

1 August 2010 – Ocean Veritas Status Report - Cruise 12 - Day 1
Compiled by: Don Aurand, Ecosystem Management and Associates (for BP)

Sampling today began with a repeat of Station BM151, sampled on 30 July. Then, based on coordinates provided in Figure 7 the 31 July 2010 ASA SIMAP subsurface oil trajectory prediction, it was our intent to move down the predicted axis of the plume to the southwest.

In addition to the subsurface monitoring usually undertaken, the Ocean Veritas has a NOAA analytical team on board collecting and analysing DO samples from a range of depths using automated titration methods in accordance with Dispersant Monitoring and Assessment Directive – Addendum 4. The sampling distribution required by Addendum 4 has been a factor in station selection, given the need to get 60% of the DO samples from depths greater than 1000 m.

Weather for the day was fine and sunny with 1-2 ft seas (or less) but essentially no wind and extremely hot. No surface oiling was observed. A total of 4 CTD casts were completed, as summarized below and shown in Figure 4.

Our results at station OV149 were essentially the same as those observed yesterday at this location by the Brooks McCall. Since this was the first station where water for Winkler titrations was obtained, we opted to take our standard eight sample depths, with four having two bottles, one solely for Winkler analysis. After sampling at this station was finished it was obvious that, since there was no NOAA NRDA sampler on board, there would be sufficient volume to take all the samples, including the Winkler sample, from one bottle. Based on that, we determined that we would continue with eight depths – drawing all samples from each bottle, and use the extra four sample bottles for duplicate or triplicate Winkler samples at selected depths. Since each of these replicates is taken from an individual Niskin bottle, they are listed in the daily data sheets as individual samples at the same station and depth.

After completing OV149 we moved southwest to a position selected based on coordinates ($28^{\circ} 19.76'$, $89^{\circ} 9.13'$) given in Figure 7 of the ASA SIMAP report (OV150). The coordinates from Figure 7 are listed here in parentheses because the ASA coordinates are in decimal minutes and our data sheet lists coordinates in decimal degrees, so this will help the reader identify the site. This station had a very weak, but apparently real signal between 220 and 240 m, which was associated with a DO dip. This suggests that there may be a very dilute area of hydrocarbons in this location, but at a much shallower depth than usual.

We then continued to the southwest to another position taken directly from Figure 7 in the ASA SIMAP report ($28^{\circ} 8.39'$, $89^{\circ} 24.40'$). There was no indication of hydrocarbons at this station (OV151) and no obvious DO dip.

At this point we made a decision to move back to the northeast since OV150 was only approximately 825 m deep and OV151 not quite 1100 m deep. Given the need to obtain 30 of 50 Winkler samples from below 1000 m we returned to an area of deeper water, but still along the projected plume trajectory.

Station OV152 was located approximately 70 km southwest of the wellhead, and roughly 8 km ESE of OV149. There was a very weak fluorometric signal centered around 1165 m which was associated with two small DO dips at 1165 and 1192 m. The signal was extremely faint, so much so that it was marginal to report it at all.

No indications of oil or dispersant were found with the LISST particle analyzer or the fluorescence intensity ratios.

Station	Position from wellhead	Fluorescence signal	Signal depth	Comment
BM151 OV149	72 km SW	No signal	-	Two slight dips in the DO profile (0.5 mg/L) were seen between 1110 and 1160 m. This is very similar to the results obtained yesterday by the Brooks McCall. The signal is very close to the bottom (depth estimated as 1201 m by the altimeter on the CTD).
OV150	90 km SW	Very Weak Signal	233 m	A very faint, but apparently real signal perhaps 20 m wide centered on the listed depth associated with a DO dip of approximately 0.75 mg/L
OV151	122 km SW	No signal	-	No significant changes in DO, but minor fluctuations were seen between 100 and 400 m.
OV152	70 km SW	Very Weak Signal	1165	Two very small peaks at 1165 and 1192 m, with associated slight dips in DO (<0.5 mg/L).

