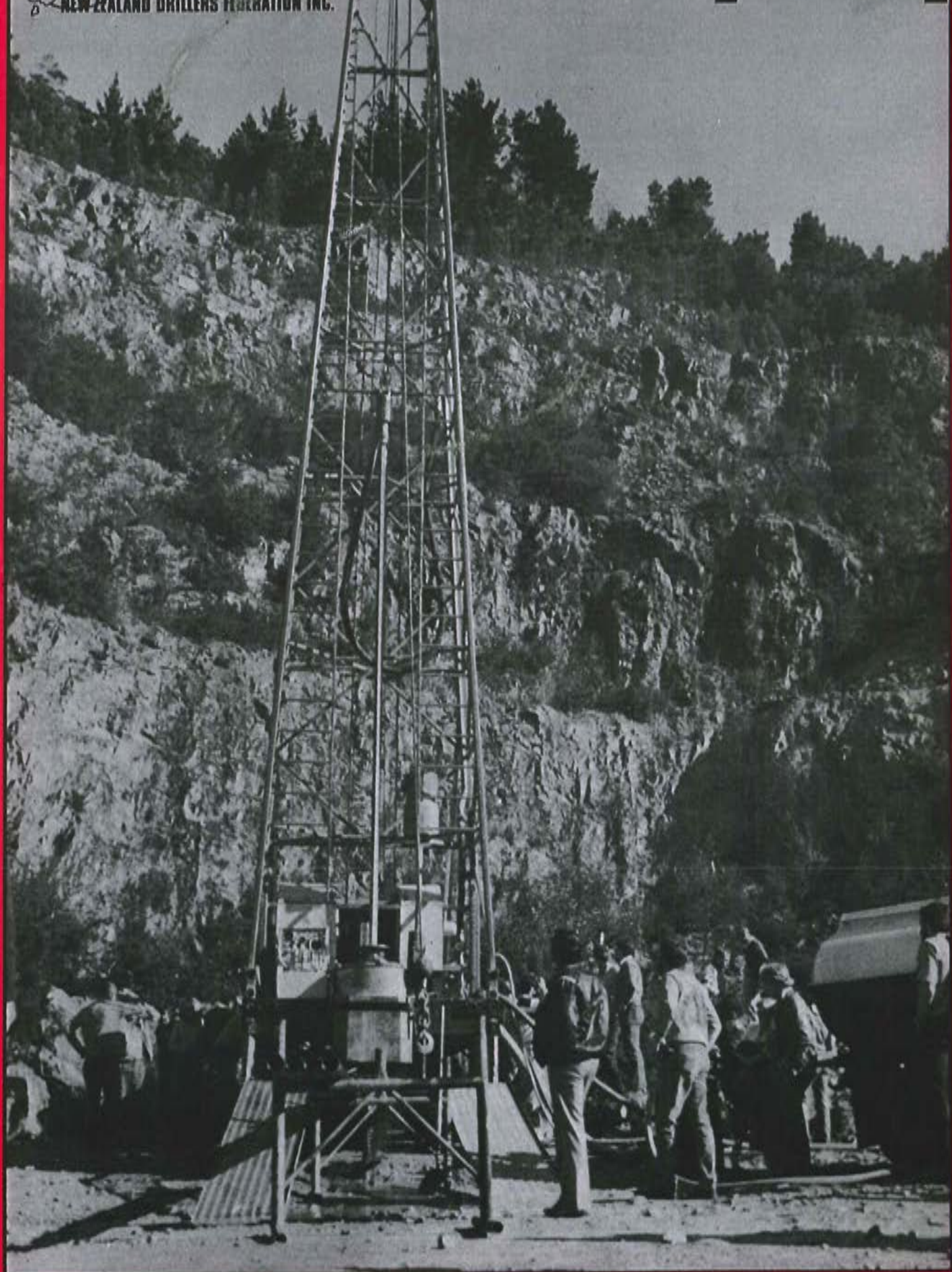




# New Zealand **THE DRILLER**



Winter Issue



New Zealand  
**THE DRILLER**

The Driller is the official publication  
of the New Zealand Drillers Federa-  
tion Inc.

