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Advanced Production and Loading AS (APL™) was established early 1993 to develop and commercialise the Submerged Turret Loading (STL™) and Submerged Turret Production (STP™) technology.

APL is responsible for system development, design and fabrication. Based on system components and experience from the proven STL system, APL has developed the Single Anchor SAL™/SAP™ and the BTL floating buoy systems.

Through acquisition of the business activities in Hitec Marine as in 2002, APL has taken over product ownership for the Bow loading System (BLS), Stern Discharge System (SDS), Volatile Organic Compounds (VOC) Recovery and Return and the Sequential Transfer of Tank Atmosphere (STTA) Systems.

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STTA



Sequential Transfer of
Tank Atmosphere

ADVANCED PRODUCTION AND LOADING AS



Sequential Transfer of Tank Atmosphere

Volatile Organic Compounds (VOC) are the crude components with lowest molecular weight. VOC is a health and environmental problem, forming ground level ozone and smog. Under traditional filling of oil tanks, the expelled tank atmosphere containing VOC has been emitted to the environment.

Offshore crude oil loading is a large single source for emissions of Non Methane Volatile Organic Compounds (NMVOC).

During loading of tankers, the STTA system directs the expelled tank atmosphere (inert gas and VOC) from one tank to another as the tanks are filled. Through this process the gas/air mixture is enriched for each new tank to be filled. VOC emission to the environment is in this way reduced.

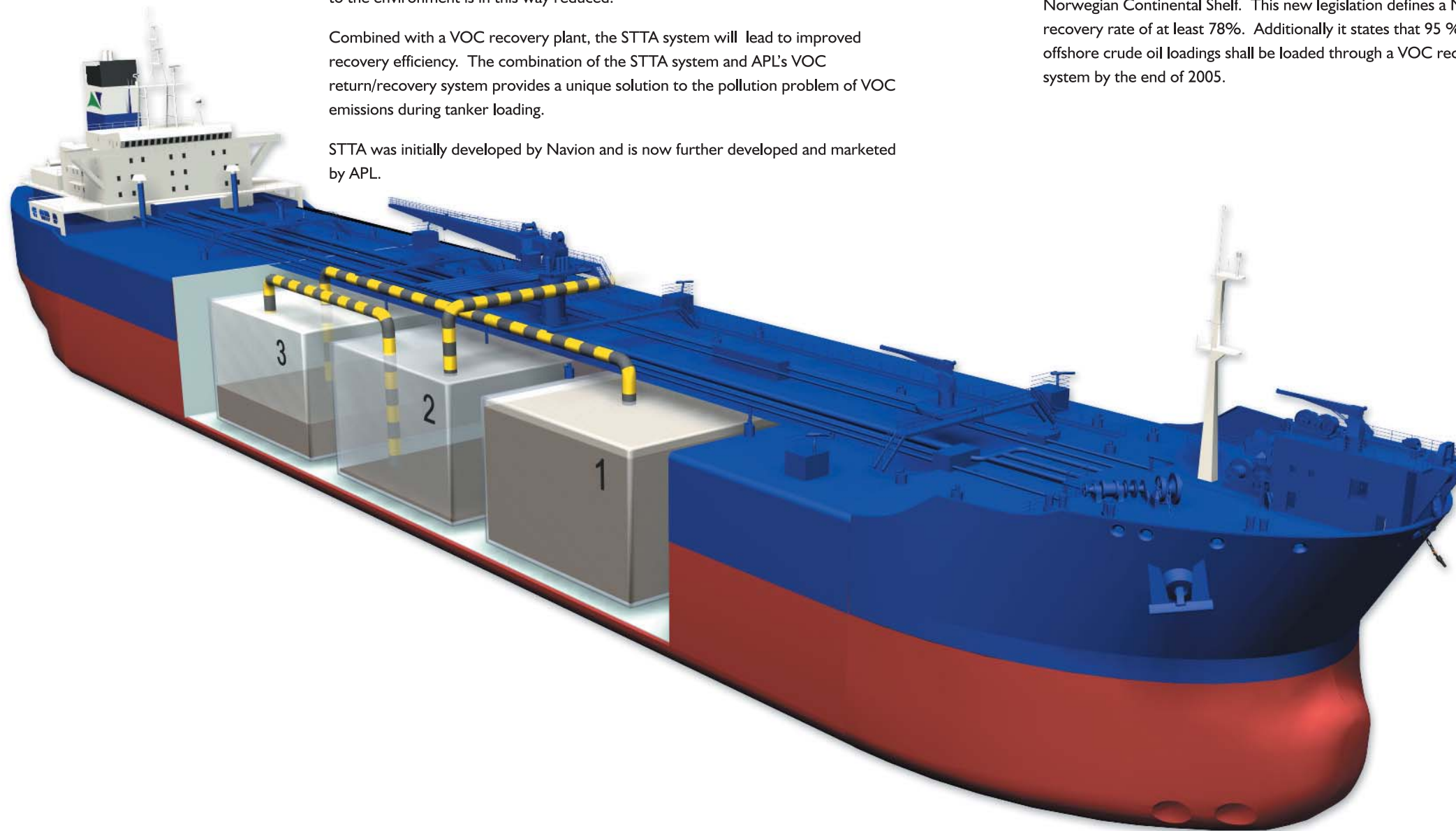
Combined with a VOC recovery plant, the STTA system will lead to improved recovery efficiency. The combination of the STTA system and APL's VOC return/recovery system provides a unique solution to the pollution problem of VOC emissions during tanker loading.

STTA was initially developed by Navion and is now further developed and marketed by APL.

Regulatory requirements for reduction of VOC emissions:

The Gothenburg protocol to abate acidification, eutrophication and ground-level ozone which aims to cut emissions of SO₂, NO_x, VOC and NH₃, by setting country-by-country emission ceiling to be achieved by 2010. 26 countries have committed an average reduction of VOC emission of 42 % by 2010.

To be able to fulfil Norway's obligations, the Norwegian Pollution Control Authority (SFT) has introduced restrictions on the allowable emission of NMVOC gases associated with export of crude oil from the Norwegian Continental Shelf. This new legislation defines a NMVOC recovery rate of at least 78%. Additionally it states that 95 % of all offshore crude oil loadings shall be loaded through a VOC recovery system by the end of 2005.



STTA