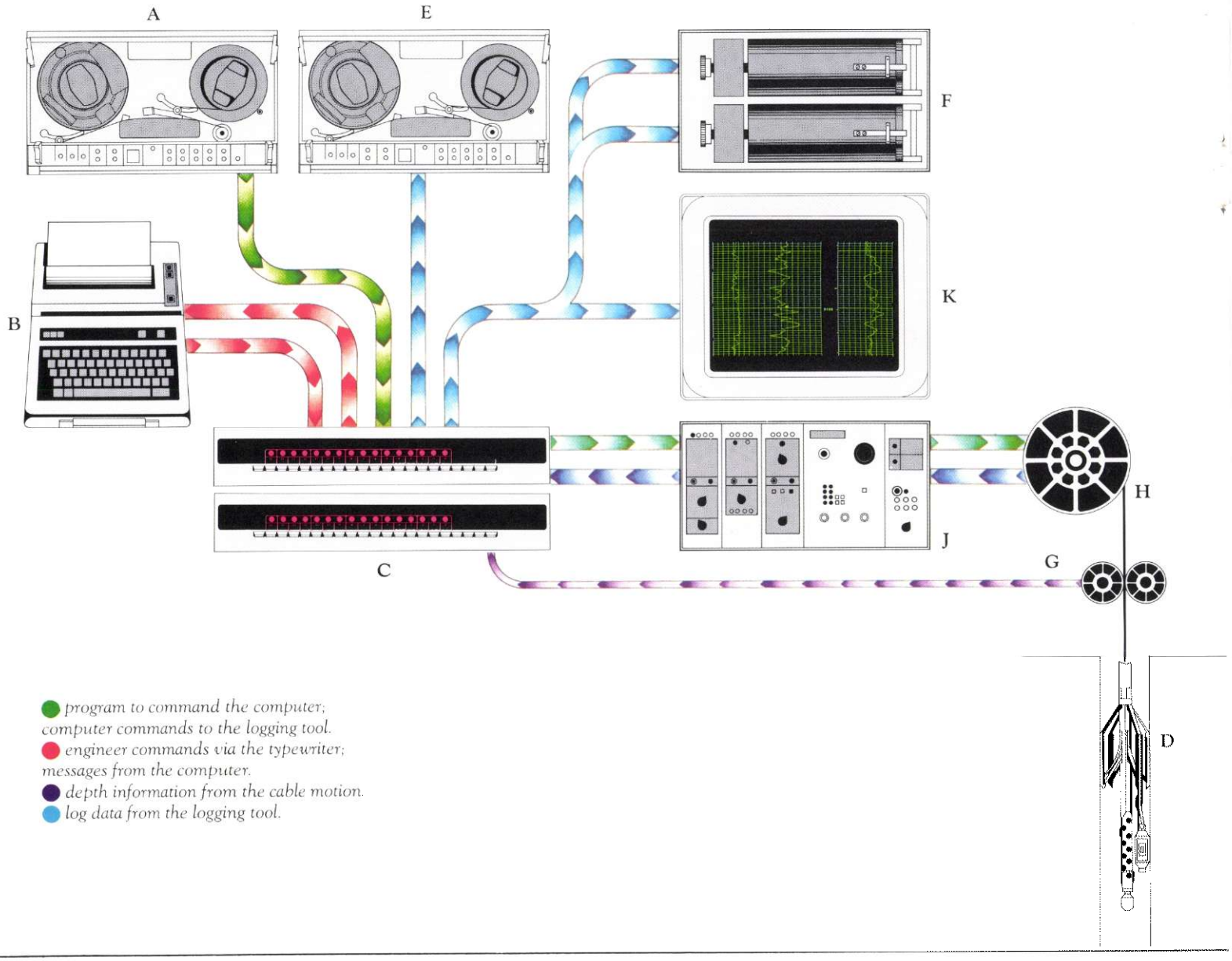
into the well by means of a multiconductor cable called a "wireline." While the downhole sonde—which contains the measuring devices—is pulled up the drill hole, information is transmitted to the field laboratory at the surface where it is recorded versus depth on magnetic tape and on a photographic film called a log. Second, these logs are interpreted to provide the answers needed. The oil company requires information on the depth, thickness, geological characteristics of a particular formation and, most important, the presence and quantity of oil or gas.

Initial developments in logging techniques were concerned with utilizing downhole the basic energy sources—electric, electromagnetic, nuclear, acoustic—to provide fundamental measurements to identify the subsurface formation. A further development was to put together two or more of these measurements into combination tools to save rig time; this was made possible by advanced integrated circuit techniques and light titanium alloy materials. However, the complexity of the downhole tools rendered them increasingly difficult to operate efficiently. A computer was needed.

Field Engineer Bruce Ganer (standing) and crew member, Ray Moreau (left) assemble the components of a combination logging tool that will be run from the CSU.

Meanwhile, the interpretation phase of logging operations progressed significantly with the availability of centrally located powerful computers. A preliminary wellsite interpretation, however, requires only a portion of these capabilities. The next step was to shrink the computer and introduce it right into the field laboratory. The result is the Cyber Service Unit.

At the end of 1977, more than 60 Cyber Service Units were in operation in places such as the North Sea, Saudi Arabia, Venezuela and key areas of the United States. In 1982, every Schlumberger logging unit will be a CSU.



● *program to command the computer; computer commands to the logging tool.*
● *engineer commands via the typewriter; messages from the computer.*
● *depth information from the cable motion.*
● *log data from the logging tool.*

This is a simplified diagram of a Cyber Service Unit system. The logging program has been prerecorded on a reel of magnetic tape. As the first step in the logging operation, the Schlumberger engineer puts this tape on the magnetic tape recorder **(A)**. *By means of a typewriter* **(B)** *the engineer instructs the computer* **(C)** *to operate the tape recorder and read the program into memory. Using the typewriter, the computer* **(C)** *then reminds the engineer of the different steps he must take to calibrate the logging tool* **(D)** *and records the results of the calibration on magnetic tape* **(E)** *and optical film* **(F)**. *When these steps are complete, the tool is lowered to the bottom of the well, while depth information* **(G)** *is fed to the computer. The engineer initiates the logging operation: as the tool is pulled up the well logging data is transmitted on the wireline cable* **(H)** *to one of several tool plug-in modules* **(J)** *which translate the data into computer language. Log data are recorded on magnetic tape and on optical film units. At the same time logs are displayed on a monitor scope* **(K)** *which shows the engineer and customer a few hundred feet of borehole data as it is recorded.*

The log data recorded on tape **(E)** *may be transmitted over a telephone or radio link to a computing center, and computed results received back in the CSU, if required.*

There are two computers, two film units, and two compatible nine-track magnetic tape units mounted in the system, as well as an additional typewriter and tool interface modules in the Cyber Service Unit. These provide redundancy, ensuring a high probability of successfully acquiring the well data in the event of possible equipment failures. Through diagnostic computer programs, every element of the CSU system is verified for proper functioning.

CSU – A Breakthrough

1. Greater scope at the wellsite

Prior to the CSU, the Schlumberger engineer performed an assigned program of logging services. The various logs were sent to the computing center for analysis.

With CSU, a preliminary interpretation is made by the computer at the wellsite. The engineer then advises the client when conditions require additional logging services to improve the quality of the answer.

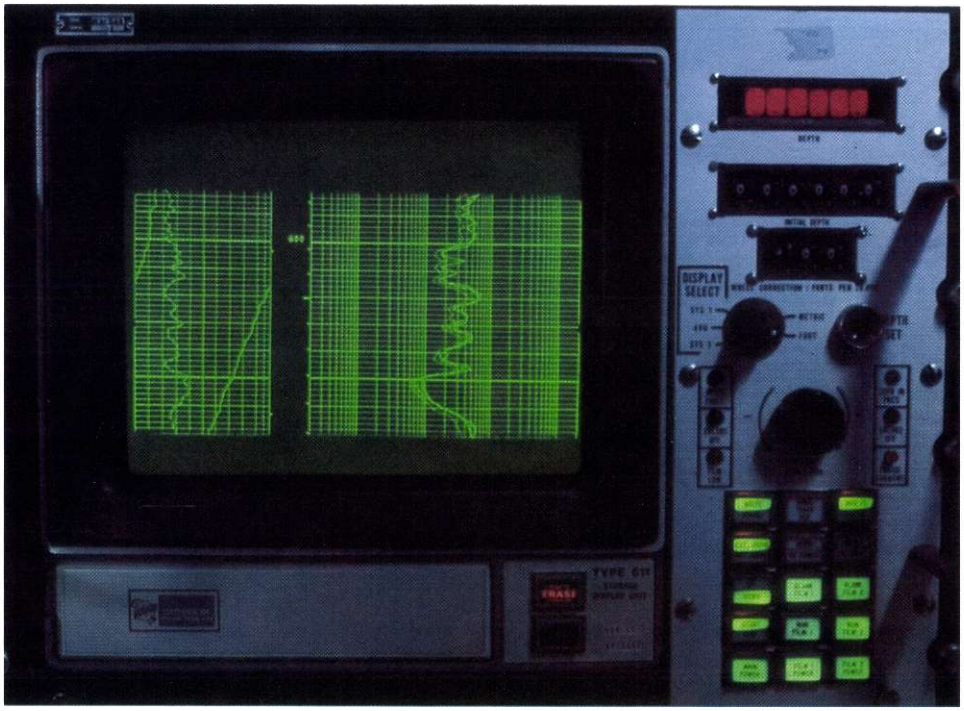
2. Streamlined operations

The efficiency of all phases of the logging operation is improved. Calibration times are reduced so that most logging operations take less time. The computer performs the routine tasks of logging, releasing the engineer for more important responsibilities such as analyzing results in consultation with the client. A video monitor displays up to 500 ft. of log as it is being recorded to permit verification of log quality and to enable the customer to watch the log in real time. The data can be transmitted to a Schlumberger log data processing network (see page 24)