The day's sampling showed a faint indication of subsurface oil at two of the four sites. In both cases there was an associated minor reduction in DO. A slight depression in DO was noted at one additional station. The absence of any indicators of oil in the LISST, the minimal fluorometry signal and the reductions in DO suggest that we were observing the remnants of the previous plume after dilution and the natural breakdown of oil by resident bacterial populations.

Samples for Rotoxkit M analysis were collected from stations OV149, OV150 and OV151 at all eight sample depths. Five water depths were sampled at OV152. Results will be available tomorrow.

Dissolved oxygen testing conducted today consisted of the following:

- Continuous CTD Seabird 43 DO sensor readings
- YSI ProODO (optical probe) readings on all water samples
- YSI Ecosense 200 (membrane probe) readings on all water samples
- Winkler titrations on 23 samples from above 1000 m and 17 samples below 1000 meters.

Figures 1 through 3 compare the results for stations OV149, OV150 and OV151. The Winkler titrations for OV152 will not be available until tomorrow and so that station is not included in this report. While a detailed analysis has not been done, there is reasonable comparability between all four methods. The YSI ProODO meter does seem to be consistently higher than the YSI Ecosense 200. In general, the comparison between the Winkler titration and the Seabird CTD unit is the best relationship among the four. A more detailed analysis will be done when the study is complete.

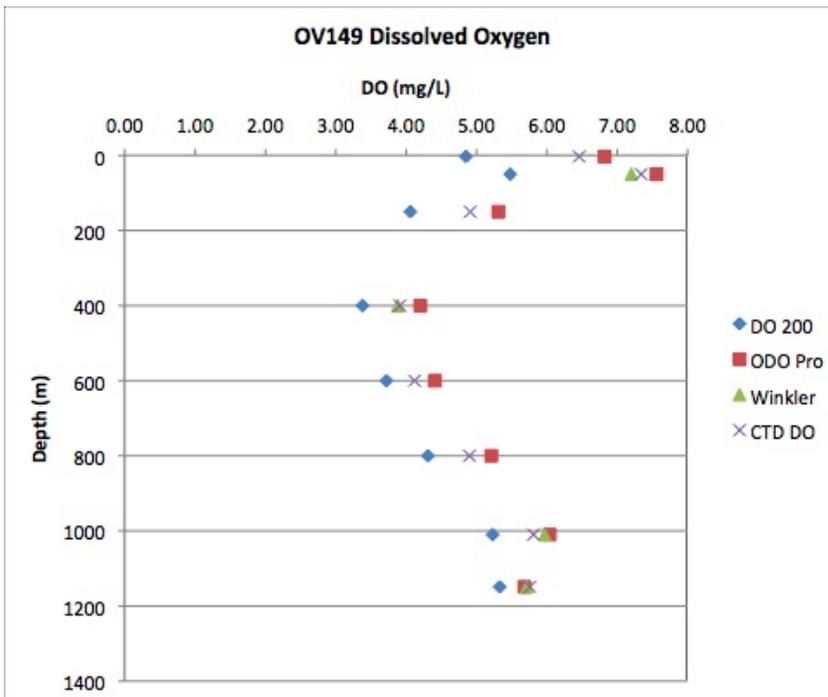


Figure 1.

