

## SUPSALV HIGH SPEED VESSEL OF OPPORTUNITY SKIMMER SYSTEM

The Navy Supervisor of Salvage (SUPSALV) “High Speed” Vessel of Opportunity Skimmer System (VOSS) is a new state-of-the-art spilled oil recovery system based on the NOFI Current Buster™ oil collection and containment system used in combination with a variety of skimmer heads, pumps, and ancillary components packaged by SUPSALV in a standard 8’x8’x20’ shipping container. This VOSS package allows customizing an oil recovery system suited to a wide range of operating conditions, available vessel types, system configurations, and spilled oil characteristics.

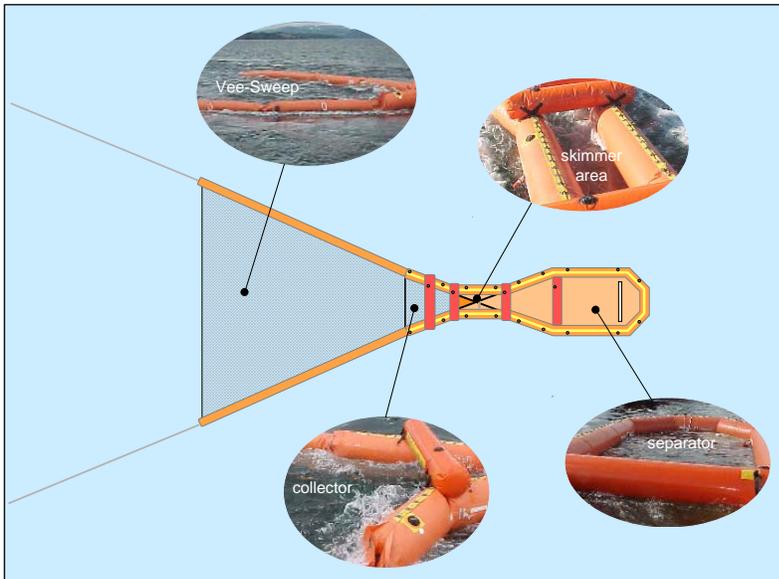


Figure 1 - NOFI Current Buster Collection/Containment System

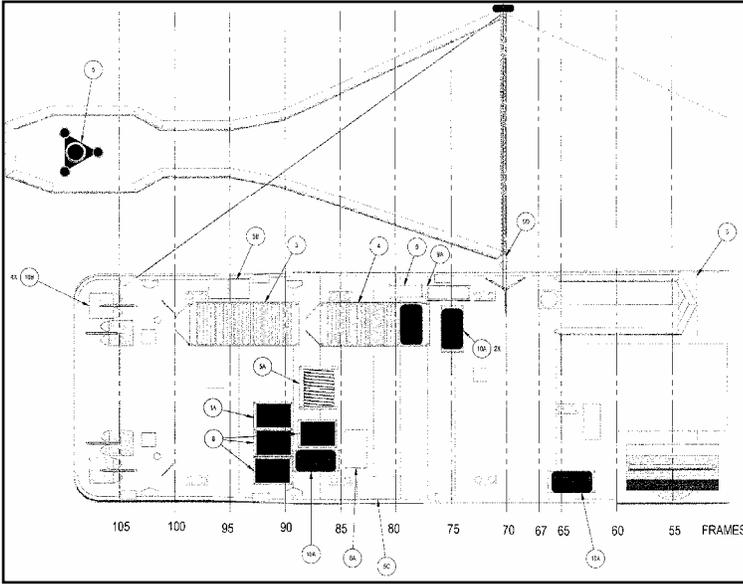
The key component of the SUPSALV High Speed VOSS is the NOFI Current Buster™ spilled oil collection and containment system developed in Norway by NOFI Tromso AS (see system illustration at the left in figure 1). The unique NOFI system design allows effective oil collection and containment at towing speeds of up to 4 knots, as compared with the maximum of 1.5 knots possible with previous towed containment boom designs. This relatively high speed capability, proven in Navy test tank trials, allows effective oil recovery in high current areas, allows skimming a

larger sea surface area in a given time period, provides for improved support vessel maneuverability, and permits the use of skimmer support vessels that cannot operate at the lower skimming tow speeds.



Figure 2 – SUPSALV High Speed VOSS in 3-vessel configuration

Figure 2 at the left shows the SUPSALV High Speed VOSS in a three vessel configuration exercise, with sweep boom extensions to increase system sweep width and thus increase oil encounter rate. A pair of SUPSALV tow boats advance the skimmer system through a simulated oil slick, while a third vessel moors alongside the NOFI containment (separator) pocket to position a skimmer head in the pocket for removal of contained oil. In an actual response operation, a larger skimmer support vessel would normally be required with on-board recovered oil storage, or the skimmer support vessel could tow an oil storage bladder.



**Figure 3 – SUPSALV High Speed VOSS in single-vessel configuration**

Figure 3 to the left illustrates the SUPSALV High Speed VOSS in a single-vessel configuration alongside a large support vessel (in this case a Navy T-ATF with a full deck load of SUPSALV spill response support systems). In this configuration, the NOFI system (in the upper half of the illustration) is towed from an outrigger spar, secured and stayed fore and aft to the support vessel (in the lower half of the illustration). A triangular generic skimmer head is illustrated in the NOFI containment (separator) pocket. The skimmer would be operated by personnel on the support vessel and recovered oil would be pumped

from the skimmer head to tanks on the support vessel or to a SUPSALV oil storage bladder towed astern of the support vessel. The single-vessel configuration with a large support vessel offers obvious advantages for sustained offshore operations. Under some conditions the 45' system sweep width offered by the SUPSALV outrigger system can be increased with an additional tow boat and extended sweep boom outboard of the outrigger. And a second High Speed VOSS system could be supported off the starboard side of the large support vessel indicated in figure 2.



**Figure 4 – Typical Small Disc Skimmer being placed in the Containment (Separator) Pocket**

As noted above, the SUPSALV High Speed VOSS package includes a range of interchangeable skimmer heads, pumps, hoses, and ancillary components for removing oil from the NOFI containment pocket and transferring it to on-board tanks or towed temporary storage bladders. Components are selected based on spilled oil characteristics (e.g. viscosity), sea state, volume contained, and available storage capacity (i.e. if storage is limited, a more efficient, lower capacity skimmer - resulting in higher recovered oil to water ratio might be preferred to a high capacity skimmer with lower recovery efficiency – more water to store and transport.



Figure 5 – SUPSALV High Speed VOSS in single-vessel configuration on USNS Catawba (T-ATF 168)