RVTEC Report
for UNOLS Winter Meeting
February 6-8, 2008

The 2007 RVTEC meeting was held November 6-8 at Moss Landing Marine Laboratories. The meeting was very productive with lively discussions on various topics.

Matt Hawkins discussed and answered questions regarding the revised Safe Working Load Guidelines that the RVOC Safety Committee has been developing.

Mr. Phil Gibson provided an interesting and educational presentation on determining wire capabilities and a history on the UNOLS wire currently in use.

Bob Arko talked about Data Archival and the progress made within the fleet.

The group agreed to include information regarding wood packaging in their pre-cruise planning documents.

RF Frequency Spectrum issue was discussed – Report presented separately to the Council

Stewart Lamerdin was reelected and will serve a second term as the Vice-Chair.

The 2008 RVTEC meeting will be hosted by the University of Miami. Expect to meet in early November. Updates will be posted on the UNOLS website.

TWIC – Transportation Workers Identification Credential

The Transportation Worker Identification Credential (TWIC) is a security measure that will ensure individuals who pose a threat do not gain unescorted access to secure areas of the nation's maritime transportation system.

TWIC was established by Congress through the Maritime Transportation Security Act (MTSA) and is administered by the Transportation Security Administration (TSA) and U.S. Coast Guard.

TWICs are tamper-resistant biometric credentials that will be issued to workers who require unescorted access to secure areas of ports, vessels, outer continental shelf facilities and all credentialed merchant mariners.

This new identification system for mariners is likely to impact the fleet in some manner. How much and to what degree is still unknown.

RVTEC discussed this issue and concluded that the group will recommend all marine technicians obtain TWIC.

We also concluded that we would recommend to the UNOLS Council that Chief Scientists obtain TWIC. The reason for this is if a UNOLS vessel mobilizes in a secure facility TWIC will be required to gain entry to the facility and/or vessel. Anyone not possessing TWIC will have to be escorted to and from the facility. The Chief Scientist would be responsible for 'escorting' members of their group.

RVTEC has been working with RVOC and the two groups have agreed to the following suggestions to present to the Council for consideration.

1) All documented Mariners required to have TWIC by regulations.
2) All Technicians should be required by their operation/institution to get TWIC.
3) HIGHLY RECOMMENDED that all Chief Scientists normally sailing out of secure facilities to get TWIC, otherwise science mobilizations/logistics may be jeopardized. PI's should check with their UNOLS operating institution for advice.

HiSeasNet - Antenna Shadowing Issue

During the October meeting, the UNOLS Chair delivered a letter she received regarding shadowing issues with HiSeasNet antenna installations to me for action. I forwarded this letter to Dr. Jon Berger, Principal Investigator for the HiSeasNet Project.

This issue was also discussed at the RVTEC meeting and in subsequent email transmissions after the RVTEC meeting.

RVTEC's response and Dr. Berger's email follows:

To: Dr. Marcia McNutt, UNOLS Chair

From: RVTEC

Date: January 18, 2008

Back in October 2007 you forwarded a letter to me that discussed "shadowing" of the C-Band HiSeasNet antennas on the Global Class UNOLS vessels. This letter was forwarded to Dr. Jon Berger, Principal Investigator of the HiSeasNet project and his response is attached as Appendix 1. This issue was also openly discussed during the RVTEC meeting in November.

RVTEC would like to respond with the following input: For the Global class ships determining the antenna location was a difficult proposition. The physical size of the antenna would have required costly superstructure modifications to reinforce weight bearing bulkheads and to ensure ship stability. The funding was not available at the time to make the superstructure modifications for optimal antenna location. The final locations resulted in areas where there are obstructions to the signal resulting in loss of the satellite link until the ship can change heading. This obstructed area is also dependent on the ship's position as higher latitudes require the antenna to have a lower angle of elevation which results in a larger area of obstruction.