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THE DRILLER



The 1983/84 President and Vice-President of the New Zealand Drillers Federa-  
tion. The new President is Mr Bill Washington (right) of Washington Drilling  
Ltd, Timaru, and Mr Ces Woodford of Waimea Drilling Co, Richmond, is now  
Vice-President.

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Cover: This 20 tonne rotary rig, con-  
structed by Tauranga engineer Ray Steven-  
son for Ewen Cameron is thought to be the  
biggest mobile rig in New Zealand. All com-  
ponentry is driven by a 680 Leyland Oc-  
topus. The water pump has 12 x 14" Gard-  
ner Denver pump heads and a home-made  
drive based on a Leyland differential. It can  
pump around 17,000 gallons of water an  
hour. The complete unit is mounted on  
hydraulic leg lifting jacks with two manual  
screw safety jacks under the rear of the 40  
ft mast.

**EDITORIAL**

## New pens take over

This issue of The Driller is the first to  
be produced by the new publishers,  
Transport News Ltd, and we would like  
to take a few lines to introduce our-  
selves.

Transport News Ltd is a publishing  
and public relations company based in  
Wellington. The company produces, in  
addition to the Driller, the national  
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monthly newsletter about transport, a  
monthly management magazine and a  
staff magazine for a large manufac-  
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want.

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and with your help we can produce a  
magazine which will be of use and  
benefit to you.

**Mike Maryan,**  
Executive Editor.

## Solids sifter

The building up of the fine solids in drilling fluid can cause major problems for the driller.

One way of overcoming the problem is by dumping the old drilling fluid and rebuilding at frequent intervals... an expensive option. Another, demonstrated at the recent NZDF conference, is to mechanically separate the fine solids from the drilling fluid... a method which is claimed to be more economical.

Mike Blong, whose company — Drilling Services and Supplies — demonstrated in Tauranga a machine for mechanically separating out the solids, discusses the method in an article written especially for *The Driller*...

In drilling, formation cuttings are transported to the surface by the drilling fluid (water or mud).

Even when using a settling pit and screen for removal of cuttings (drilled solids), many drilled solids will be pumped down the well. The pump and bit grind these solids smaller when they are recirculated. The drilling fluid then deteriorates with increasing amounts of fine solids.

Excessive fine solids built-up in the drilling fluid will lead to such downhole problems as stuck rods, bit balling and increased bit wear. Pumps and pump parts will also wear faster.

A mechanical separator hydroclone (also called a desander or desilter) was demonstrated at the recent Tauranga conference.

**Mike Blong of Drilling Services and Supplies demonstrates the desander during the NZDF Conference**



The hydroclone is a centrifugal separator consisting of a cylindrical inlet section attached to a cone shaped discharge section. The drilling fluid is pumped through a specially-designed inlet which imparts rotary movement, generating a centrifugal force.

As the solids-laden fluid swirls down the inside of the cone the heavier solids are forced toward the cone wall. These solids, with a small amount of liquid, are then ejected out the bottom of the cone. At the same time the cleaned fluid has changed direction and is now spiraling up the centre of the cone and out the overflow discharge at the top for return to the mud pit.

The size of solids that a hydroclone will separate depends on the cone size

and its design. The hydroclone seen at Tauranga will remove solids down to the 15 micron range (25400 microns = 1 inch)... the consistency of fine talcum powder.

At this operating range all sand, and the majority of silt, will be removed by the hydroclone.

The solids/liquid ratio of the underflow discharge can be varied by reducing or increasing the size of the underflow opening controlled by a Tri-nut. The bigger the opening, the more liquid and less solids will be discharged from the underflow. Too small an opening will totally plug off the underflow. If required the hydroclone can be stopped and unplugged in a few minutes without interference to the drilling operation.

