

Far above the 70th parallel, in a region that many people mistakenly associate with polar bears, two Norwegian companies are taking a bite out of some of the world's hardest rock.

Some 450 kilometres north of the Arctic Circle, near the town of Austertana, contractor Leonhard Nilsen & Sønner AS (LNS) operates the largest quartzite quarry in the world.

Here, in the region called Finnmark, where the warm currents from the Gulf Stream make it possible to cope with the extreme environment, a team of hard-working quarrymen are in action around the clock, working 17 shifts per week.

A total of 1.2 million tonnes of rock are processed each year at the quarry which is owned by Elkem Tana AS. And as LNS is responsible for all drilling, (40,000 drillmetres per year) as well as blasting, loading and transportation, the drilling equipment plays a central role.

Two operators share one Atlas Copco ROC D7 rig, equipped with a COP 1838 ME rock drill, on a 2+1 rotation basis. This compares to one-and-half rigs of a different make, previously used by another contractor to achieve the same annual production.

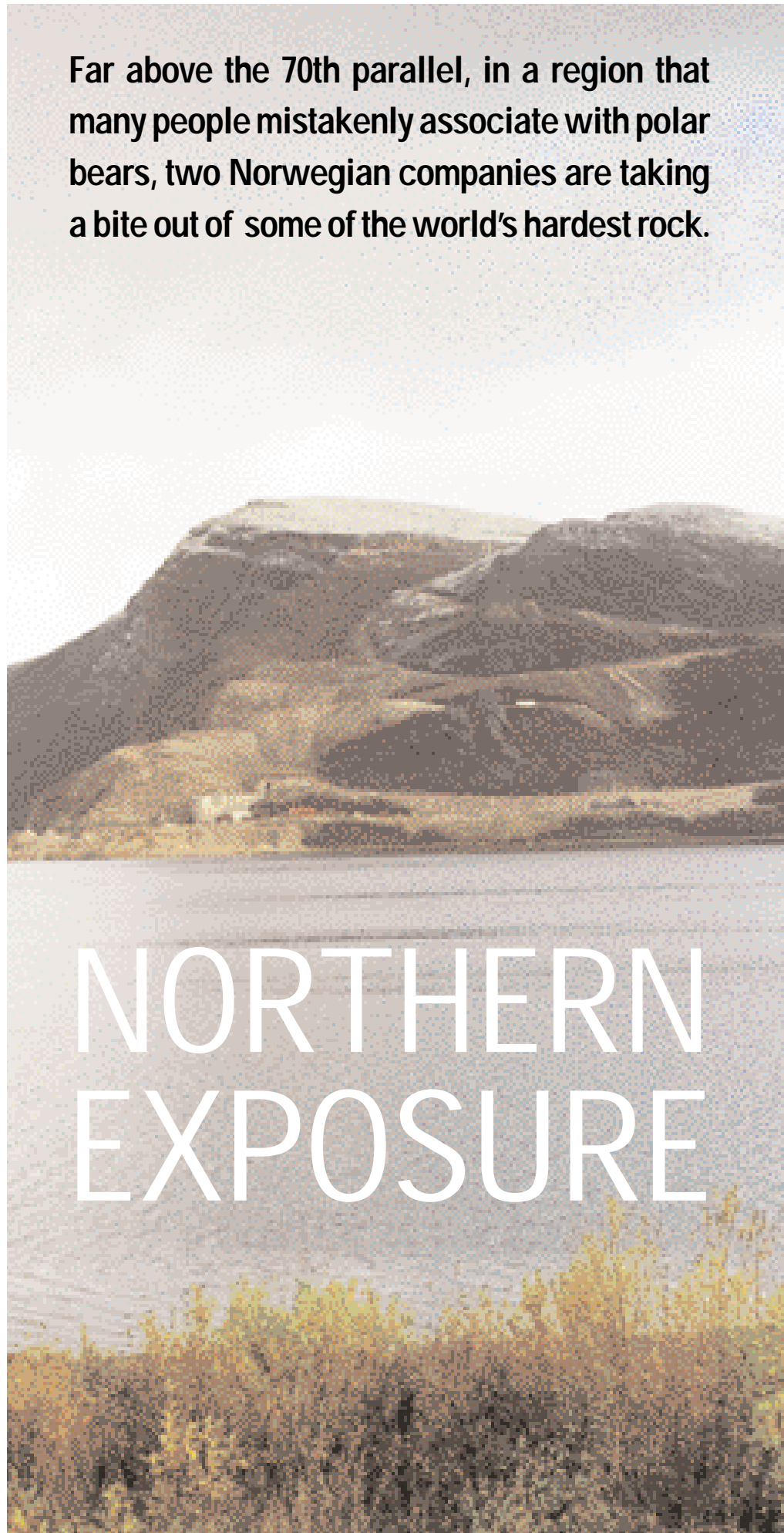
#### Almost diamonds

Although the amount that is quarried is not outstanding compared with the pro-



*Untouchable: The only stone at the Tana quarry that the Atlas Copco equipment is not allowed to touch is this ancient sacrificial stone, located right in the centre of the worksite.*

*World's largest: The Tana quartzite quarry at the foot of a rock in Finnmark, Norway.*



# NORTHERN EXPOSURE



*Top performance in a tough environment: The Austertana quartzite, which is hard enough to cut glass, places extreme demands on this Atlas Copco ROC D7 armed with its Secoroc drill bits.*

duction at other quarries, what makes this assignment special is the very nature of the rock, which is approximately 99 per cent quartzite. With rock this hard, virtually all normal drill bits, in the words of the drillers, just quickly “turns to butter”. So how hard is it? The locals say that on a scale of 1-10, with diamonds being 10, the Austertana quartzite is ranked in 7th place.