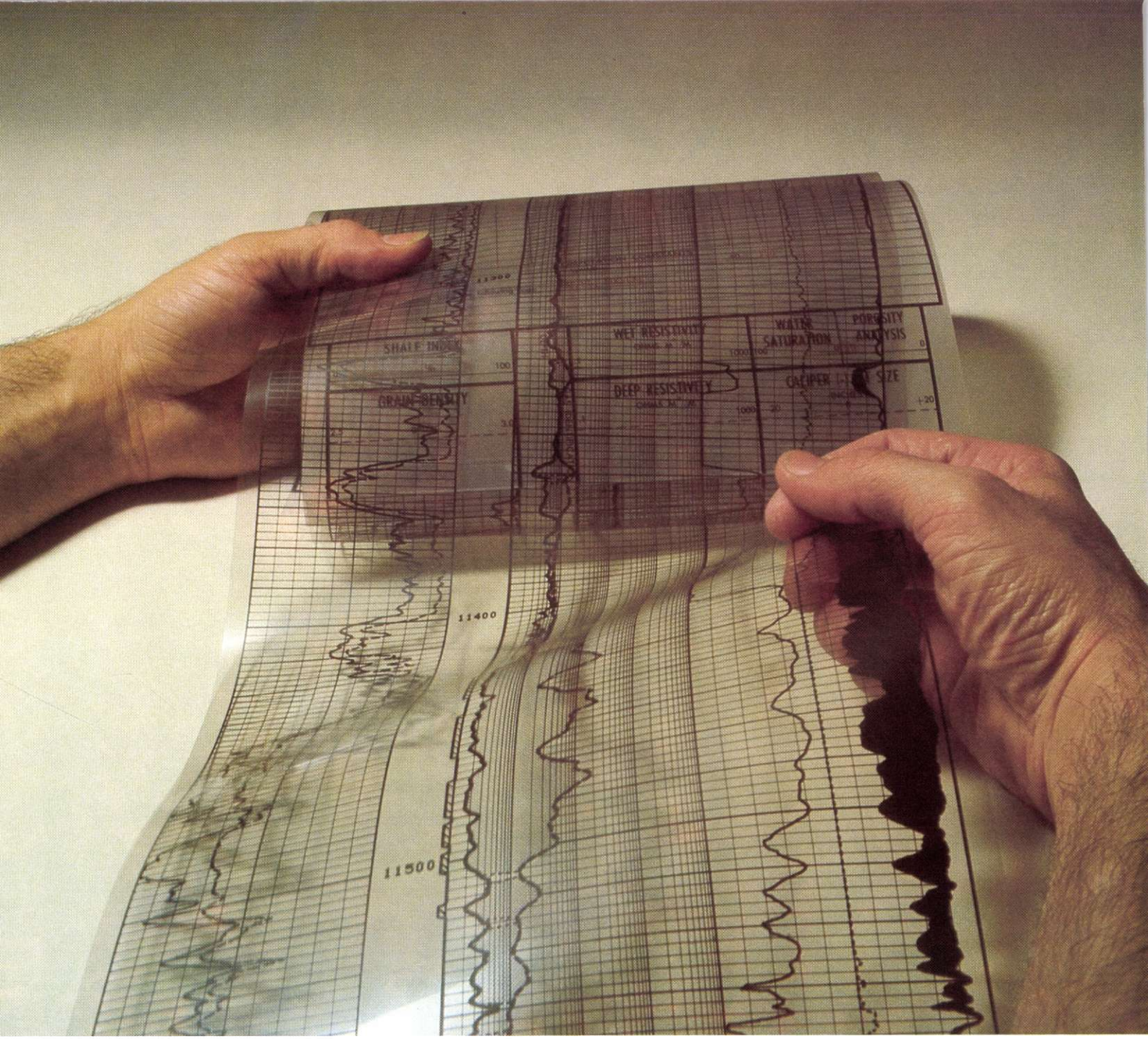
3. The future

Up to now, only a limited flow of data coming from the downhole sensors could be handled by the traditional logging instrumentation.

A recently developed digital telemetry system, combined with the CSU, makes handling of high data rates possible. This opens the way for a new generation of sensors that can be continually "adapted" by the computer to give the most accurate measurements under prevailing downhole conditions.



A video monitor in the CSU system displays logs while they are being run and recorded.



Cyberlook, an interpreted log prepared at the wellsite by the CSU computer, provides the client with early information he needs for decision making.

Schlumberger Log Data, Transmission, Processing & Interpretation Network

The 1977 revenue from Log Data Processing and Interpretation services increased substantially. These services are expected to continue growing at a high rate for the next few years reflecting a strong and genuine market need.

Processing and interpretation products are provided at the wellsite with the CSU when the answer is needed immediately after logging operations. More comprehensive results can be obtained in a field computing center when the answer is needed within a day or two after logging. By the end of 1977, Schlumberger had 20 field computing centers operating throughout the world. When the accuracy requirement is very high and fast response time is not essential, logging data is processed at one of two large Schlumberger computing centers located in the U.S. and Europe.

Wellsite Evaluation in the CSU

The computer in the Cyber Service Unit is used after completion of logging operations to provide the client with immediate log interpretation at the wellsite. Information regarding the quality of the recorded data is available before the Schlumberger crew releases the rig so that additional logs can be run. Zones of particular interest are immediately detected in time for further evaluation, sampling or testing.

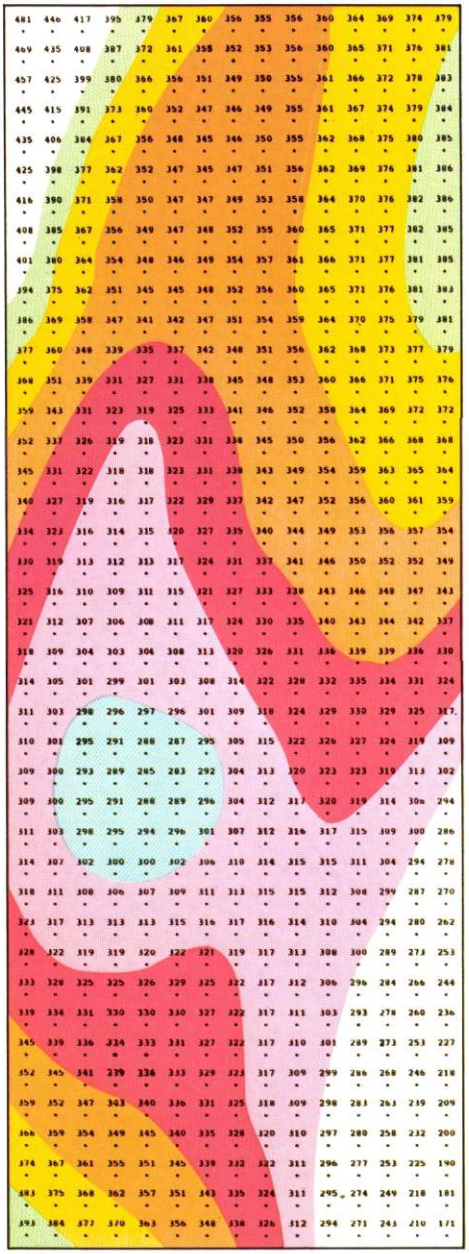
From the wellsite, the logging data can be transmitted by phone line, radio or satellite back to a Schlumberger office where an exact duplicate of the logs can be made available for office analysis.