**DO Comparison for
OV149**

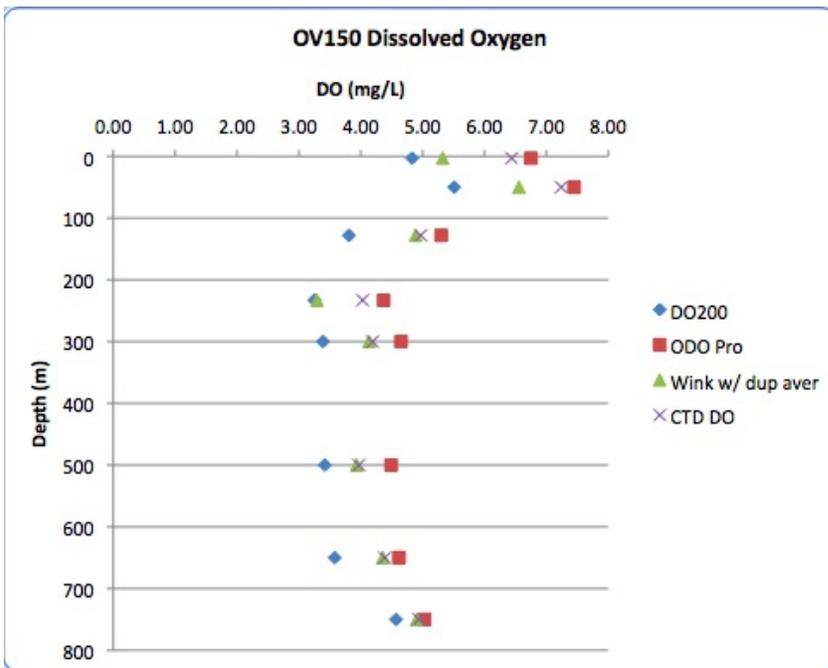


Figure 2

**DO Comparison for
OV150**

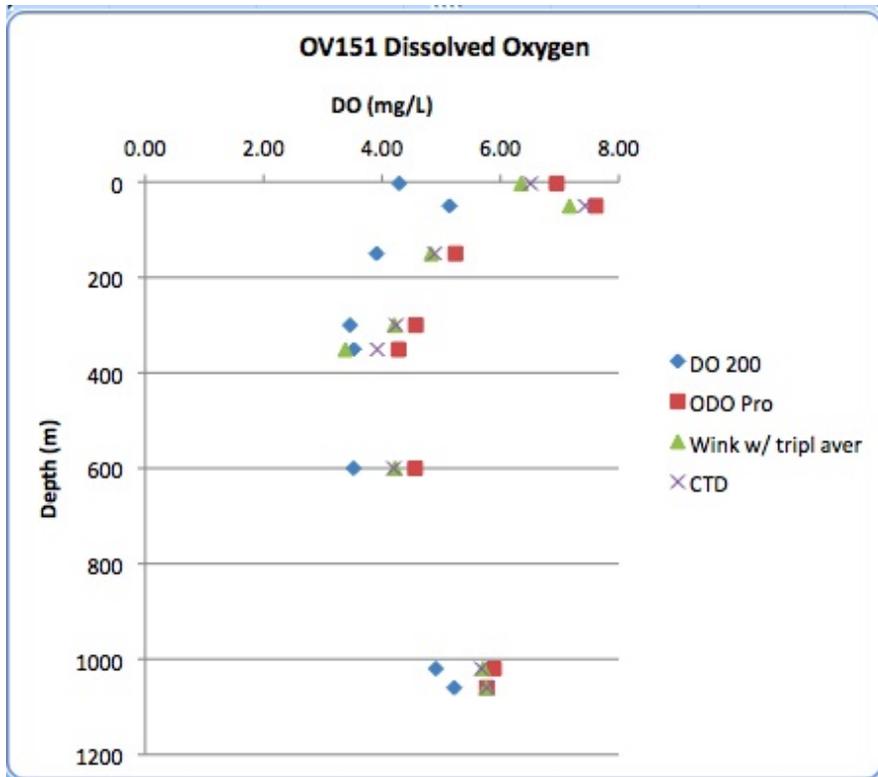


Figure 3

DO Comparison for
OV151

Air quality monitoring was conducted by Doug Childress of CTEH 4 to 5 times per hour while workers were on deck. VOC's, H₂S and SO₂ were measured utilizing a MultiRae Plus, with recorded measurements in the range from 0.0 ppm to 0.0 ppm. Benzene measurements were taken approximately every 2 -3 hours as a matter of routine utilizing an UltraRae 3000, with all measurements reading 0.00 ppm.