“Cutting glass with a piece of stone from the quarry is no problem at all,” says owner Odd Einar Utsi. “But of course, this places extreme demands on our equipment. Atlas Copco Secoroc has created a specially designed, 76 mm drill bit to meet our challenge. The bit still has to be sharpened every six drillmetres, but the maximum lifetime is 120 drillmetres.”

Also decisive for the lifetime of the drill steel is the quality of the rock, he says. “Using the COP 1838 ME with Secoroc drill steel has been one of the success factors for us. The operators can also adjust the feed force and rotation to achieve optimal performance and an Atlas Copco drillmaster is also involved in the entire process.”

Wear is not the only challenge being faced at the Austertana quarry. Its very location in the northern hemisphere means that the drillers have to cope with temperatures that can drop to -40 C in winter and rise to +40 C in summer.

“Being able to withstand these extreme weather conditions says a lot about the Atlas Copco equipment,” says Mr Utsi.

#### Increased production

The Tana quarry, where bench heights vary from 6-25 m, has existed since 1974. Elkem Tana AS has run the operation since 1985 and increased annual production from 500,000 tonnes of excavated rock to today’s level of 1.2 million tonnes.

The final product, which consists of crushed quartzite in sizes of 40–130 mm is transported to several ferrosilicone plants all over the country and also to one in Iceland. With a recovery rate of 72 per cent, this means a shipment of approximately 865,000 tonnes of finished product per year.

The quartzite is used in the manufacture of a wide range of products. In addition to use in the production of steel and glass, it is also used in such products as computers, cosmetics, silicone, health food and paint coatings. In fact,

the mine claims that its quartzite is used in 80% of all computers manufactured in the world. At present, LNS has 16 full-time employees at Austertana, most of them recruited locally.

#### Flexibility at Steinkjer

Further south, towards the city of Trondheim lies the community of Steinkjer. Here, another Atlas Copco ROC D7 is also making a good name for itself.

The contractor Per Ivar Fölling Steinkjer has had its ROC D7 for about one year after having previously owned two ROC 748 rigs.

Whether it be expanding a marina, preparing a house foundation, drilling blast holes for a tunnel or quarrying, the drill rig is put to the test in a wide variety of applications and conditions.

“For us, flexibility and versatility are the most important aspects of our business,” says owner Per Ivar Fölling. “And our rig has to be able to adapt and be just as flexible as we are.”

Mr Fölling started the business with his father. They have been using Atlas Copco rigs from the outset, first with a pneumatic ROC 701, then moving up the line with a ROC 712, the previously mentioned ROC 748 and finally to today’s ROC D7, which is also equipped with a cabin.

Geir Westerhus, who has been working as a driller for Per Ivar Fölling for more than six years, says: “You can really see a ▶



*Meeting the challenge: Drilling contractor Asbjørn Nilsen (left) with Site Manager at the Tana quarry Odd Einar Utsi.*



Quite a sight: The Steinkjer quarry where the Per Ivar Fölling team is drilling and blasting aggregate to be used as roadfill.

Driller Geir Westerhus (right) with Roar Woldseth of Atlas Copco.



▶ difference between the older rigs and the new generation. The development of the working environment in the ROC D7 is fantastic. I just can't imagine a better rig.

"It has a comfortable cab with good suspension and the chair can be adjusted to suit the operator."

Mr Westerhus also praises the COP

1838 HE rockdrill and says the rig's wide range allows him to drill several holes without having to change position which saves a great deal of time.

The Per Ivar Fölling team is currently working in a quarry in Steinkjer, busily drilling and blasting aggregate to be used as filler and for road construction.

"What this all means for me is that I'm now able to spend more time concentrating on drilling," concludes Geir Westerhus. "The rig has definitely helped us to increase our daily production." **M&C 3•01**

## – and ROC D7 scores high with Italian drillers

**A** limestone quarry in Cisano Sul Neva in Italy's Savona region, decided it wanted a new, powerful, ergonomic drill rig to enable the rigorous tasks of drilling, blasting and removing the material to be handled by only one operator.

The choice fell to an Atlas Copco ROC D7, equipped with a COP 1838 HE T45 rock drill and the latest Secoroc spherical button bit.

Now, after a short period in operation, ICOSE S.p.A, says it is more than satisfied with the performance of the rig and is expecting even better results in the near future.

The new crawler provides an aver-



Benissimo! Italian contractors and the ROC D7 during a recent demonstration.

age production rate of 56.7 metres per hour drilling 76 mm diameter holes at an average depth of 15 metres. It has drilled 5,500 metres to date with a fuel consumption of 20 litre/hour.

Demonstrations of the new ROC D7 crawler rig have been staged recently around the country and Italian contractors everywhere have been giving it their full approval. **M&C 3•01**