Labin reconstruction results in virtually new rig

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Crosco's jackup drilling rig Labin, a Levingston 111-C, was built at the Viktor Lenac shipyard in Rijeka, Croatia in 1985.

Labin performed well, drilling wells until 2003 in the Mediterranean (Turkey; Egypt & Tunnisia) and the Adriatic Seas (Croatian & Italian part), mostly consisting of gas exploration and production wells and completion and testing of existing wells.

During that period the rig remained highly competitive with other drilling units of same type due to regular maintenance and replacement of old equipment, upgrading with the improvements in drilling technology and safety.

Comparison before and after reconstruction

Hull length:	**197 ft.**	**Hull length:**	**210 ft.**
Hull width:	**184 ft**	**Hull width:**	**217 ft.**
Cantilever skid. cap.:	**35 ft.**	**Cantilever skid. cap.:**	**55 ft.**
Operating sea depth:	**300 ft.**	**Operating sea depth:**	**329 ft.**
Accommodation cap.:	**77**	**Accommodation cap.:**	**100**

After a period of intensive exploitation, regardless of good maintenance and technical improvements, the Labin reached the point when a thorough reconstruction was necessary.

The reconstruction was also requested by operating companies (especially ENI Agip, as long term operator). The most important aim was the improved possibility to work alongside fixed production platforms. Another very important request was the possibility to work in water depths of 91 m and deeper.

Among the enhancements to Crosco's Labin reconstruction project was enlarging and extending the cantilever.

Due to operating restrictions to meet those requests without thorough reconstruction, it was decided to start the project.

The reconstruction exceeded our expectations and the Labin has become a modern and highly competitive unit. Virtually every part of the rig was scheduled to undergo some reconstruction, upgrade or enhancement:

Hull and legs:

- Legs extension
- Jack up system modification (additional jacking for legs No. 2. & No. 3., lower shock absorber replacement, major overhaul of existing jacking system included new jacking control panel)
- Hull extension (stern and side extension)
- New cantilever extension with new rack & pinion system
- Third pedestal crane installation
- Submersible pumps equipped with rack and pinion system
- Tanks inspection, cleaning & anticorrosion protection
- ABS class renewal
- Re-certification of all major components (NDT inspection, service reports etc.)

Drilling equipment:

- Third mud pump installation (new suction and pressure mud lines)
- New mud treatment facility
- Two new bulk tanks on bow side
- New zero pollution system
- Additional mud tank (78 m3)
- Third transformer installation
- Cementing unit equipped with diesel engine and placed on main deck (new high pressure cement lines)
- Piping replacement (industrial water, mud, black & grey water, air, sewage etc.)
- PVT system
- New BOP stacks 13 5/8" & 21 1/4"
- New accumulator unit

Accommodation:

• Living quarters capacity increasing to 100 persons with high living standard (only single and twin bedrooms)

Safety:

• Additional 2 lifeboats (total capacity in all lifeboats 200 persons)

• New fixed fire fighting system (halon replaced with ecological FM 200)

• New GMDSS radio system

• Remote monitoring system (tanks, generators, ventilation)

It was concluded that Crosco, with its human and technical resources and with the help of it's partners, could organize and successfully finish the reconstruction. The project began on 15 November2003.

After the analysis of technical requests, marine conditions and geographical position, Crosco decided to perform the reconstruction at the Nauta Lamjana shipyard on the island of Ugljan (Zadar, Croatia). Crosco hired the shipyard together with all its facilities.

The reconstruction was designed and mostly performed by experts from Crosco, in cooperation with the Faculty of Mechanical Engineering and Naval Architecture at the University of Zagreb.

The project was scheduled to finish in 3 ½ months. There were 400 to 500 people working daily in the shipyard. Accommodation and food was provided near the shipyard and medical personnel was made available 24 hours a day.

During the reconstruction, the shipyard looked like a busy beehive. The entire reconstruction was supervised and verified by ABS surveyors, ModuSpec and Crosco's QA experts. The entire installation of the new equipment was covered with QA procedures and reports.

However, due to extensive works the project lasted 2.5 months longer than expected.

During this time the workers endured 42 days of extremely bad weather (rains, strong wind and even snow) and because some of the works had to be performed at 105 m above the sea level, the entire situation was made even more difficult.

Despite all the difficulties, the reconstruction was successfully completed.

The reconstruction has considerably improved the unit's technological capabilities. Due to the extent of the upgrading operations Labin has become the most up-to-date unit of its class.

Equipped as it is now, Labin has practically become a newly built unit which makes it more competitive on the market, and its economic and operational life has been extended by 25 years.

The Labin is presently situated in the Adriatic Sea and is carrying out a contract for AGIP.