## Holden WB ute handles well

A recent article in the Australian motoring magazine "Wheels" revealed that General Motors Holden plans to scrap the venerable Holden WB utility in 1985.

The 6 cylinder Holden ute has been a popular vehicle with tradesmen and machinery users since its introduction in 1969 with the 13cwt HT model. The current WB model is available in two variants: the 3-speed manual ute (with 3 sp auto and power steering as options) with a payload of 779kg, and the "one tonner" cab and chassis with a standard 4-speed manual box and a 1000kg payload.

A road test of the ute, which may be a dying breed, shows it to possess plenty of power from the 3298cc XT5 engine (83kw at 4000rpm) and more than enough torque (231 Nm at 2400 rpm). Cruising is effortless and hill-climbing no problem.

Handling is good. The vehicle is safe and goes exactly where you want it to

go... it behaves itself well. The standard fitment Firestone 195SR14 radials along with semi-elliptic leaf rear suspension combine to give good road holding. The 3-speed auto gearbox does, however, have a mind of its own and can drop straight to first on kick-down.

For those taking a ute across rough country the Salisbury rear axle with limited slip diff and 3.55:1 axle ratio produce adequate power transfer but the WB can be a problem in mud without enough weight over the back wheels.

The big bug bear is fuel consumption: between 8.05 km/litre (24.14 mpg) and 6.24 km/litre (17.59mpg) with an average on our road test of 7.31 km/litre (21 mpg).

Cargo space in our wellside test vehicle was adequate but a little shallow. However, room in the cab is excellent... enough for three hefty men in work-boots. There's not much room in the cab for personal gear, though, and more

storage space around the dash and behind the seats would be an improvement.

We liked: the room, performance, cruising capability and cab layout. We didn't like: the 3-speed auto gearbox, storage space in the cab, some of the finish on the test vehicle, the seating (too basic), and the shallow load tray.

The WB ute sells for between \$16,000 and \$18,000 and GMH are scheduled to pension off this workhorse in 1985 as part of a long-term plan towards financial stability and a more profitable model line-up. GM New Zealand says that at present, no definite time has been established for ceasing production of the WB in this country... it may continue here after it stops in Australia.

If it does disappear in favour of the Japanese-sourced 4-cylinder utes the only six will be the Falcon ute which Ford say will continue for many years yet. But when the WB does go it will mean the end of an era.

# Tauranga scene for '83 Conference

The 1983 New Zealand Drillers Federation annual conference was officially opened by the Minister of Energy Mr Birch in Tauranga on July 27.

A wide range of subjects affecting the drilling industry was discussed during the three-day conference which attracted 108 delegates and their wives.

First speaker up was John Tawhai, Drilling Training Officer at Wairakei who spoke about the establishment of a drilling school. Several other speakers described local conditions of concern to drillers in the Bay of Plenty region. Barbara Simpson, a hydrologist with the DSIR in Rotorua, described the hydrology of the region and also spoke about groundwater drilling in Israel which she had recently visited.

R J Shannon, a geothermal engineer discussed the potential utilisation of geothermal power in the Bay of Plenty and showed delegates ways it was being used as an energy resource for heating government buildings in Rotorua. Dr Healy, a lecturer at Waikato University used slides to illustrate the results of coastal sedimentation and erosion in the region.

Other speakers included Bruce Selby of Drilco, Singapore, who gave a slide presentation on Bit Design and Selection, Dr Cam Nelson who spoke about core drilling by the Glomar Challenger in the Tasman Sea, and Chris Kidd of Groundwater Consultants who spoke on Waterwell Efficiency — Dos and Don'ts.

Doug Chase of Petrocorp presented an update on his company's activities and Mic Costello of the Fruit Growers Federation explained the irrigation needs of orchardists. Sales Manager for NZ Steel Alistair Gooch gave a talk on the manufacture of steel pipe.