The goal of the HiSeasNet project has been to get this system installed on all ships, Regional and Intermediate as well as the Global class ships so it is available to everyone and all science projects. Ku-Band systems (for smaller vessels) and C-Band systems have been installed on nearly all the UNOLS vessels. By the end of 2008 only two ships, the RV Sproul and Sharp, will not have HiSeasNet installations.

We suggest that the HiSeasNet project and the RVTEC group work together to determine improvements that can be made to the system(s). Ideas such as a second antenna system for all ships, increased bandwidth, or a mobile system that could be installed on ships whose scheduled projects require 24/7 Internet access, etc. Recommendations, which would include costs and detail improved capabilities, from these discussions could be sent to the UNOLS Council for the Council's help to gain support from the funding agencies.

Proposals are being written, submitted, and funded relying on the ability of the HiSeasNet systems to communicate with shore-based data systems and personnel for successful completion of their research. RVTEC suggests that the Science Mission Requirements (SMRs) be updated for Regional, Intermediate, and Global class vessels to include optimal placement of the appropriate HiSeasNet antenna to ensure an unobstructed signal path.

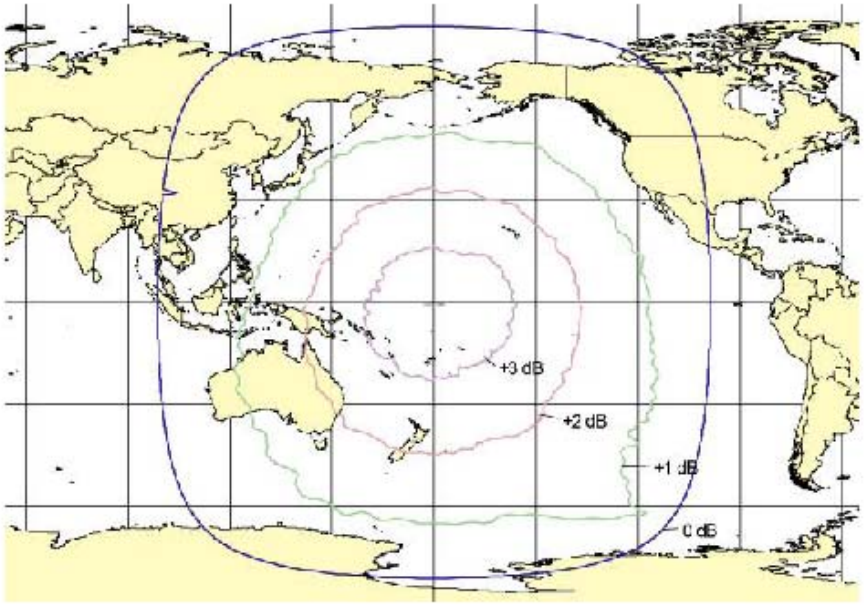
Sincerely,
Bill Martin
RVTEC Chair

Appendix 1
Dr. Jon Berger's Response

Bill:

Sorry for the delay in answering this email. Here are my comments.

1. In order for the HiSeasNet (or any other C- or Ku- band satellite) communications system to work there must be an unobstructed line of sight between the ship's antenna and the satellite transceiving its signal. The azimuth and elevation angles of this line of sight depend on the relative locations of the ship and satellite. For example, the satellite we use in the Pacific is located above the equator at 180 degrees longitude. When the ship is near these coordinates the antenna points approximately straight up and no shadowing should take place. However as the ship approaches the edges of the beam (see blue line in the figure below) the elevation angle gets lower and lower(0 degrees for the blue line) and hence shadowing may occur due to blockage of parts of the ship's superstructure or appendages.



2. There are two ways to alleviate this shadowing; one is to elevate the antenna above all superstructure and appendages. (See for example the installation on the NOAA R/V Ron Brown below)

The second way, favored by the Cruise ship industry, is to install redundant antennas so that when one is blocked the other is not. Neither of these methods are particularly attractive for the UNOLS fleet but I believe each ship might be able to improve performance by judicious re-location of the existing antenna.