Interpretation Services in a Field Computing Center

Besides being transmitted to a Schlumberger office, the logs can also be transmitted to a Schlumberger processing and interpretation center located near a client office and equipped with more processing capabilities than are available in the CSU. The function of these field centers is to apply to the logging data more sophisticated interpretation techniques than are provided on the wellsite. These answers help the oil companies implement the completion program of a development well or the testing program of an exploration well. Usually such decisions must be taken within a day or two after completion of logging.

Interpretation Services in Large Computing Centers

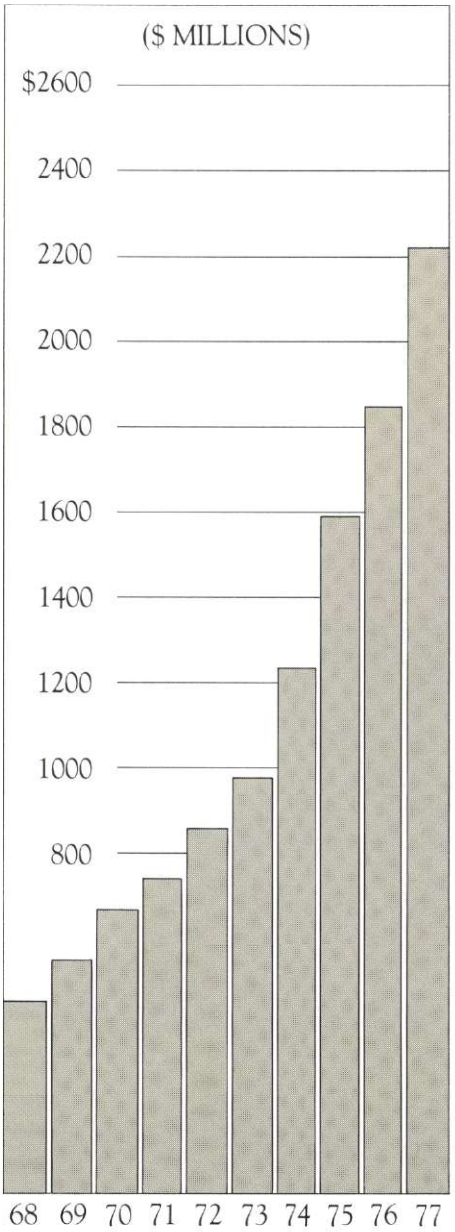
Schlumberger provides a third level of data processing and interpretation services in large computing centers. Services such as Field Studies and Production Management Logs can be obtained. Field Studies is an extended computer analysis which combines and compares wireline measurements from all the wells in a given field, together with other data such as core analysis and test results, to establish a comprehensive, three dimensional "map" of an oil field as a whole.



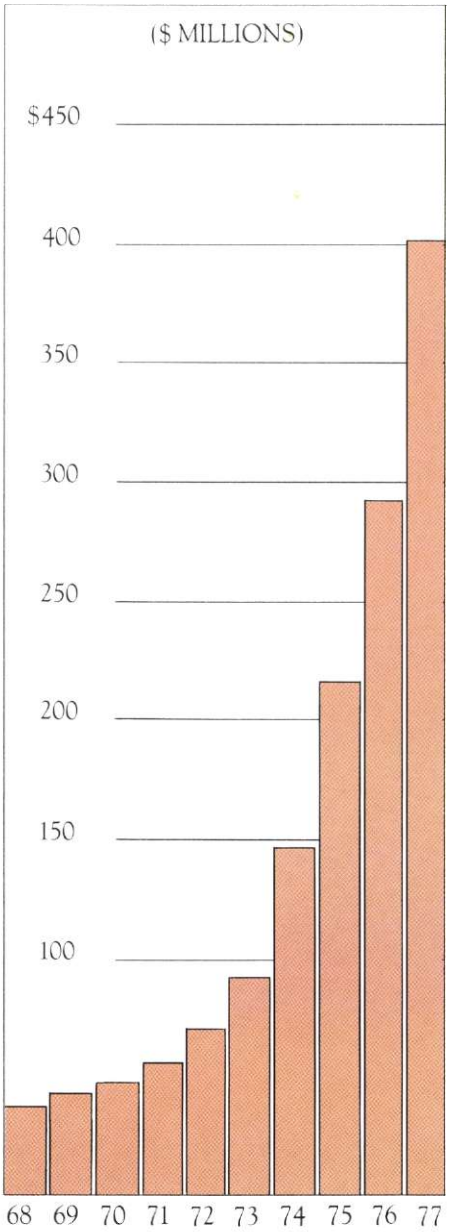
This map is one product of a Field Study. It shows reservoir parameters computed at each point of a grid covering the entire oilfield. In this example from Iran, the figures indicate the reservoir thickness in feet; the distance between two points of the grid represents 1000 feet. Colored contours delineate regions of constant reservoir thickness.

Financial Review

REVENUE



NET INCOME



Analysis of 1977 Operations Compared to 1976

Net income of $401 million for 1977 improved 37% over 1976 on a revenue gain of 20% to $2.2 billion. Earnings per share were $4.68 in 1977 compared to $3.41 in 1976.

Net income was 18% of revenue in 1977 (16% in 1976) and return on stockholders' equity was 28% (25% in 1976). The principal reasons for these gains and for the faster growth in earnings than in revenue were improvements in gross margins in both Oilfield Services and Measurement & Control and a slower rate of growth in research & engineering, marketing and general expenses than in revenue. The relatively slow growth in all expense categories resulted from improved utilization of manpower and equipment and the growing effectiveness of cost controls.

More detailed comments on the increase in operating revenue are contained in previous sections of this report. Revenue and operating income by business segment are shown in the Five Year Summary on page 41.

Interest and other income of $45 million was 53% greater than in 1976 principally because of a significant increase in cash generated by the business and available for short-term investments. Interest expense in 1977 was somewhat higher than in the prior year due to a moderate increase in interest rates and to a higher average level of borrowing.

The effective tax rate of 38% in 1977 was two percentage points higher than in 1976. This increase resulted from 1977 taxes on subsidiary reorganizations and from a larger portion of income earned in high tax rate countries than in 1976.

Research & Engineering

Expenditures for research & engineering were $69 million in 1977 (3.2% of operating revenue) compared to $60 million in 1976 (3.3% of operating revenue). Oilfield Services accounted for $38 million of these expenditures in 1977 while $31 million was for Measurement & Control.

Currency

General expenses in 1977 include $7 million for currency losses, compared to $2 million in 1976. The 1977 loss was due to exchange and translation losses on the Argentine peso and to the cost of hedging contracts on significant currency exposures.

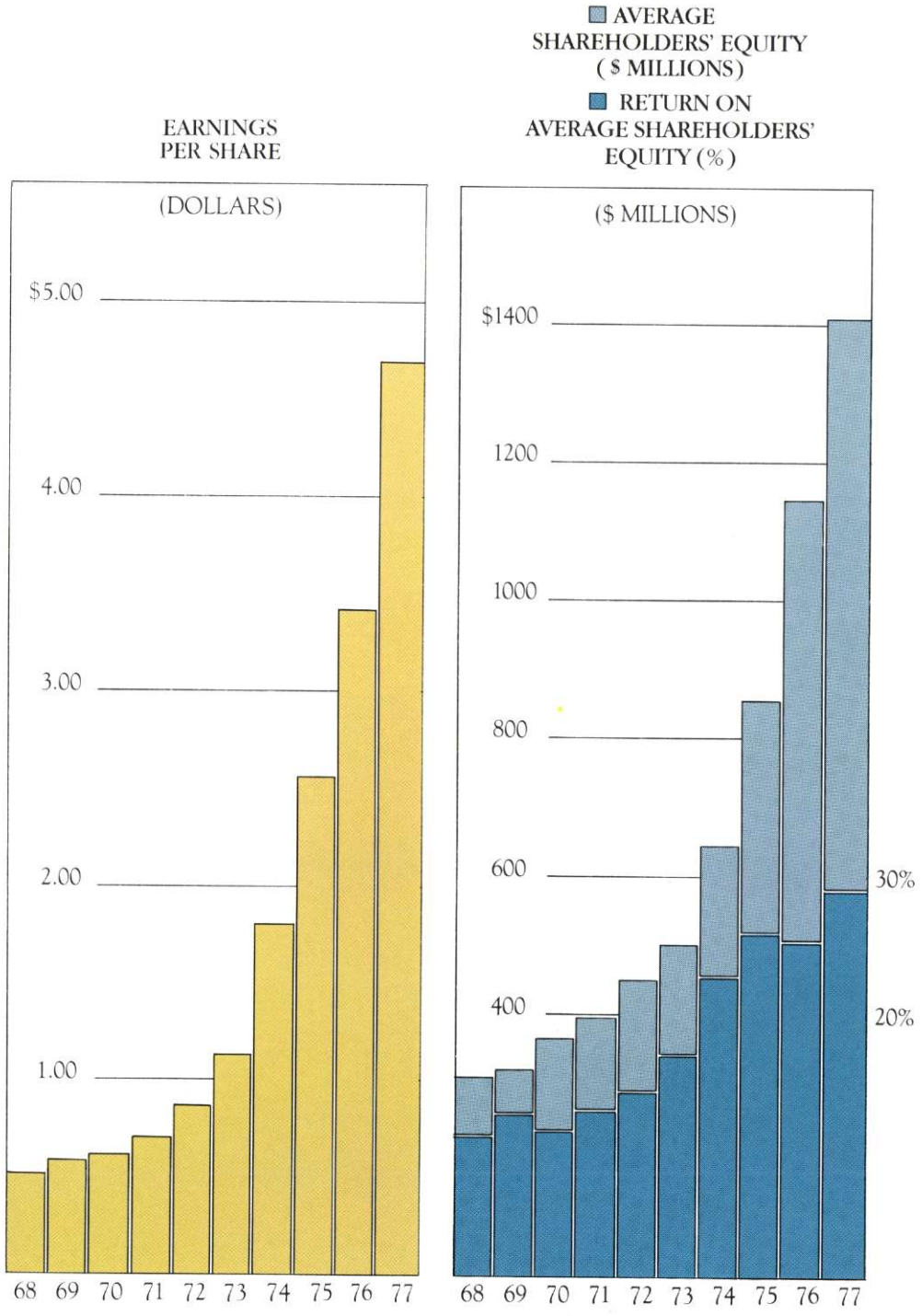
The relative weakness of the French franc during the first half of 1977 compared to the similar period of the prior year had the effect of depressing the dollar equivalent of franc revenue and earnings compared to 1976. However, the effect on consolidated results was not material.