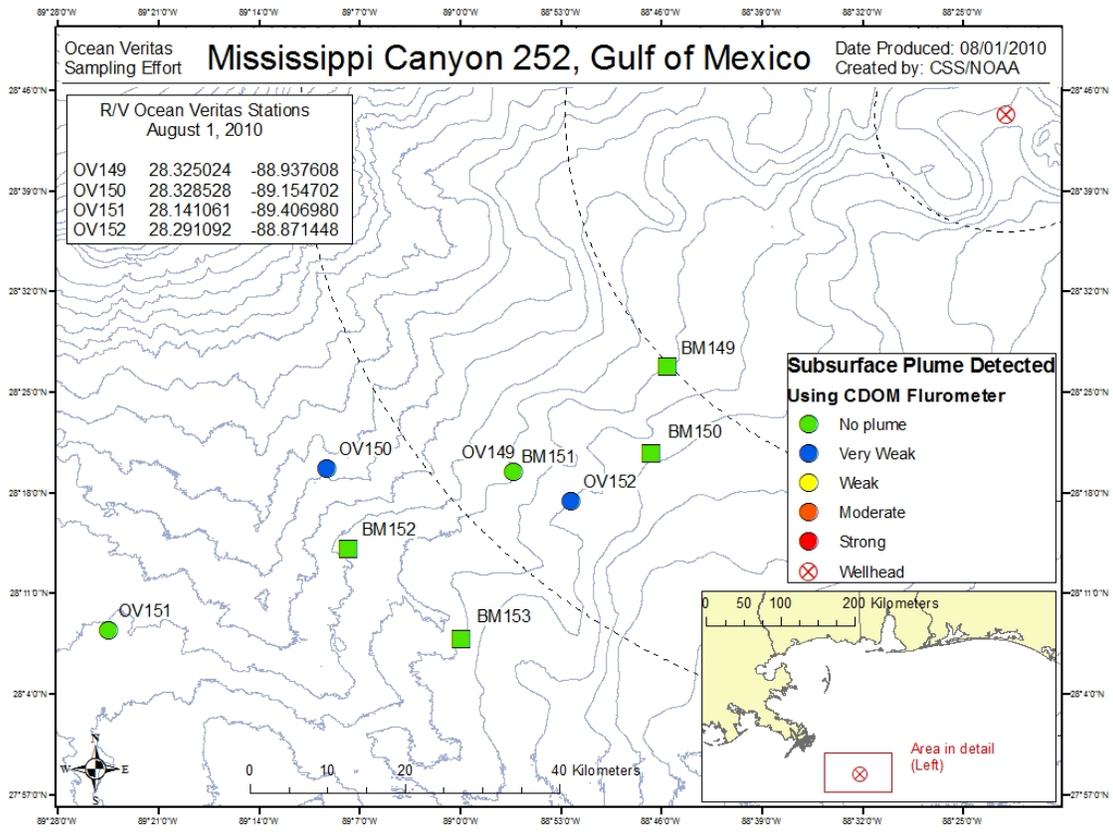


Figure 4. Station Locations for 1 August 2010.

Staffing, R/V Ocean Veritas, Cruise 12 August 1-3, 2010		
Name	Affiliation	Role
Scientific Staff		
Don Aurand	EM&A	Chief Scientist
Doug Childress	CTEH	Industrial Hygienist
Michelle Kenny	DFO	Particle Analysis
Jay Bugden	DFO	Particle Analysis
Tim Mayer	EM&A	Toxicology
Rich Ascough	Entrix	Sampling Technician
Mark Deuger	Entrix	Sampling Technician
George Berbarian	NOAA/CSS	Winkler DO Determinations
Wayne Matten	NOAA/CSS	Winkler DO Determinations
Michelle Stogner	NOAA	Data Management
Dan Pisegna	Fugro	Party Chief Oceanography
Ward Bekins	Fugro	Oceanography Team
Hannuman Bull	Fugro	Oceanography Team
Clay Harbich	Fugro	Oceanography Team
Mike Guzman	Fugro Chance	Navigation
Jhana Enders	EPA	Agency Rep.
Ship's Company		
Perry Rosenthal	Master	
Eric Houtary	Chief Mate	
Bud Hanson	Second Mate	
Doug Brock	Chief Engineer	
Lorenzo Cristano	QMED-1	
Mohammed Nartay	QMED-2	
Tim Pitarys	AB-1	
Nate Compton	AB-2	
Jose Valentine	AB-3	
Dakota Russel	Ordinary	
Aaron Lanet	Cook	
Albert Massaru	Assistant Cook	