Lindsay Fooks of Kingston Reynolds Thoms & Allardice talked about the need to obtain specialist advice in areas such as legislation, cost analysis, geological studies, and well design. Groundwater Consultants' Wayne Russell discussed ways to locate a successful waterwell. This included details of a recent resistivity survey undertaken around Pukekohe.

A trip to a local kiwifruit orchard to see one of Cameron Welldrilling rigs in action created a lot of interest among the drillers who were obviously keen to check out the different techniques and equipment being used.

Drilling Services and Supplies had provided a desander and this too attracted a lot of interest. Later, delegates went to a nearby quarry to see a downhole hammer in action. Unfortunately, the quarry floor had disappeared under the gravel and deposits from the surrounding hillside and the demonstration had to be abandoned.



The newly-elected New Zealand Drillers Federation council. From left to right: Neil Richardson, Ewen Cameron, Hamish Pearson, Pat Garnett, Jim Faulkner, John McCallion, Martyn Brown, Gordon Brown, Lyle McMillan, Bill Washington, and Ces Woodford. Right: Dick Baylis.



Most delegates, however, took the opportunity to take a close look at the 20 tonne rig which local engineer Ray Stevenson had built for Cameron Well-drilling Co.

On the final day of conference, Alan Farmer of Dominion Construction and Chris Kidd presented a workshop on sieve analysis and screen selection.

Bay Computer Services followed with a talk on the applications of a computer in the drilling industry.

Those who had not absorbed much in the official sessions during the day made up for it at the unofficial meetings at night. A dine & dance rounded off the conference on 30 July after an informative and entertaining three days.

## Another step up ladder toward driller training

A ticket for New Zealand drillers is now a step closer to reality.

Senior Technical Officer of the Geophysics Division, DSIR, Jack Hoffman told the 1983 Drillers Federation Conference that he had discussed a drilling programme with the Technical Correspondence Institute in Petone several years ago. The Institute had offered to set up a correspondence course for a nominal fee at that time.

The proposal for the course was abandoned when Mr Hoffman left for the North Sea. "I think it would be worthwhile for the Federation to continue those investigations I started," he said.

The Federation had not been aware of this possibility and will now look into the setting up of a course with the Technical Institute. Delegates had earlier discussed the adaptation of 15 Australian training modules for New Zealand drillers.

liar training modules for New Zealand drillers.

Rod McCallum of the Australian National Water Well Association said the recently-produced modules would be available for use in New Zealand at minimal cost. "Maybe the Australian system will not suit your criteria but it would certainly be a good base on which to adapt."

It is planned that the modules be made available to New Zealand drillers in return for local expertise in the geothermal area, he said.

Later, under general business at the AGM, a motion was carried to proceed with a Technical Correspondence Institute type course using Australian material at minimal cost to the Federation. Mr Jack Hoffman will also be asked to approach the Technical Institute with the proposal to use the 15 Australian modules.

## Preheating vital for secure weld

Basic engineering with applications for well-drillers was the subject of a conference session taken by Tauranga engineer Ray Stevenson.

Drawing from his knowledge of drilling gained while constructing a mobile rig for Ewen Cameron Well-drilling Ltd, Ray Stevenson passed on the basics of welding, fitting, machining, and design. His pointers on welding are set out below:

Welding can be described as the joining together of two similar or dissimilar materials. In the example below, the materials to be joined are ferrous steels.

Before welding, it is important to identify the steel and to ascertain whether the materials are suitable for the intended application.

To identify the steel is not always easy. Filing it, chipping it, hammering it, and breaking it may provide some clues. If the steel has come from a local steel supplier then he should be able to give you full details about its composition, application, and strength. Catalogues from the supplier will help you select the right material for the job and tell you which electrode to use.