Taxes on Income

Estimated liability for taxes on income was $309 million at year end 1977—up $74 million during the year. Higher earnings accounted for a portion of the increase but it was also due to provisions for taxes which may be payable in the future to various countries depending on the interpretation of applicable laws and regulations.

Acquisitions

In July 1977, Schlumberger acquired for $25 million cash the remaining 73% equity interest in The Analysts, a Houston, Texas based company which provides oil operators with a computer assisted analysis of the drilling process to increase drilling efficiency and safety. The minority interests in Sangamo Weston Limited (U.K.) and Sangamo Company Limited (Canada) were also acquired during the year.



Fixed Assets

Expenditures for fixed assets in 1977 were $212 million, an increase of 13% from 1976. Additions by business sector were as follows:

	1977	1976
	(Stated in millions)	
Oilfield Services:		
Wireline	$120.0	$ 87.1
Drilling & Production	58.2	67.8
	178.2	154.9
Measurement & Control:		
North America	8.8	5.2
Europe	22.2	24.3
	31.0	29.5
Other	2.8	2.5
	$212.0	$186.9

Depreciation expense in 1977 was $159 million compared to $130 million in 1976. Fixed asset expenditures are budgeted at $378 million for 1978. By far the largest portion of this substantial increase is in Oilfield Services—especially Wireline.

Dividends and Common Stock

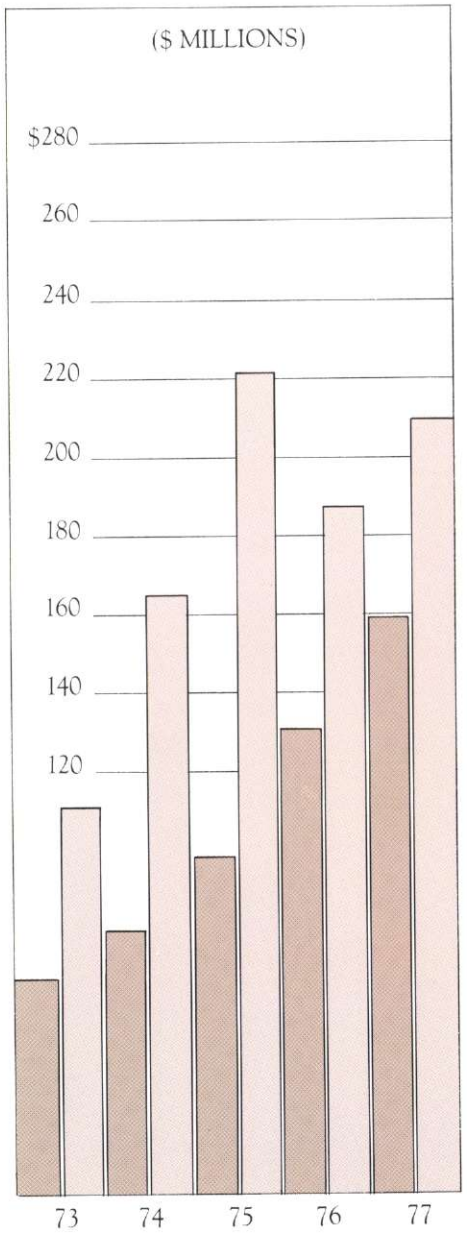
In July 1977 the Board of Directors raised the annual dividend rate from $0.80 to $1.10 per share—a 37½% increase.

During the year 814,300 shares of the Company's Common Stock were purchased at market value for the Treasury, including 199,000 shares acquired from the Schlumberger Pension Trust. Also, 158,660 previously unissued shares were sold to employees under stock option plans.

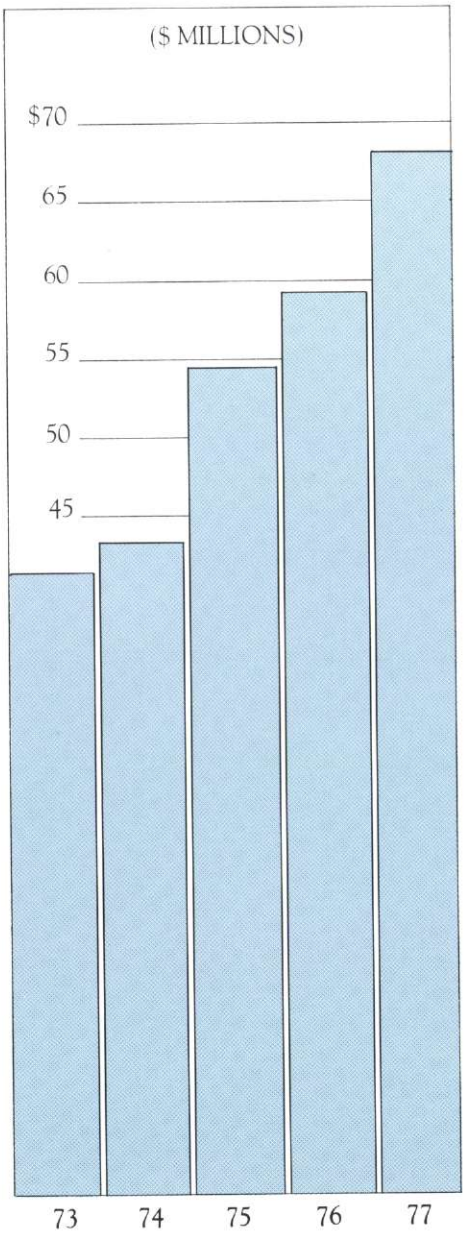
At December 31, 1977 there were 85,275,145 shares of Common Stock outstanding compared to 85,930,785 shares at the end of 1976. Outstanding shares exclude 3,350,338 and 2,536,038 shares, respectively, held in the Treasury.

At the Annual Meeting on May 3,

GROSS FIXED ASSETS



RESEARCH & ENGINEERING



1977, stockholders approved an increase in the authorized Common Stock to 200 million shares from 120 million shares.

At their meeting on February 24, 1978, the Board of Directors authorized the purchase from time to time of up to an additional one-million shares of the Company's Common Stock depending on market conditions and other factors. Any shares so acquired would be held in the Treasury or used for general corporate purposes.

Financial Position

The financial position of the Company strengthened further during 1977. Working capital at year end was $786 million, an increase of $161 million from December 31, 1976. Current assets were twice current liabilities. Receivables increased in line with the growth in business, but inventories grew only 12%. Short-term investments increased $175 million—37%.

