

World DREDGING

M i n i n g & C o n s t r u c t i o n

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DB Heidi-Renee owned and operated by
JE McAmis Inc. (Chico, California)
dredging the Skipanon River with
their new 14.5 yd³ Cable Arm
Environmental Clamshell bucket
for USACE Portland District's
2016 Oregon Coast Clamshell
Maintenance Dredging project.

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shows early signs of success.....32

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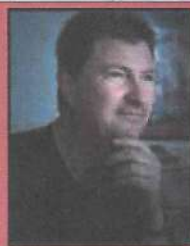
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The individual names and affiliations of the Board of Industry Advisors are not responsible for the content of WORLD DREDGING Mining & Construction magazine. The purpose of the Board is to provide current communication with the dredging industry.

COVER: DB Heidi-Renee owned and operated by JE McAmis Inc. (Chico, California) dredging the Skipanon River with their new 14.5 yd³ Cable Arm Environmental Clamshell bucket for USACE Portland District's 2016 Oregon Coast Clamshell Maintenance Dredging project.

Work begins on developing an innovative fueling process in the Atlantic arch

S/F SamueLNG Project, lead by French Dragages Ports (DP), is the first phase of the Global Project 'Towards a Blue Atlantic Arch by 2025'. The overall project aims to improve the sustainability of marine traffic through the use of marine Liquefied Natural Gas (LNG) as an environmentally-friendly, and cost-effective, alternative to conventional ship fuels for small vessels.

According to the 'Third IMO Greenhouse Gas Study 2014', maritime transport emits around 1,000M tons of CO₂ annually and is responsible for about 2.5% of global greenhouse gas emissions. Shipping emissions are predicted to increase by between 50% and 250% by 2050 – depending on future economic and energy developments – and something clearly needs to be done. Such increases

are not compatible with the internationally agreed goal of keeping the global temperature increase below 2°C, compared to pre-industrial levels. The current goals require worldwide emissions to be at least halved, from 1990 levels, by 2050.

Subsequently, the IMO's Marine Environment Protection Committee (MEPC) has agreed that implementation of a 0.5% global sulphur cap on marine fuel will be brought forward to 2020, from the originally proposed date of 2025. The S/F SamueLNG Project will contribute to this by helping to achieve the objectives of two key EU Directives: Directive 2014/94/EU on the sustainability of the European maritime transport and Directive 2012/33/EU on reduction in the sulphur content of marine fuels.

As the regulations around shipping emissions become more stringent LNG is expected to become increasingly important as an alternative fuel. As a result, the number of LNG-fueled ships being commissioned is growing and at present the supply infrastructure required to service them is limited. The outcomes of the S/F SamueLNG Project will help to address the increasing need for an innovative and sustainable fueling process in the Atlantic arch.

Key activities

Over the next three years, the S/F SamueLNG Project will cover the following key activities:

- ♦ LNG bunkering studies including: a risk assessment in the port of Nantes Saint-Nazarene, a mobile bunkering unit in the Port of Gijon, and a floating device in the Port of Vigo (in conjunction with each of the port's partners) ;
- ♦ LNG retrofit of DP's Samuel de Champlain - an 8,500 m³ Trailing Suction Hopper (TH) Dredge - from Marine Gas Oil to a dual-source fuel engine system ;
- ♦ Environmental Impact Assessment studies in the Ports of Rouen, Le Havre and Nantes Saint-Nazarene ;
- ♦ The training of staff involved in LNG operations in the Ports of Nantes Saint-Nazarene and Rouen ;
- ♦ Dissemination of the results to the maritime community by CEDA.



Port of Gijon



DP's Samuel de Champlain - an 8,500 m³ Trailing Suction Hopper (TH) Dredge

Stage 1: Setting up an innovative fueling process in the Atlantic arch

The first stages of the project, which will lead to the development and deployment of the LNG distribution infrastructure in the Atlantic arch, are underway. Activities include a risk assessment on marine LNG handling in the Port of Nantes/Saint-Nazarene, and detailed pre-design studies which will result in designs for an LNG mobile device in the Port of Gijon and a floating LNG storage device in the Port of Vigo.

Risk assessment study: Initial assessments have suggested that the 'trucks-to-ship' method is, at this stage, the best for LNG bunkering activity in the Port of Nantes/Saint-Nazarene and on the Loire estuary. The Port is leading the study which aims

to fully assess the risks and establish the rules for authorizing this bunkering procedure, plus those for 'barge-to-ship' and 'ship-to-ship' refueling scenarios. The assessment consists of hazard identification studies for the different sites to highlight the risks of LNG bunkering operations involving one or more LNG tankers; and the impact of bunkering on port operations and surrounding facilities, in terms of health and safety, and operational and environmental risks. It is also looking at the safety barriers and additional measures that will be needed to avoid any identified risks.

Bunkering and pre-design study in the Port of Gijon: This study evaluates the potential infrastructure required for ports with low LNG demand and will propose a design for a corresponding flexible, or mobile, bunkering system that will be appropriate for small vessels. The Port of Gijon is working on the study with engineering and design consultants, Ghenova, and energy supply company, Energias de Portugal. They will analyze the bunkering options including synergy between bunkering in maritime transport, and refueling in road transport, to optimize investment conditions, and identify appropriate locations. The study will also define appropriate safety and administrative conditions of the LNG bunkering service, and recommend a business model for it. Finally, a flexible/mobile LNG bunkering system will be designed specifically to deal with the low LNG demand during the initial deployment period.

Design of floating LNG storage device in the Port of Vigo: The Port of Vigo is leading a study to develop a prototype design for a floating storage and supply unit that will cater mainly for LNG but potentially also handle CNG and MDO. They are working with engineering and design companies, Inova and Ghenova, and short sea shipping company, Suardiaz, to determine the key parameters including LNG storage capacities, inclusion of other fuels, propulsion methods and modular capacity of the storage device. The engineering design will also examine the feasibility of installing a ploy-generation system in the projected unit, which will enable the supply of electricity and heat to vessels while at port (Cold Ironing Function of the barge). As part of that, the necessary logistics and technical on-board equipment for the cold ironing function will also be studied. Finally, a scale model will be developed and rigorously tested in a storm tank... along with the robustness of the project itself.

As the studies develop the lead partners will share the results as appropriate. A conference is planned for June, in the Port of Vigo, to exchange knowledge and the initial learnings from the project and details are available from the Port.

About the project management team

The SamuelLNG Project is coordinated by Dragages Ports (DP) and supported by a consortium of 12 partners, from along the Atlantic Arch, representing France, Spain and the Netherlands. DP is an economic interest group which ensures fleet management for dredging in the main French Ports of Dunkirk, Le Havre, Rouen, Nantes Saint-Nazarene, La Rochelle, and Bordeaux. Part-owned by French authorities and French port authorities, it was established to optimize the costs of dredging. As part of that DP is involved in improving maritime access to ports – particularly in the TEN-T Atlantic corridor. The partners working alongside DP on the S/F SamuelLNG Project are:

- ♦ 5 public port authorities: Nantes Saint-Nazarene (GPMNSN), Le Havre (GPMH), Rouen (GPMR), Port Authority of Gijon (APG), Port Authority of Vigo (APV) ;
- ♦ 2 ship engineering and design companies: Inova, Ghenova;
- ♦ 2 energy supply companies: Energias de Portugal (EDP), Gas Natural Fenosa (GNF) ;
- ♦ A short sea shipping company: Suardiaz (VN) ;
- ♦ An international dredging association: CEDA (Central Dredging Assn.). ○

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