As a result of the experimental success to date thickening slicks for in situ burning in drift ice a research program has been undertaken to explore the use of herding agents for in situ burning in open water conditions as a rapid-response technique for oil spills offshore. The research involved two areas:

1. A series of comparative experiments was undertaken at the SL Ross lab with hydrocarbon-based and silicone-based herding agents in 1-m² pans, a 10-m² pan, small pans mounted on a rocking shaker and the SL Ross wind/wave tank to determine the best of several candidate herders for use on warmer water. Overhead digital photographs were taken and analyzed by computer to determine the herder effectiveness in the pan tests. The wind/wave tank tests were videotaped.

2. Surfactant film persistence (i.e., how long the monolayer generated by a specific herding agent will last as a function of sea state) and to what degree periodically replenishing the film can counteract this was investigated in an 8-day test program at Ohmsett from May 13 through 20, 2011. The experiments took advantage of the facility’s newly upgraded wave making capabilities. Overhead digital video and photographs were taken to qualitatively compare and determine the persistence of three herding agents in calm conditions, a swell and breaking waves. A total of 11 experiments were completed with three herding agents (USN, Silsurf A108 and Silsurf A004-D) in the three wave conditions: 9 tests as per the test protocol plus an additional duplicate test and a control (no herder). Based on visual observations of the tests the following conclusions can be drawn:

   - The monolayer of each of the herders will survive for more than 45 minutes in a calm sea.
   - The presence of breaking or cresting waves rapidly disrupts the herder monolayer and the oil slick resulting in many small slicklets.
   - The monolayer survives for considerable periods of time in a swell condition, but the constant stretching and contracting of the herded slick results in elongating the oil slick and slowly breaking the slick into smaller segments.
   - The Silsurf A108 herder performed noticeably better than the other two herders in all test conditions.