MARKET PRICES AND DIVIDENDS PAID PER SHARE

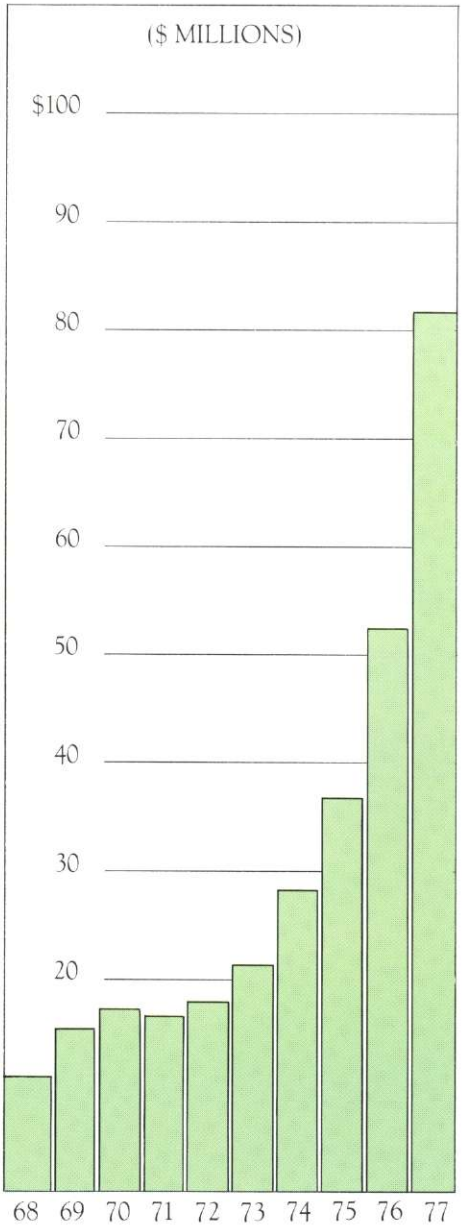
Quarterly high and low prices for the Company's Common Stock as reported by The New York Stock Exchange (composite transactions), together with dividends paid in each quarter of 1977 and 1976 were:

	1977		
	Price range		Dividends paid
	High	Low	per share
Quarter			
First	65-1/4	56	$0.20
Second	69-3/4	58-3/4	0.20
Third	70-3/4	63	0.20
Fourth	74	62-1/2	0.275

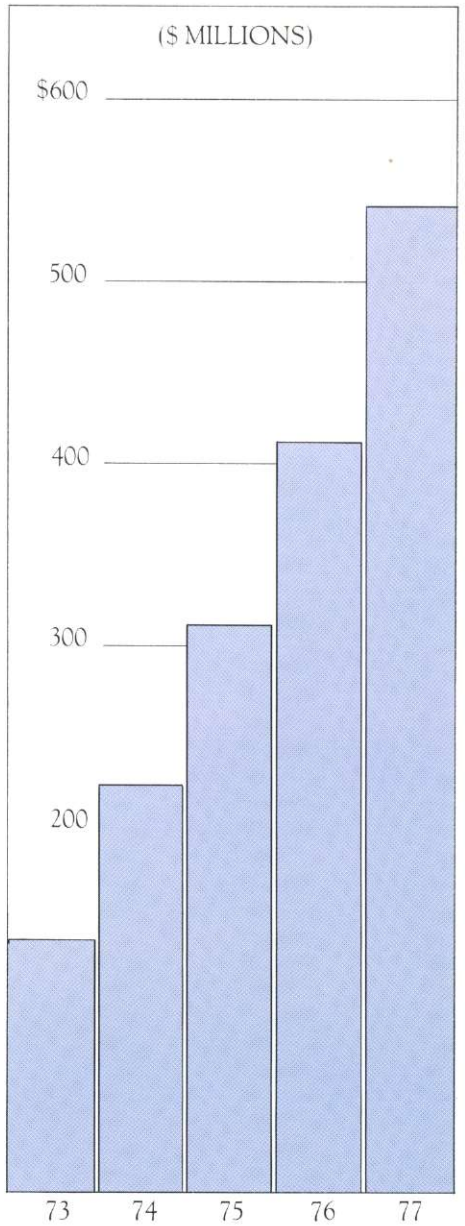
	1976*		
	Price range		Dividends paid
	High	Low	per share
Quarter			
First	55-3/8	46-5/8	$0.1333
Second	58-1/4	49-3/8	0.1333
Third	68-5/8	57-3/8	0.1333
Fourth	66-7/8	59-3/8	0.1334

*Adjusted for three-for-two stock split of December 20, 1976

DIVIDENDS DECLARED



CASH FLOW



SCHLUMBERGER LIMITED
(Schlumberger N.V., Incorporated in the Netherlands Antilles) and Subsidiary Companies

Consolidated Balance Sheet
Assets

	December 31, 1977	1976
	(Stated in thousands)	
CURRENT ASSETS:		
Cash	$ 13,308	$ 15,636
Short-term investments, at cost (approximately market)	651,823	476,442
Receivables less allowance for doubtful accounts (1977—$13,104; 1976—$14,960)	510,645	424,464
Inventories	296,936	265,345
Other current assets	30,395	26,973
	1,503,107	1,208,860
INVESTMENTS IN AFFILIATED COMPANIES	76,191	63,478
LONG-TERM INVESTMENTS AND RECEIVABLES	17,081	18,335
FIXED ASSETS less accumulated depreciation	693,532	631,574
INTANGIBLE ASSETS	60,826	35,389
RECOVERABLE U.S. INCOME TAX ASSESSMENT	24,745	24,745
OTHER ASSETS	9,854	12,687
	$2,385,336	$1,995,068

SEE NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Balance Sheet Liabilities & Stockholders' Equity

	December 31, 1977	1976
	(Stated in thousands)	
CURRENT LIABILITIES:		
Accounts payable and accrued liabilities	$ 308,552	$ 262,556
Estimated liability for taxes on income	308,648	234,636
Bank loans	54,865	47,392
Dividend payable	23,469	17,200
Long-term debt due within one year	21,469	21,924
	717,003	583,708
LONG-TERM DEBT	56,345	72,041
OTHER LIABILITIES	50,498	40,503
MINORITY INTEREST IN SUBSIDIARIES	11,605	19,216
	835,451	715,468
STOCKHOLDERS' EQUITY:		
Common stock	306,658	303,569
Income retained for use in the business	1,243,227	976,031
	1,549,885	1,279,600
	$2,385,336	$1,995,068

SEE NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

SCHLUMBERGER LIMITED
(Schlumberger N.V., Incorporated in the Netherlands Antilles) and Subsidiary Companies

Consolidated Statement of Income

	Year ended December 31, 1977	1976
	(Stated in thousands)	
REVENUE:		
Operating	$2,160,338	$1,810,358
Interest and other income	45,372	29,580
	2,205,710	1,839,938
EXPENSES:		
Cost of goods sold and services	1,230,936	1,071,265
Research & engineering	68,529	59,899
Marketing	106,296	101,965
General	134,371	130,900
Interest	16,069	15,121
Taxes on income	248,017	167,626
	1,804,218	1,546,776
NET INCOME	$ 401,492	$ 293,162
Net income per share	$ 4.68	$ 3.41
Average number of shares outstanding (thousands)	85,773	85,919

SEE NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Statement of Stockholders' Equity

	Common stock		Income retained for use in the business
	Shares outstanding	Amount	
		(Stated in thousands)	
Balance, January 1, 1976	85,852,529	$299,086	$ 739,055
Purchase of shares for Treasury	(75,000)	(267)	(4,630)
Shares sold to optionees	153,256	4,750	—
Net income	—	—	293,162
Dividends declared ($0.60 per share)	—	—	(51,556)
Balance, December 31, 1976	85,930,785	303,569	976,031
Purchase of shares for Treasury	(814,300)	(2,936)	(52,933)
Shares sold to optionees	158,660	6,025	—
Net income	—	—	401,492
Dividends declared ($0.95 per share)	—	—	(81,363)
Balance, December 31, 1977	85,275,145	$306,658	$1,243,227

SEE NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

SCHLUMBERGER LIMITED
(Schlumberger N.V., Incorporated in the Netherlands Antilles) and Subsidiary Companies

Consolidated Statement of Changes in Financial Position

	Year ended December 31, 1977	1976
	(Stated in thousands)	
SOURCE OF WORKING CAPITAL:		
Net income	$401,492	$293,162
Add (deduct) amounts not affecting working capital:		
Depreciation	159,471	130,289
Amortization of intangibles	2,047	2,077
Earnings of companies carried at equity, less dividends received (1977 – $5,290; 1976 – $4,153)	(14,338)	(10,577)
Other – net	(6,863)	(8,592)
Working capital provided from operations	541,809	406,359
Decrease in investments and long-term receivables	21	7,118
Increase in long-term debt	5,421	1,612
Retirement of fixed assets	15,605	14,564
Proceeds from sale of shares to optionees	6,025	4,750
Total working capital provided	568,881	434,403
APPLICATION OF WORKING CAPITAL:		
Net noncurrent assets of companies acquired and consolidated	42,930	–
Additions to fixed assets	211,955	186,904
Dividends declared	81,363	51,556
Reduction of long-term debt	21,775	29,545
Purchase of shares for Treasury	55,869	4,897
Other – net	(5,963)	(7,011)
Total working capital applied	407,929	265,891
NET INCREASE IN WORKING CAPITAL	$160,952	$168,512
INCREASE IN WORKING CAPITAL CONSISTS OF:		
Increase (decrease) in current assets:		
Cash and short-term investments	$173,053	$218,109
Receivables	86,181	14,411
Inventories	31,591	(6,551)
Other current assets	3,422	2,493
(Increase) decrease in current liabilities:		
Accounts and dividend payable	(52,265)	(20,967)
Estimated liability for taxes on income	(74,012)	(65,324)
Bank loans and debt due within one year	(7,018)	26,341
NET INCREASE IN WORKING CAPITAL	$160,952	$168,512

SEE NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Notes to Consolidated Financial Statements

SUMMARY OF ACCOUNTING POLICIES

The Consolidated Financial Statements of Schlumberger Limited have been prepared in accordance with accounting principles generally accepted in the United States of America. Within those principles, the Company's more important accounting policies are set forth below.

