Boskalis
Dredging & Marine Experts

PROJECT SHEET

OFFSHORE DRILLING ISLAND AND ICE BARRIERS IN KAZAKHSTAN

EXTREME WEATHER CONDITIONS AND DEMANDING LOGISTICS

INTRODUCTION

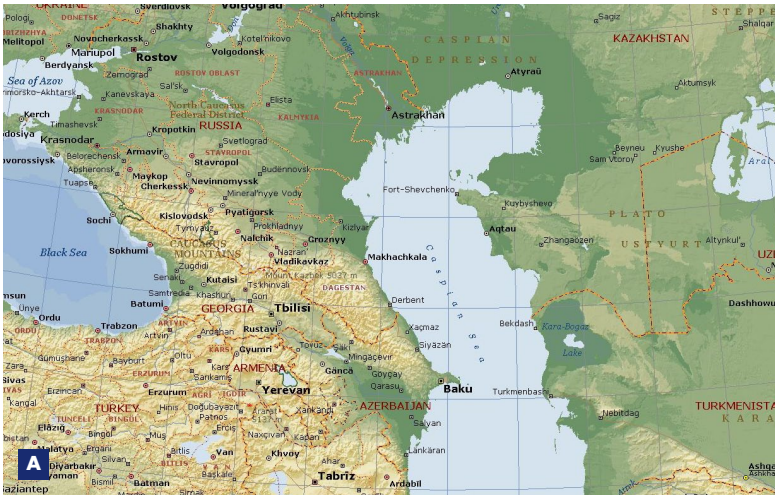
Agip Kazakhstan North Caspian Operating Company B.V. (Agip KCO), a consortium of eight leading oil companies, is active in the northern section of the Caspian Sea. The gas and oil reserves in this area were mapped out in 1998 and 1999. To allow for their exploitation, Boskalis International has created an artificial island measuring 225 x 225 meters, and underwater berms, for Agip KCO. Four years later, the time is ripe for the construction of the drilling island and ice barriers. Once they are in place, Agip KCO can start to extract and distribute the oil reserves.

PROJECT SPECIFICATIONS

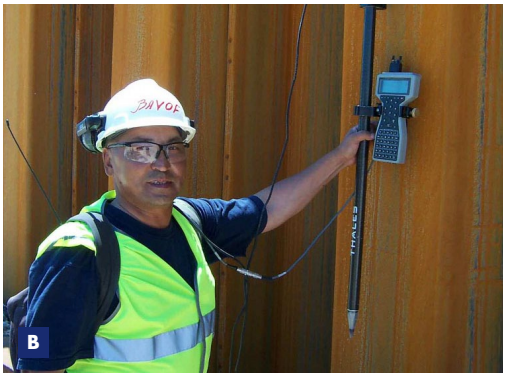
Boskalis Archirodon VOF (BAVOF) specializes in the construction of marine infrastructure. The company has extensive experience with the execution of complex multidisciplinary projects, both maritime and offshore. So it is a highly suitable partner for the construction of an offshore drilling island and ice barriers. This project in the Caspian Sea involved the construction of two corridors. One with a total length of 450 meters and 20 meters wide, and the other measuring more than 550 meters. BAVOF also built Riser Island, measuring 550 x 90 meters. This drilling island will be the starting point later for the

FEATURES

Client	Agip KCO
Location	Northern section of Caspian Sea
Period	2003 - 2005
Contractor	Boskalis Archirodon VOF (BAVOF)



A Location map
B Checking the sheet piling
C Installing the sheet piling involved incredible precision
D Aerial photo of the work



Kazakhstan: material Quantities 2004 - 2005

	Quarry run	20 - 500 kg	500 - 2000 kg	Larssen 606 sheet piling			geo-membrane
	(tons)	(tons)	(tons)	linear meters	length in meters	m²	m²
Islands	600,000	26,000	-	480	17	8,160	15,000
2 Cofferdams	150,000	-	-	1,250	16	20,000	-
2 Breakwaters	85,000	55,000	15,000	-	-	-	7,500
Other applications	65,000	2,000	2,000	100	24	2,400	-
(Sub)total	900,000	83,000	17,000	1,830	57	30,560	22,500
total	1,000,000						

pipelines taking the oil to shore for subsequent distribution. The main ice barrier (the South Barrier) for the drilling island was also built, together with two underwater berms; one near to the main site and the second in a completely isolated offshore location at a depth of 8 meters.

CHALLENGES

Large distances, shallow waters and extreme weather conditions are features of the locality. From November to the end of March, ice makes the Caspian Sea inaccessible and it is almost impossible to work. In the summer, temperatures can rise to 40 degrees Centigrade (over 100 degrees Fahrenheit). Another difficulty is the depth of the sea: most of it is less than 4 meters deep. Strong winds are not unusual and so rough seas are common. Wind speeds in excess of 20 knots generally meant that work on the 16 to 17 meter-long sheet piling had to be suspended, cutting the available net construction time by half. There was another factor that merited particular attention. The Caspian Sea is the breeding ground for the celebrated sturgeon. To protect the sensitive environment, stringent environmental standards applied to the project.

APPROACH

Spare parts, goods and equipment are scarce in Kazakhstan and so they have to be brought in from Europe. The supply route was by sea from the Netherlands, passing Gibraltar on its way to the Mediterranean, the Black Sea and finally the Volga-Don Canal to Astrakhan in the Caspian Sea. A total of 8,500 kilometers. Sheet piling was transported from Europe by barge across the North Sea, the Baltic, passing St Petersburg on its way through the Volga to the Caspian Sea via Astrakhan. Road haulage takes about two weeks and transport by train takes three to four weeks.
All the rock material needed for the construction of the drilling island and the breakwaters was dispatched from the port of Bautino, which is 280 kilometers from the project location, in other words a voyage of two days and one night. And on top of that, the client and the project location were a long way apart: a one-hour flight from Bautino to Atyrau. The transport barges 'Bautino 1', 'Bautino 2' and 'Bautino 3' (all BAVOF-owned vessels with a loading capacity of 3,000 tons) were converted specially for this project so that they could transport as much rock as possible per return voyage, despite the relatively shallow waters.

SAFETY, HEALTH AND THE ENVIRONMENT

Safety is crucial on a project of this caliber. BAVOF itself set up SHE training. This varied from a safety induction course to an H2S course (hazardous substances) for everybody working both onshore and offshore. Offshore personnel followed a HUET course (offshore helicopter survival), a firefighting course and a First Aid course. Working practices were adapted specifically for this project in order to comply with the strict environmental standards.

RESULT

Despite the difficult conditions, BAVOF did everything possible to make sure that the work went off as smoothly as possible and to meet the deadline. In this way, the 200-strong BAVOF team managed to live up to the demands of the clients and the local conditions.

PROJECT KEY FIGURES

MAIN EQUIPMENT USED	Tug boats: 10
	Transport barges: 20
	Positioning pontoons: 3
	Survey barges: 1
	Accommodation vessels: 3
	Multi-cats: 1
And a large variety of	land equipment
WORKFORCE	Amount of people: 200
	Manhours: 2,000,000

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F


G

E Installing concrete mat
F Tough weather conditions
G Installing the anchor rods

Royal Boskalis Westminster N.V.
PO Box 43
3350 AA Papendrecht
The Netherlands

T +31 78 69 69 000
F +31 78 69 69 555

royal@boskalis.com
www.boskalis.com