A common example of the use of

welding by drillers would be to join a drill pipe to a coupling. If API carbon line pipe, a medium tensile tube with good qualities for waterwell drilling (strength, elasticity, durability, and is easily welded) and a male or female coupling (Ultimo 200 or SPS) were used, the electrode choice would be a hydrogen controlled electrode.

This decision is based on the fact that both steels have very good qualities and are easily machined and welded. Two common types of hydrogen controlled electrodes are Ferrocraft 61 and Phillips 56s.

The next step is to vee or bevel the end of the tube and drill for plug welding. Machine the coupling with an interference fit of roughly .001" per inch of tube diameter. If the tube is out of round, strike an average of its diameter.

Drive the coupling with spigot into the tube. The area to be welded must then be preheated to between 250-350 degrees C. Place four tacks at opposite angles around pipe and weld. Put in a root run and then a capping run. This should be allowed to cool naturally.

Weld failures can usually be attributed to either: a. Incorrect electrodes,

b. Unsuitable parent materials. c. Lack of preheat. d. Insufficient penetration. e. Cooled out too quickly. f. Electrode not baked. g. Too much amperage on electrode.

Ray stressed the importance of heating both the electrodes and area to be welded. For more information about welding he recommended the **Lincoln Handbook on Welding**.

**The Stenuick** down-hole hammer is now available in this country from Seismic Supply International in New Plymouth.

The Belgium-sourced hammer is a recent addition to the company's range of down-hole hammers and is said to be unique in being fitted with a shock absorber system which reduces the vibrations travelling back up the drill stem. The hammers accommodate bits in sizes from 65mm (2.5/8 in) to 350mm (13.4 in) and all can be fitted with a non-return valve for drilling below the water level.

Further information can be obtained from Seismic Supply International, P.O. Box 15, New Plymouth, Tel (067) 84-397.

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## Private sector cheaper

Work by private drilling companies on sites for possible hydro power station development last year cost the Government less than similar work being carried out by Ministry of Works' crews.

The Minister of Energy, Mr Birch, told the NZ Drillers Federation Annual Conference in Tauranga last month that investigation drilling at Mohaka, Lower and Upper Clutha, Lower Waitaki, and Kawerau worked out cheaper per metre drilled when private drillers were employed.

"The Ministry of Works' own forces drilling account for 4550 metres, at a total cost of just over \$1 million, or \$236 a metre. Contract drilling at Mohaka, Lower and Upper Clutha, and Kawerau totalled 1159 metres, at a total cost of almost \$260,000 or \$218 a metre.

"It seems to prove private enterprise is cheaper than the Ministry of Works. I'm not sure if that is the conclusion you are supposed to reach," Mr Birch said.

"As far as the Mohaka project is concerned, more contract drilling would have been done but there were no tenders received when two contracts were advertised." Tenders for a third contract at Mohaka are now being considered.

Other upcoming contracts for tender which would be of interest to the Federation would be those offered by the Liquid Fuels Trust Board over the next two years, Mr Birch said. These would be to oversee drilling in the Central Otago and Southland areas as part of the NZ Coal Resources Survey.

Nearly \$17 million has been spent on this survey since it began in 1974 and

around \$10 million of this sum had been direct drilling costs. Drilling expenditure would continue at about the same level over the next three years, Mr Birch said.

"The huge South Island lignite fields are the major discovery of the exploration programme, making up 80 per cent of known recoverable reserves. Around 5.4 billion tonnes of recoverable coal is estimated to be in these fields," Mr Birch said.

Another major exploration drilling programme which had produced promising results was at Martha Hill in Waihi. Over the last three years some 72 holes have been drilled totalling over 12,000 metres.

"A resource of 14.6 million tonnes has been confirmed with an average grade of 3.2 grams of gold per tonne and 32 grams of silver per tonne, to a depth of 270 metres," he said.

"Feasibility studies are still under way, but the Waihi Gold Company has announced its intention of seeking a mining licence."

