SIGNIFICANT PROGRESS WAS MADE DURING 2015 ON THE VARIOUS COMPONENTS OF THE SEAFLOOR PRODUCTION SYSTEM.
Nautilus is currently on track to be the first company to commercially extract copper and gold at the Solwara 1 Joint Venture’s project site in the Bismarck Sea, PNG, with seafloor production operations planned to commence in Q1 2018, subject to funding.

*A joint venture (Solwara 1 Joint Venture) was formed by Nautilus and the Independent State of Papua New Guinea’s nominee, Eda Kopa (Solwara) Limited, a wholly owned subsidiary of Petromin PNG Holdings Limited (comprising Nautilus 85% and Eda Kopa (Solwara) Limited 15%).

Seafloor Production Tools

During the year, FAT on the Auxiliary Cutter, Bulk Cutter and Collecting Machine was completed at SMD’s facility in Newcastle-upon-Tyne, UK. In late January 2016, the Company took delivery of the three SPTs from SMD. The SPTs have since been shipped to Oman where it is planned that they undergo extensive wet testing at Duqm Port (Q2/Q3 2016), designed to provide a submerged demonstration of the fully assembled SPTs and involving submerged testing of:

- Control systems operations and feedback
- Hydraulic functions
- Collection system functions
- Survey and visualisation systems

United Engineering Services LLC will provide the support services associated with wet testing the Company’s Seafloor Production Equipment and storing the equipment as it is delivered from various suppliers prior to integration onto the PSV which is expected to occur in 2017.

The three umbilical winches that store and manage the power and control umbilicals were designed, procured and assembled at SMD. In March 2015, the Company announced that the umbilical winches for the three SPTs had successfully completed FAT. The umbilical cables have since been installed onto the umbilical winches and in Q2 2016 they will be shipped to the shipyard for integration onto the vessel.

Launch and Recovery System

The LARS, which will be used to lift the tools in and out of the water, is comprised of A frames, lift winches, hydraulic power units, electric power units and deck control cabins. The LARS will be sent to the shipyard in Q2 2016.

Riser and Lifting System


Welding of the connectors for the riser pipe commenced in January 2015. Nautilus anticipates taking delivery of the Riser and the surface seawater pumps and pull in skids in Q2 2016. Work on the derrick and riser handling systems remain ongoing with delivery anticipated in Q4 2016. Delivery of the riser transfer hoses is due to occur in Q4 2017.

Production Support Vessel

Significant progress was made during the year on the PSV which will serve as the operational base to support the operations to extract and to transport high grade copper and gold material from the Project site in the Bismarck Sea of PNG. The key vessel contracts that were awarded during 2015 can be seen in Table 1 below.

The shipyard continues to progress 3D modelling and preparation of production drawings, steel cutting and block fabrication with keel laying scheduled for mid 2016.

In September 2015, the Company moved into the physical construction phase of the vessel with the first steel being cut. A steel cutting ceremony took place at the shipyard of Fujian Mawei Shipbuilding Ltd. to mark this significant occasion.

As of March 21, 2016, ~13,500 tonnes (66%) of the total steel had been cut, with 117 blocks assembled and an additional 28 blocks in the fabrication stage.

The Company continues to work with Fujian Mawei Shipyard, MAC* and others on its project and is pleased to have established such a good relationship, which will continue over the coming years.

* Marine Assets Corporation, a marine solutions company based in Dubai which specialises in the delivery of new build support vessels for the offshore industry, will own and provide the marine management of the PSV. The PSV will be chartered to Nautilus for a minimum period of five years at a rate of US$199,910 per day, with options to either extend the charter or purchase the PSV at the end of the five year period. MAC entered into a contract with Fujian Mawei Shipbuilding Ltd., based in Fujian province in south-eastern China, to design and construct the PSV in accordance with Nautilus’ specifications.

Table 1: Key Vessel Contracts Awarded

<table>
<thead>
<tr>
<th>Package</th>
<th>To Whom</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated vessel control system</td>
<td>Kongsberg Maritime</td>
<td>Comprises dynamic positioning, marine automation, information management and navigation systems</td>
</tr>
<tr>
<td>Electrics</td>
<td>Siemens</td>
<td>Supply of the entire electrical installation for the PSV</td>
</tr>
<tr>
<td>Engines &amp; thrusters packages</td>
<td>Rolls Royce Marine</td>
<td>The order secures the main engines, azimuth and tunnel thrusters</td>
</tr>
<tr>
<td>Cargo handling equipment</td>
<td>Bedeschi SPA</td>
<td>Will be used to load and recover the dewatered material into/from the storage holds</td>
</tr>
<tr>
<td>Cranes</td>
<td>MacGregor</td>
<td>Two knuckle boom units</td>
</tr>
</tbody>
</table>
The SSLP is a key piece of equipment in Nautilus’ plan to produce copper, gold and other metals from the deep ocean, with a small environmental footprint, as it enables the transfer of the mineralised material as a slurry from the seafloor to the PSV with no interaction with the overlying water column.
When completed, the PSV will measure 227 metres in length and 40 metres in width with accommodation for up to 199 people and generate approximately 31MW of power. All of the below deck mining equipment will be installed in the PSV during the build process to minimise the equipment integration to be completed following delivery of the PSV. The PSV is expected to be delivered by the end of 2017.

**HOW IT WILL WORK**

Rock is disaggregated on the seafloor by two large robotic machines that excavate material by a continuous cutting process, not unlike coal or other bulk continuous mining machines on land. The AC is a preparatory machine that deals with rough terrain and creates benches for the other machines to work. It will operate on tracks and has a boom mounted cutting head for flexibility.

The second machine, the BC, has higher cutting capacity but will be limited to working on flatter areas and benches created by the AC. Both machines leave cut material in temporary positions on the seafloor for collection by the CM. The CM, also a large robotic vehicle, will collect the cut material (sand, gravel, silt) by drawing it in as seawater slurry with internal pumps and pushing it through a flexible pipe to the RALS.

The RALS comprises a large pump and rigid riser pipe supported from the vessel which delivers the slurry to the surface.

On deck of the PSV, the slurry is dewatered. The dewatered solid material is stored in the PSV's hull, and then discharged to a transportation vessel that will be moored alongside. Filtered seawater is pumped back to the seafloor through the riser pipes and provides hydraulic power to operate the RALS pump. Discharge of the return water at the seafloor from where it came eliminates mixing of the water column, and minimises the environmental impact of the operation.