PRINCIPLES OF CONSOLIDATION

The Consolidated Financial Statements include the accounts of all significant majority-owned subsidiaries. Significant 20%-50% owned companies are carried in "Investments in Affiliated Companies" at Schlumberger's share of net assets. The pro rata share of revenue and expenses of Dowell Schlumberger, a 50% owned oilfield services company, has been included in the individual captions in the Consolidated Statement of Income. Schlumberger's pro rata share of after tax earnings of other equity companies is included in "Interest and Other Income". Other investments in affiliated companies are carried at cost less allowances for possible losses which, based in part on unaudited figures, approximates Schlumberger's share of underlying equity.

TRANSLATION OF NON-U.S. CURRENCIES

Balance sheet items recorded in currencies other than U.S. dollars are translated at current exchange rates except for Oilfield Services inventories, fixed and intangible assets and long-term investments which are translated at historical rates. Revenue and expenses are translated at average current rates of exchange except that depreciation of fixed assets and amortization of intangible assets are translated at historical rates. Translation adjustments and gains or losses on forward exchange contracts are taken up in income currently. See note under "Supplementary Information" for comments on translation principles regarding Measurement & Control inventories maintained in other than U.S. dollars (Financial Accounting Standards Board Statement No. 8).

INVENTORIES

Inventories are stated principally at average or standard cost, which approximates average cost, or at market, if lower.

FIXED ASSETS AND DEPRECIATION

Fixed assets are stated at cost less depreciation, which is provided for by charges to income over the estimated useful lives of the assets by the straight-line method. Fixed assets include the cost of Company manufactured oilfield technical equipment for use in wireline operations. Expenditures for renewals, replacements and betterments are capitalized. Upon sale or other disposition, the applicable amounts of asset cost and accumulated depreciation are removed from the accounts and the net amount, less proceeds from disposal, is charged or credited to income.

Maintenance and repairs are charged to operating expenses as incurred.

INTANGIBLE ASSETS

Intangible assets represent largely the excess of purchase price over fair value of net tangible assets of businesses acquired. Amounts relating to acquisitions which took place principally in 1970 will not be amortized unless a diminution of value occurs. Most of the remainder is being amortized over 25 years.

DEFERRED BENEFIT PLANS

The Company and its subsidiaries have several voluntary pension and other deferred benefit plans covering substantially all officers and employees, including those in countries other than the United States. These plans are

substantially fully funded with trustees in respect of past and current services. Charges to expense are based upon costs computed by independent actuaries.

In France, the principal pensions are provided for by union agreements negotiated by all employers within an industry on a nationwide basis. Rights to future retirement benefits vest currently, but monetary amounts are not assigned to these rights until year of payment. Benefits when paid are not identified with particular employers, but are made from funds obtained through concurrent compulsory contributions from all employers within each industry based on employee salaries. These plans are accounted for on the defined contribution basis and each year's contributions are charged currently to expense.

TAXES ON INCOME

Schlumberger and its affiliated companies compute income taxes payable in accordance with the tax rules and regulations of the many taxing authorities where the income is earned. The income tax rates imposed by these taxing authorities vary substantially. Taxable income may differ from pretax income for financial accounting purposes. To the extent that differences are due to revenue and expense items reported in one period for tax purposes and in another period for financial accounting purposes, appropriate provision for deferred income taxes is made. The provisions were not significant in 1977 or 1976.

Investment credits and other allowances provided by income tax laws of the United States and other countries are credited to current income tax expense on the flow-through method of accounting.

Approximately $1.2 billion of consolidated income retained for use in the business at December 31, 1977 represents undistributed earnings of consolidated subsidiaries and Schlumberger's pro rata share of 20%-50% owned companies. Since it is the policy of the Company to reinvest substantially all such undistributed earnings in the business, no provision is made for income taxes, at rates of 3% to 10%, on those earnings considered to be indefinitely reinvested.

COMMON STOCK

Common Stock is carried at the stated value or proceeds of issued shares, increased by proceeds from sales of treasury shares and reduced pro rata for shares reacquired. Any excess of cost of reacquired shares over the pro rata amount is treated as a reduction of income retained for use in the business.

NET INCOME PER SHARE

Net income per share is computed by dividing net income by the average number of common shares outstanding during the year.

RESEARCH & ENGINEERING

All research & engineering expenditures are expensed as incurred, including costs relating to patents or rights which may result from such expenditures.

FIXED ASSETS

A summary of fixed assets follows:

	December 31, 1977	1976
	(Stated in millions)	
Land	$ 26.8	$ 25.0
Buildings & improvements	171.6	162.5
Machinery and equipment	1,084.4	933.5
Total cost	1,282.8	1,121.0
Less—accumulated depreciation	589.3	489.4
	$ 693.5	$ 631.6

LONG-TERM DEBT

At December 31, 1977, consolidated long-term debt of $56.3 million, excluding amounts maturing within one year, is payable, $18 million in 1979, $16.8 million in 1980, $13.3 million in 1981, $3.1 million 1982 and $5.1 million thereafter. Interest rates on this debt range from 5.75% to 10%.

COMMON STOCK

At the Annual Meeting on May 3, 1977 the stockholders approved an increase in the authorized Common Stock from 120 million to 200 million shares.

Options to officers and key employees to purchase shares of the Company's Common Stock are granted at prices equal to 100% of fair market value at date of grant. Transactions under stock option plans during 1977 and 1976 were as follows:

	Number of shares under option	
	1977	1976
January 1,	791,652	795,532
Granted for five years	297,100	208,875
Exercised	(158,660)	(153,256)
Lapsed or terminated	(4,672)	(59,499)
December 31,	925,420	791,652

The 925,420 shares under option at December 31, 1977 were held by 385 officers and key employees at option prices ranging from $38.83 to $69.94; options for 345,229 shares were exercisable at that date. A balance of 430,061 shares of Common Stock remained available for future option under the plans. During 1977 and 1976, 158,660 and 153,256 previously unissued shares, respectively, were sold on exercise of stock options.

Common Stock outstanding at December 31, 1977 and 1976 excluded 1,375,099 and 560,799 reacquired shares held in Treasury and, at both dates, 1,975,239 shares issued to a wholly-owned subsidiary in 1971.

LEASES AND LEASE COMMITMENTS

Total rental expense was $38.0 million in 1977 and $30.3 million in 1976.

Future minimum rental commitments under noncancelable leases for years ending December 31 are: 1978—$9.7 million; 1979—$7.6 million; 1980—$5.0 million; 1981—$3.7 million and 1982—$3.1 million. For the ensuing three five-year periods, these commitments decrease from $7.5 million to $1.4 million. The minimum rentals over the remaining terms of the leases aggregate $13.7 million. Noncancelable rental commitments are principally for real estate and office space. Noncapitalized financing lease commitments are not material.

TAX ASSESSMENTS

As previously reported, the U.S. Internal Revenue Service has completed its examination of Schlumberger's U.S. income tax returns for 1967-1969 and has assessed additional tax. The principal parts of the assessment (excluding interest) arise from non-recurring transfers of assets from a subsidiary to the parent company ($24 million) and from continuing wireline operations on the U.S. outer continental shelf ($6 million). The Company maintains that the tax effects of these transactions were properly determined and reported. While the principal issues in the case involve novel questions as to which there is no direct authority, independent counsel is of the opinion that the Company's position will prevail. The Company is contesting this assessment and, in connection therewith, tax payments totaling $24.7 million were made in June 1975, recorded as recoverable and did not affect net income. Litigation of this issue resulted in a mistrial in September 1977, and the case is still pending in the U.S. District Court in Houston. Discussions are being held with the Government to ascertain whether a settlement can be reached. If these are unsuccessful, the case will be retried.

