VOS Report for 2010 **(Canada)**

a. Programme description:				
Category	**No. of ships at 31 Dec 2010**	**Recruitments in 2010**	**De-recruitments In 2010**	**Comments**
Selected				
Selected AWS				
VOSClim				
VOSClim AWS	53	4	2	
Supplementary				
Supplementary AWS				
Auxiliary	2	2		
Auxiliary AWS				
Other				
National VOS Total	55			

National VOS Target	
National VOSClim Target	75 VOSClim AWS

b. Data management:	
Total number of ship observations (BBXX) distributed on the GTS in 2010	Total 178900 = Auto 172767/Manual 6133
Frequency of VOS data submitted to the GCC in 2010	

c. Shipboard Automatic Weather System				
Type	**No. of ships at 31 Dec 2010**	**Manual Input Yes / No**	**Method of Comms**	**2011 Planned installations**
AVOS manufactured by AXYS Technologies	18	Both	INMARSAT-C	Retrofit the remaining INMARSAT-C with IRIDIUM
AVOS manufactured by AXYS Technologies	35	Both	IRIDIUM	We intend to install 5-7 new AVOS this year

f. Electronic logbooks: (TurboWin, SEAS, OBSJMA)		
Software & version	**No. of ships at 31 Dec 2010**	**Implementation plans**
1.23.0014 Bridge PC 1.16	8	
1.23.0014 Bridge PC 1.17	1	
1.23.0014 Bridge PC 1.21	2	
1.23.0014 Bridge PC 1.22	1	
1.23.0014 Bridge PC 1.23	1	
1.23.0015 Bridge PC 1.16	2	
1.23.0015 Bridge PC 1.17	5	
1.23.0015 Bridge PC 1.19	3	
1.23.0015 Bridge PC 1.21	1	
1.23.0016 Bridge PC 1.19	1	

1.23.0016 Bridge PC 1.21	10	
1.23.0016 Bridge PC 1.22	6	
1.23.0016 Bridge PC 1.23	3	
1.23.0016 Bridge PC 1.25	1	
1.23.0017 Bridge PC 1.21	2	
1.23.0017 Bridge PC 1.24	3	
1.23.0016 Bridge PC 1.25	2	
UNKNOWN	1	Canadian Enterprise (VCJM)
		All new installs and retrofits will be version 1.23.17…Bridge PC Software should be updated on next inspection.
TurboWin Version 4.5	2	The MSC may recruit additional VOS Auxiliary ships who will utilize TurboWin software, with delivery of observations via email. Ships traversing Northern waters will be the focus of such recruitments.

g. Major challenges and difficulties:

- Resource restraints in MSC Informatics Section have delayed our program in submitting the delayed mode IMMT data to the GCCs. We are currently working with our Regional PMO's and the GCCs to have this issue resolved in the coming year.
- Data Collection rate is low in the high northern latitudes and Arctic with INMARSAT. This will be resolved once the remaining 18 ships are retrofitted to Iridium in the next year.
- MSC continues to strategize on how to increase the number and frequency of manual observations from AVOS ships. In the coming year MSC plans on revitalizing their Marine Incentive Program and also provide additional training to ship crews on taking manual observations.
- Accurate SST measurements remain an issue due to mounting location of sensor and technique.
- We have faced challenges retrieving AVOS equipment from ships no longer sailing from Canadian ports due to changes in vessel ownership, or changes in trade routes/contracts.
- As early adopters of the AXYS AVOS system, we have had to work through a number of technical problems which continue to cause gaps in data record, as well as increased requirements for system resets and unscheduled maintenance.
- The MSC intends to recruit an additional 20 vessels over the next 2-3 years, with at least 15 of these focused on vessels that will operate in Arctic waters. It has proven to be difficult to find suitable vessels, while at the same time keeping up with vessels who have left the network. For example, we expect to lose up to 4 vessels on our Pacific coast this year. Three of these ships routinely traversed the North Pacific on trade with Asia.

h. Research / development / testing:

- The MSC continues to implement Iridium Telemetry on the operation AVOS Network. 35 ships have been retrofitted to date with the remaining 18 ships scheduled for Iridium retrofit in the coming year. The use of Iridium continues to be very reliable, with excellent performance in Arctic waters. Due to the significant costs savings, MSC will continue to receive data on an hourly basis from all Iridium vessels.
- Iridium telemetry also offers opportunity for bi-directional communication with ships, allowing for configuration changes, sensor suppression, as well as system reset (assuming Iridium modem is functioning). The ability to contact the system remotely has proven to be a very cost effective way to ensure data continuity and avoid expensive non scheduled site visits.
- Investigation of alternate means to automatically obtain SST continues, given the challenges of the current system that relies on either engine intake or hull-contact sensors.
- The MSC will validate/verify the requirement and possibly a different solution for collecting Relative Humidity measurements.
- The MSC is presently evaluating options to install sonic anemometers on AVOS vessels. It is hoped that the non-mechanical sensors will reduce maintenance costs and extend life of operation. Heating of the sensors may also be possible for ships operating in icing conditions.
- In 2010 the MSC started to receive observations from VOS “Auxiliary” vessels who utilize the TurboWin electronic logbook to create the FM13 message for delivery via email. Note: These VOS “Auxiliary” vessels do not utilize standardized meteorological sensors, and there is no on-going calibration or maintenance performed.

i. Other comments:

- Data from AVOS ships with IRIDIUM communication are available on the GTS under the header “SI/SN/SM VD02 CWAO”
- Data from VOS auxiliary ships are available on the GTS under the header “SI/SN/SM VD03 CWAO”
- MSC will make required transition to BUFR dissemination when templates are finalized by JCOMM and SOT.