Later, a delegate said an Australian rig had been used at Martha Hill and he asked Mr Birch: "Why wasn't the driller in New Zealand consulted to get rigs in to do the same job?"

"We offer an open and free market. The Government does not tell them who to employ. It comes back to the market price. The guy who can do the job at the cheapest rate," Mr Birch replied.

He also suggested the Federation look closely at the reasons why overseas drillers were employed and invited them to discuss any anomalies with the Government.

## Industry needs research

A rousing (particularly for those who had been up late the night before) speech which challenged the Drillers Federation to "do their homework" opened the 1983 conference sessions.

Drilling training officer for the Wairakei geophysical project John Tawhai spoke on drilling training — a subject which has been under discussion for the last two or three years.

Although much of the past discussion has centred on whether to institute a drilling training scheme or an apprenticeship scheme, John Tawhai did not think this was important.

"What's the size of your industry? How many drilling contractors in New Zealand? How many rigs?" he asked the delegates.

"We need to know where it's at and where it's going. No-one in this room

can tell me what size your industry is.

"Before you start on a training school you've got to do your homework. The Federation must be prepared to allocate funds and appoint someone with the know-how and the time. Otherwise it will go on and on and on.

"Let's finish it this weekend. Let's do it or leave it alone. Get someone who can put it all together. Forget about the curricula and format of the school — getting it off the ground is the biggest thing," John Tawhai said.

He believes research into the industry is needed before setting up a school to attract other drilling companies who are not Federation members. If a drilling school is researched thoroughly and set up professionally, then companies outside the Federation will buy it, he said.

## Exam results

Dargaville driller Peter Burgess scored top marks in this year's Drilling School examination held in conjunction with the 1983 Drillers Federation Conference.

Bain Webster came second with Peter Ward and Keith Brown, both from Rotorua Welldrilling Co, coming third and fourth respectively.

The teams' prize was won by Rotorua Welldrilling Co and the following candidates received pass certificates:

Neil Stephenson, Wayne Griffin, Lance Carlyle, John Hadfield, Simon Fitzgerald, Jim Pearson, T. Bolton, Harry Orpwood, Peter Graham-Sutton, Terry Garnett, Michael Morrow, Murray Gillies, Ray Stevenson, Susan Burgess, Larry Weller, Doug Honnor, Bill Washington, Steve Faulkner, Derek Brough, Wayne Bradley, Stewart Montgomerie, Bob Hole, Ron Rae, D. Williams.

## Price of pipe questioned

The price of New Zealand-made pipe should be cut in line with the recent 50 per cent reduction in the cost of API pipe, outgoing Federation President Hamish Pearson told the 1983 conference.

"The last part of this year there has been a great reduction in API pipe line. Why can't we get the same reduction from New Zealand pipe?" he asked.

Mr Pearson also told delegates he was a little disappointed with the lack of progress in instituting a drillers' training school but that two meetings during the year with Les Mahoney of the Australian Drilling Industry Training Unit and the Labour Department's Andrew Crisp had been valuable.

He said the federation had a number of new members and that it was in great heart.

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Here's your chance to influence what you'll be reading in The Driller.



Slow-moving vehicles may soon wear a special badge, if the Accident Compensation Corporation has its way.

The Corporation is considering the introduction on a voluntary basis of a special slow motor vehicle emblem used extensively in the United States.

The fluorescent orange-yellow emblem is surrounded by a dark red reflective border tape and is in use on some US-sourced equipment used in this country. The emblem can be seen at a distance of 150 to 230m in both daytime and at night.

The ACC's Rural Safety Committee is seeking comment from vehicle users on the proposal for voluntary use which would necessitate changes to traffic regulations. In Ohio, where the emblem was adopted several years ago, rear-end-shunt collisions causing injury decreased by 30 per cent and associated property damage declined by 70 per cent after the emblem was introduced.