The U.S. Internal Revenue Service is currently examining Schlumberger's U.S. income tax returns for 1970-1972 and is expected to propose additional assessments including, consistent with its earlier position, a deficiency of $8 million (excluding interest) based upon income from continuing wireline operations on the U.S. outer continental shelf. A determination for the earlier years does not necessarily resolve the taxability of this income subsequent to 1969.

Management is of the opinion that the reserve for estimated liability for taxes on income is adequate and that any adjustments which may ultimately be determined will not materially affect the financial position or results of operations.

SUPPLEMENTARY INFORMATION

Short-term investments are collectible mainly in U.S. dollars and include

interest bearing time deposits of $646 million and $467 million at December 31, 1977 and 1976, respectively.

Interest income was $41.6 million in 1977 and $24 million in 1976.

Inventories at December 31, 1977 comprised $74.4 million of operating materials and supplies for Oilfield Services and $222.5 million applicable to Measurement & Control products of which $144 million represents inventories maintained in other than U.S. dollars.

Investments in affiliated companies are summarized as follows:

	December 31,	
	1977	1976
	(Stated in thousands)	
20%-50% owned companies	$71,783	$58,131
Other	4,408	5,347
	$76,191	$63,478

In July 1977, Schlumberger acquired for approximately $25 million cash the remaining 73% equity interest in Petroserve, Inc. (The Analysts), a Houston, Texas based oilfield services company. Substantially all of the purchase price represented excess over the book value of net assets acquired. In addition, the Company acquired certain assets of four small businesses and the minority interest in three subsidiaries for approximately $17 million.

In 1977 expense of the pension and deferred benefit plans was $32.5 million and of the compulsory contributions for French retirement benefits was $15.0 million; 1976 amounts for such plans were $27.4 million and $11.6 million.

Foreign exchange losses in 1977 and 1976 were $7.3 million and $1.9 million, respectively.

Under provisions of Financial Accounting Standards Board Statement No. 8, Measurement & Control inventories maintained in other than U.S. dollars should be translated at historical exchange rates rather than current exchange rates. The Company, however, has consistently used current exchange rates in valuing these inventories. If they had been translated at historical exchange rates rather than current rates it would have had a negligible effect on consolidated income for each of the years ended December 31, 1977 and 1976, and the consolidated financial position at those dates.

SEGMENT INFORMATION

Financial information for the year ended December 31, 1977 by industry segment and geographic area is as follows:

INDUSTRY SEGMENT—	(Stated in millions)			
	Oilfield Services	Measurement & Control	Adjust. and Eliminations	Consolidated
Operating revenue—				
Customers	$1,310.1	$850.2	$ —	$2,160.3
Intersegment transfers	.9	14.3	(15.2)	—
	$1,311.0	$864.5	$(15.2)	$2,160.3
Operating income	$ 540.0	$ 93.4	$ (1.1)	$ 632.3
Interest expense				(16.1)
Interest and other income less other charges—$12.1				33.3
Income before taxes				$ 649.5
Depreciation expense	$ 133.2	$ 25.4	$ .9	$ 159.5
Fixed asset additions	$ 178.2	$ 31.0	$ 2.8	$ 212.0
At December 31, 1977—				
Identifiable assets	$ 989.5	$700.9	$(21.2)	$1,669.2
Corporate assets				716.1
Total assets				$2,385.3

The Company's business comprises two segments: (1) Oilfield Services and (2) Measurement & Control products. The Oilfield Services segment offers well site services to the petroleum industry throughout the world. The Measurement & Control segment manufactures measurement, display and control products which are primarily sold to public utilities, laboratories and industrial plants throughout the U.S. and Europe. Services and products are described in more detail earlier in this report.

GEOGRAPHIC AREA—

	(Stated in millions)					
	U.S. and Canada	France	Other European Countries	Other	Adjust. and Elim.	Consolidated
Operating revenue—						
Customers	$646.5	$429.3	$293.8	$790.7	$ —	$2,160.3
Interarea transfers	78.3	71.4	—	1.6	(151.3)	—
	$724.8	$500.7	$293.8	$792.3	$(151.3)	$2,160.3
Operating income	$213.0	$ 47.2	$ 76.4	$301.6	$ (5.9)	$ 632.3
Interest expense						(16.1)
Interest and other income less other charges—$12.1						33.3
Income before taxes						$ 649.5
At Dec. 31, 1977—						
Identifiable assets	$483.3	$468.1	$232.0	$527.8	$ (42.0)	$1,669.2
Corporate assets						716.1
Total assets						$2,385.3

Transfers between segments and geographic areas are for the most part made at regular prices available to unaffiliated customers. Certain Oilfield Services segment fixed assets are manufactured internally and some components and complete instruments are supplied by the Measurement & Control segment; transfer prices are competitive with those of outside suppliers.

Corporate assets largely comprise short-term investments.

During the year ended December 31, 1977, $73 million of revenue was attributable to sales or services directly to governments or government agencies, none of which arose in the Netherlands Antilles, the Company's home country.

The geographic distribution of operating revenue in 1976 and net assets at December 31, 1976 was approximately as follows:

	Operating revenue	Net assets
U.S.A. & Canada	29%	34%
France	23	14
Other	48	52
	100%	100%

QUARTERLY RESULTS (UNAUDITED)

The following table summarizes results for each of the four quarters for the years ended December 31, 1977 and December 31, 1976:

	1977			
	Operating revenue	Gross profit*	Net income	
			Amount	Per share
	(Stated in millions)			(Dollars)
Quarters				
First	$ 504.1	$206.5	$ 79.7	$0.93
Second	544.5	244.6	105.7	1.23
Third	532.1	233.3	106.9	1.24
Fourth	579.6	245.0	109.2	1.28
Total	$2,160.3	$929.4	$401.5	$4.68

	1976			
	Operating revenue	Gross profit*	Net income	
			Amount	Per share
	(Stated in millions)			(Dollars)
Quarters				
First	$ 438.1	$175.5	$ 56.3	$0.66
Second	460.3	187.8	76.7	0.89
Third	433.0	184.5	79.2	0.92
Fourth	479.0	191.3	81.0	0.94
Total	$1,810.4	$739.1	$293.2	$3.41

*Operating revenue less cost of goods sold and services.

REPLACEMENT COST DATA (UNAUDITED)

Inflation during recent years has caused increases in the prices paid for purchased goods and services. Generally, the Company has been able to compensate for these increases through technological upgrading of plant and equipment, cost controls and sales price increases.

In its annual report to the Securities and Exchange Commission on Form 20-K to be filed by June 30, 1978, the Company will report estimated replacement cost of productive capacity and inventories at December 31, 1977 and the approximate impact this would have on cost of goods sold and services and depreciation expense for the year then ended.

Report of Independent Accountants

PRICE WATERHOUSE & CO. 153 East 53rd Street, New York 10022

February 14, 1978

TO THE BOARD OF DIRECTORS AND STOCKHOLDERS OF SCHLUMBERGER LIMITED:

In our opinion, the accompanying consolidated balance sheet and the related consolidated statements of income, stockholders' equity and changes in financial position present fairly the financial position of Schlumberger Limited and its subsidiaries at December 31, 1977 and 1976, and the results of their operations and the changes in their financial position for the years then ended, in conformity with generally accepted accounting principles consistently applied. Our examinations of these statements were made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Price Waterhouse & Co.

