IS EXCEPTION A-3.5 THE SOLUTION TO HEAVY LIFT/SEMI SUBMERSIBLE?

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I have been involved with Ballast Water Treatment since 2002 when the inventor of the Venturi Oxygen Stripping BWTS (BWTS), Peter McNulty, came into my office and announced he had a great idea for a Ballast Water Treatment System – VOS. Being a project manager at a company completing terrestrial water treatment, this statement meant nothing to me. How things change...

I remember Peter's call in 2004, "The Convention is Final" and went to work for his N.E.I. Treatment Systems company in 2006. N.E.I.'s VOS is a valid no filter BWTS, the first BWTS to be "IMO" Type Approved in 2007. Sometime after that we were approached to write a proposal for the Pioneer Spirit. I did a double take of the ballasting numbers, then had a long call with the representative engineers. That was the first time I really got to think about the issues facing a semi-submersible heavy lift vessel or rig trying to operate in compliance with the ballast water regulations. The best I could come up with at the time was that VOS did not use filters and was not flow constrained, normal operation would require a VERY large system though.

The rapid in-place flooding and deballasting of a semi-submersible vessel is the "thing" which allows a semi-sub to do its job in the way it was engineered to do – and there is no lack of specialized engineering on these vessels. But the IMO and U.S. BW regulations remain deaf to the operational realities of what could be described as niche maritime operations. The extent of the impact both; numerically, the number of vessels and operators, and operationally, to the safe economic completion of work is, I believe, wildly underestimated by regulators.

I had extended meetings in Holland introducing VOS and actively discussed getting the Dutch Administration to propose an Exception to be added to The Convention specifically for semi-submersible Heavy Lift operations. In 2010 The Netherlands presented MEPC 61 with a document clearly describing the "operational barriers" for these vessels, but no specific exception was passed. This leaves heavy lift vessels all having to comply with the The Convention. There is no recourse, only clean tanks before every in-place flood and discharge operation, or treat all ballast water whether used for, in-place ballasting, trim, transit ballasting or otherwise.

The IMO's BW Convention does list five Exceptions which allow a vessel to discharge without completing treatment IF the conditions of the Exception are met. The fifth Exception, A-3.5, looks as though it should fit HL operations, allowing a vessel with a conventional BWTS to complete in-place ballasting/deballasting, without treatment:

Regulation A-3 Exceptions....

5. the discharge of Ballast Water and Sediments from a ship at the same location where the whole of that Ballast Water and those Sediments originated and provided that no mixing with unmanaged Ballast Water and Sediments from other areas has occurred. If mixing has occurred, the Ballast Water taken from other areas is subject to Ballast Water Management in accordance with this Annex.

At first glance it seems as though this exception should apply to a heavy lift vessel. However, when reviewed with careful attention to operations and ballast tank construction it is soon understood an in-place flood and drain operation will leave much untreated ballast trapped in the tanks with no way for an in-line BWTS to go back and treat. It does not matter if the flood and drain is by gravity or pumped, the exception will not apply. This is a very unforgiving situation for many HL operations and until recently there was no way around either cleaning tanks or treating all ballast waters.

At MEPC 63 (2011) and MEPC (64 (2012) Holland and Singapore submitted "Internal Circulation" BWTS (ICBWTS) as solutions for semi-submersible and drill rigs respectively. The submittals described how an ICBWTS meets A-3.5 but did not list any commercially available systems.

Why does an ICBWTS satisfy Exception A-3.5? An ICBWTS makes each ballast tank its own treatment event, there is no untreated residual. This does lead to a larger control program and additional piping, but it makes two fundamental differences regarding compliance.

First: Treatment and neutralization is recorded in the tank before discharge commences so the vessel's technical compliance with the TA Certificate is already recorded before discharge begins, no conditioning or treatment during discharge, pumped or gravity. This is attractive for all vessels as treatment/conditioning by in-line BWTS during discharge is the source of many non-compliant BW discharges.

Second, and most applicable to heavy lift operators: The ballast tank is the "treatment event". This means a semi-submersible can enter a project location with its tanks registered as treated and neutralized "ready for discharge" - whether partially full or not does not matter. Once at the project location the vessel can flood any tanks by pump or gravity, and then discharge any tanks, by pump or gravity and will not have to treat any of that water until moving to the next location.

In the language of the exception; the water and sediments in the tanks as the vessel enters the project location have been fully "managed". This fully managed water can be mixed with local water and discharged in the same location. As the vessel sails away it will have to treat those tanks again, but the in "location" operations can all be completed without treatment.

It is unfortunate the U.S. ballast water rules do not have the same Exception (VIDA may change this, lobbying will help), but for the rest of the world a vessel which needs to complete in-place ballasting/deballasting operations can do so without treatment.

From an operational point of view, an ICBWT has many fundamental advantages for most vessel types; no filters, no power use in port, no change to cargo or ballasting activities, no matter BW quality, reduced impact of failures - the vessel is at sea, control over compliance (today's sleeper issue in the BW regulatory field) etc. Internal Circulation can be a fundamentally more elegant solution to BW compliance for a commercial vessel. Internal Circulation is the way for a Heavy Lifter to satisfy Exception A-3.5.

fig. 07/ Ocean Onyx Deckhouse

fig. 08/ inTank BWTS in situ - single unit serving all four pontoons

If IC is such a good solution, why are there no ICBWTS on the market? For years the Cold Harbour inert gas based ICBWTS has been available but without USCG Type Approval. More recently another ICBWTS has come to market; Using DNV-GL as the Independent Laboratory inTank was USCG/ IMO Type Approved last year. inTank is a BWTS product of Envirocleanse LLC based in Houston Texas.

As an independent Consultant in 2016, I read the first Press Release for the inTank BWTS. I'd not heard of Envirocleanse, but I'd heard of Berkshire Hathaway, the owner of their parent company so I reached out to Matt Hughes, VP at Envirocleanse. I was soon sure this ICBWTS would make it to market, now it has.
inTank has received orders for; Capes from CMB Bocimar and Alpha Bulkers, Heavy Lifts from NYK, MR's from Enterprises and VLCC's from Pantheon Tankers and a leading ME VLCC owner operator, with half a dozen systems now installed.

Significantly for semi-submersible vessels, Diamond Offshore installed inTank aboard their recommissioned semi-submersible rig the Ocean Onyx. This sale was specifically because inTank allows a semi-submersible to complete its normal operations with minimal disruption due to ballast water treatment.