## New device gives hook load weight

A new Mini-Weight Indicator System has been introduced onto the local market by New Plymouth-based Drilling Services and Supplies Ltd.

The system is designed for use on workovers, water wells and small drilling rig operations. Using ball bearing movement and clear gauge face the system provides the driller with quick and accurate monitoring of the total hook load.

"We've designed this system for ease of movement and maximum corrosion protection," say Drilling Services. "The new brass fluid six-inch gauge is mounted in a stainless steel enclosure, which includes a side cover and two inch pipe stub mounting."

The tension load cell capacity is 25,000 pounds single line pull with overload capability. A high pressure factory-filled hydraulic hose connects the load cell to a gauge-mounted adjustable damper block for pointer sensitivity and adjustment. There are two pointers — one for hook load and the second as a reference point for weight-

on-bit and other operations.

The system is available in both single and dual load cells allowing weight reading capabilities on both hoisting line and kelly line used on workover rigs. The model range comprises: 2 line/4 line (25,000 to 50,000 pounds), 2 line/4 line (50,000 to 100,000 pounds), 4 line/6 line (100,000 pounds to 150,000 pounds) and 6 line/8 line (150,000 to 200,000 pounds).

Further information is available from Drilling Services and Supplies Ltd, P.O. Box 15, New Plymouth. Tel: (067) 84-397. (See ad p.10)