Five Year Summary

YEAR ENDED DECEMBER 31—	(Amounts in millions except per share amounts) 1977	1976	1975(A)	1974	1973
Revenue:					
Oilfield Services	$1,310.1	$1,005.0	$ 844.9	$ 625.7	$ 453.3
Measurement & Control	850.2	805.3	720.7	574.4	510.3
Interest and other income	45.4	29.6	22.0	18.6	17.3
	$2,205.7	$1,839.9	$1,587.6	$1,218.7	$ 980.9
% Increase over prior year	19.9%	16.0%	30.3%	24.2%	16.7%
Cost of goods sold and services	$1,230.9	$1,071.3	$ 950.2	$ 742.6	$ 612.4
Operating income:					
Oilfield Services	$ 540.0	$ 382.7	$ 299.3	$ 218.0	$ 134.9
Measurement & Control	93.4	77.4	63.7	38.0	29.7
Eliminations	(1.1)	(.2)	(1.8)	(.4)	(.8)
	$ 632.3	$ 459.9	$ 361.2	$ 255.6	$ 163.8
% Increase over prior year	37.5%	27.3%	41.3%	56.0%	33.6%
Interest expense	$ 16.1	$ 15.1	$ 24.0	$ 21.5	$ 15.9
Taxes on income	$ 248.0	$ 167.6	$ 125.4	$ 83.6	$ 57.7
Net income	$ 401.5	$ 293.2	$ 219.3	$ 147.6	$ 92.4
% Increase over prior year	37.0%	33.7%	48.6%	59.7%	31.6%
Net income as % of revenue	18.2%	15.9%	13.8%	12.1%	9.4%
Return on average stockholders' equity	28.3%	25.4%	25.9%	23.4%	17.2%
Fixed asset additions	$ 212.0	$ 186.9	$ 222.1	$ 162.6	$ 114.6
Depreciation expense	$ 159.5	$ 130.3	$ 99.1	$ 74.1	$ 62.2
Per common share:					
Net income	$ 4.68	$ 3.41	$ 2.61	$ 1.79	$ 1.13
Cash dividends declared	$ 0.95	$ 0.60	$ 0.43	$ 0.34	$ 0.24
Average number of shares outstanding	85.8	85.9	83.9	82.6	82.1
AT DECEMBER 31—					
Working capital	$ 786.1	$ 625.2	$ 456.6	$ 309.1	$ 290.4
Total assets	$2,385.3	$1,995.1	$1,715.7	$1,327.6	$1,057.3
Stockholders' equity	$1,549.9	$1,279.6	$1,038.1	$ 698.2	$ 575.9

(A) Results of Sangamo Electric Company have been consolidated with Schlumberger beginning July 1, 1975.

William J. Gillingham (left) and Jean Riboud

Management

William J. Gillingham retires

Bill Gillingham retires at 65 after 43 years with Schlumberger. For many years he was Executive Vice President in charge of Oilfield Services worldwide and more recently Senior Advisor to the Chairman. Mr. Gillingham joined Schlumberger as a Field Engineer in Louisiana.

In a speech made in Clamart, France, on September 30, 1977 at the celebration of the fiftieth anniversary of the first log, Jean Riboud, Chairman, said: "Bill Gillingham has had all the important jobs at Schlumberger that an engineer could dream of having, but his heart will always belong to his years as a field engineer and as a field manager. Passion for service work, a conviction that the customer is always right and always comes first, the incredible ability to work day and night, and in addition, being very careful about pennies—his own as well as the company's."

Board of Directors

On May 3, 1977 Ellmore C. Patterson and Pierre Marcel Schlumberger were elected directors.

Mr. Patterson is Chairman of the Executive Committee of Morgan Guaranty Trust Company of New York.

Mr. Schlumberger is an attorney in Houston.

John E. Rhodes retired from Schlumberger after 15 years of service. He held various financial management posts, was Executive Vice President in charge of electronics operations worldwide, and had served as Chairman of the Finance Committee and of the Investment Committee.

Officers

On August 24, 1977 Michel Gouilloud was elected Vice President. On December 16 the Board of Directors elected Bernard Alpaerts as Executive Vice President, Roy R. Shourd and André J. Salaber as Vice Presidents of Schlumberger Limited.

—Mr. Alpaerts is responsible for oilfield Drilling & Production Services worldwide.

—Mr. Shourd, President of Schlumberger Well Services in Houston, is in charge of oilfield Wireline Services in North America.

—Mr. Salaber is in charge of oilfield Wireline Services in the Eastern Hemisphere and South America.

—Mr. Gouilloud is Director of the Schlumberger Doll Research Center.

Louis E. Magne retired from the Company after 42 years of service in various wireline operations. Recently, Mr. Magne was President of Schlumberger Well Services in Houston and Vice President of Schlumberger Limited.

Charles M. Kirkland retired after 15 years of service. Mr. Kirkland had served as President of Heath and of Weston Instruments; at his retirement he was Vice President of Schlumberger Limited in charge of development.

Subsidiaries

James H. Smith was elected Vice President Operations of Schlumberger Well Services, Houston, Texas.

Dr. John Ingram was named Vice President—Engineering at Schlumberger Well Services in Houston replacing George Attali who retired after 23 years. Mr. Attali had been in charge of Schlumberger Doll Research Center, and previously of European engineering in Clamart, France.

Maurice P. Tixier retired as Technical Advisor to the Vice President Engineering at Schlumberger Well Services after a 43 year career.

DIRECTORS

Jacques de Fouchier°
Chairman, Compagnie financière de Paris et des Pays-Bas, Paris

Roland Génin
Executive Vice President-Operations, Schlumberger

William J. Gillingham*
Former Executive Vice President, Schlumberger

Charles Goodwin, Jr.
Partner, Shearman & Sterling, attorneys, New York City

Elisha Gray II°□
Former Chairman, Whirlpool Corp., Benton Harbor, Michigan

George H. Jewell°
Partner, Baker & Botts, attorneys, Houston, Texas

Paul Lepercq* □
Managing Director, Lepercq International, N.V., investment bankers, London

George de Menil
Economist, Princeton, New Jersey

Ellmore C. Patterson
Chairman of the Executive Committee, Morgan Guaranty Trust Company, New York City

Françoise Schlumberger Primat
Director, Schlumberger Museum, France

Herbert G. Reid □
Executive Vice President and Chairman Finance Committee, Schlumberger

John E. Rhodes □
Former Vice President, Schlumberger

Jean Riboud* □
Chairman and President, Schlumberger

Pierre Marcel Schlumberger
Attorney, Houston, Texas

Benno C. Schmidt° □
Managing Partner, J. H. Whitney & Co., private investment firm, New York City

Ame Vennema* □
Former Chairman Executive Committee, Schlumberger

Jerome B. Wiesner
President, Massachusetts Institute of Technology, Cambridge, Massachusetts

*Member Executive Committee
□Member Finance Committee
°Member Audit Committee

OFFICERS

Jean Riboud
Chairman and President

Roland Génin
Executive Vice President – Operations

Herbert G. Reid
Executive Vice President and Chairman Finance Committee

Bernard Alpaerts
Executive Vice President

Charles B. Evans
Executive Vice President

Michel Vaillaud
Executive Vice President

Jean Babaud
Vice President

David S. Browning
Secretary and General Counsel

Carl W. Buchholz
Vice President

Michel Gouilloud
Vice President

James H. Poyner
Vice President and Controller

André Salaber
Vice President

Nick A. Schuster
Vice President

Roy R. Shourd
Vice President

Richard B. Stearns, Jr.
Treasurer

Horace R. Cardoni
Assistant Secretary

André Laloux
Assistant Secretary

Operating Units

Oilfield Services

WIRELINE SERVICES

Measurement of physical properties of underground formations which helps to locate and define oil and gas reservoirs and to assist in completion, development and production phases of oil wells. Operations are conducted in 75 countries.

Vector
Manufacture of cables for well logging, oceanography and geophysical exploration.

DRILLING & PRODUCTION SERVICES

Forex Neptune
Offshore and land drilling in the Eastern Hemisphere and Latin America.

Flopetrol
Services and tools for oil well completion, production and secondary recovery.

Johnston
Services and equipment for well completion, production and well testing.

The Analysts
Mud logging, computer-assisted analysis of drilling, downhole measurement while drilling services.

Macco
Gas lift and safety valves; gas lift systems.

Dowell Schlumberger (50% Owned)
Cementing, acidizing, fracturing, formation testing and directional drilling services.

Measurement & Control

EUROPE

Enertec
Meters and load management equipment for electricity distribution; relays and transformers for electricity transmission; instruments and systems; broadcasting equipment.

Flonic
Water meters and systems; gas meters and systems; heating equipment; mechanical products.

Sereg
Industrial control; petroleum valves; nuclear and industrial valves.

Service
Products and services related to water and energy distribution.

International
Electricity, water and gas meters and related systems in several countries of Europe and Latin America.

United Kingdom
Electricity meters, time switches, aircraft and industrial instruments, electronic instruments, training systems, transducers.

NORTH AMERICA

SANGAMO WESTON

Sangamo
Watthour meters, electrical load and rate control systems, equipment for electric power systems, electronic components.

Weston
Nuclear instruments, x-ray gauges, potentiometers, electronic systems, panel and portable meters, aircraft instruments, vehicle performance recorders.

EMR
Telemetry data systems and instruments, photomultiplier tubes, data communication products, data recorders.

HEATH

Electronic equipment in kit form for home entertainment, electronic testing, amateur radio, home computers, educational and laboratory instruments.

STOCK TRANSFER AGENTS
Citibank, N.A.
New York City

Bank of the Southwest
Houston, Texas

REGISTRARS
Citibank, N.A.
New York City

First City National Bank
Houston, Texas

SCHLUMBERGER STOCK IS LISTED
ON THE FOLLOWING EXCHANGES:
New York (trading symbol: SLB)
Paris
London
Amsterdam
Geneva

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