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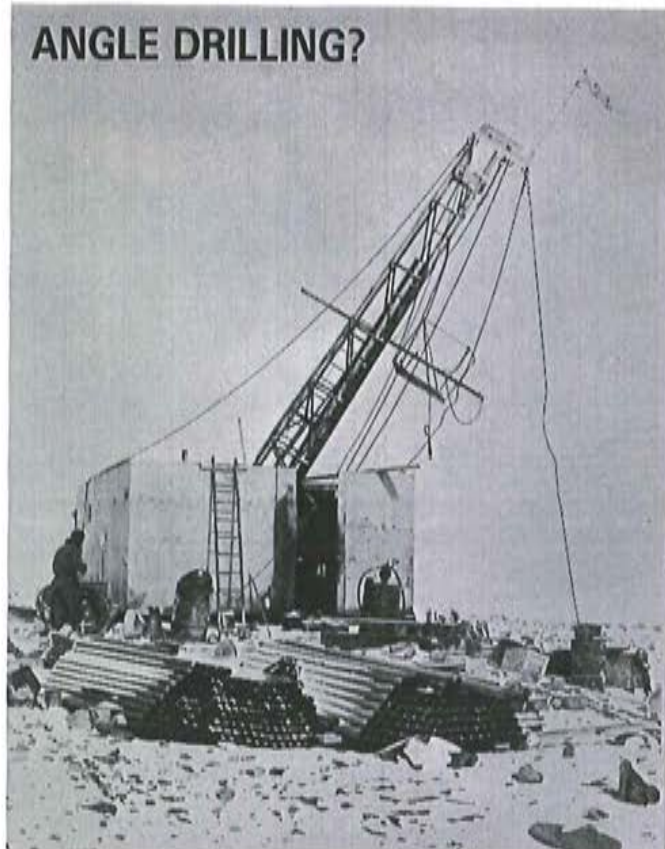
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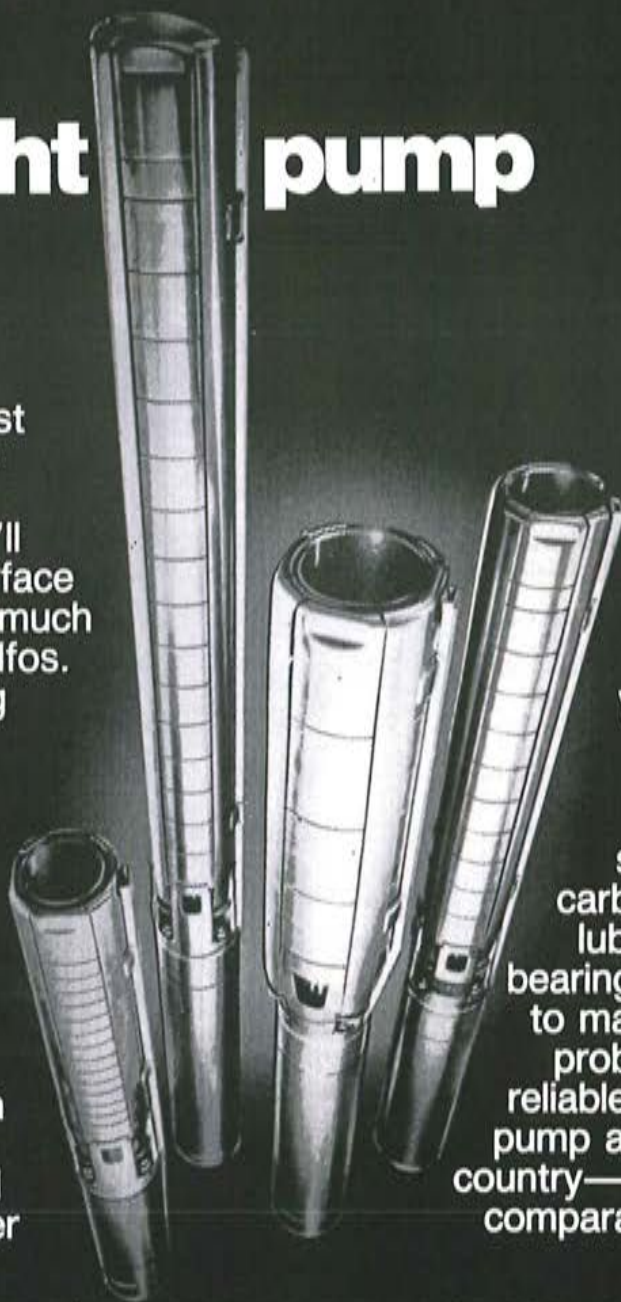
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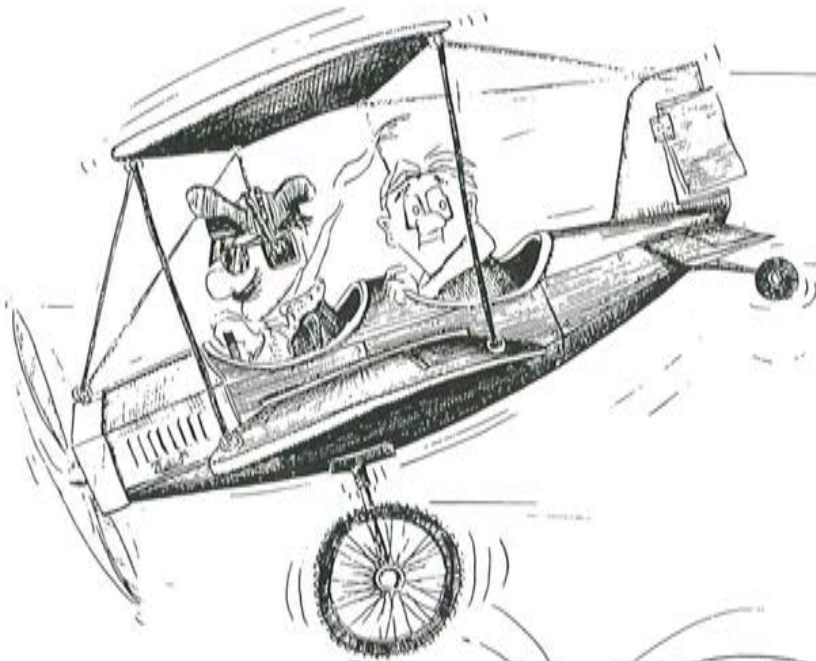
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