



The Pipeline Periodical

SeaView Systems' Quarterly
Newsletter

Summer 2006

Volume 2

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www.seaviewsystems.com

matthew.cook@seaviewsystems.com



Come and visit us at HydroVision 2006

Booth #955

Portland, OR Convention Center

August 2nd -August 4th

Warm Greetings

Welcome back to those who received the first volume of this periodical. To those who have just signed up, I hope you find this quarterly newsletter of interest and of some benefit to your organization.

Summer is well underway and it has proved to be a hot one. This suits me just fine as I personally will take the heat any day over a Michigan Winter. I haven't had too much time to sit back and enjoy it yet as business continues to move ahead solidly and we are about to close out a strong quarter.

Last Quarter

Ormen Lange, Norway

We left off the last newsletter having just returned from the NOAA trip to the Caribbean. A week or so to regroup all equipment and I was setting up to head over to Norway for a couple of weeks working offshore as a project engineer for Nexans Norway supporting two of their Capjet pipeline trenching vehicles working on the Orman Lange field.

This work was a throwback to my old life working offshore. The project was very interesting and I enjoyed the opportunity to catch up with many old friends and meet some new ones. I was working as the night shift superintendent aboard the DP support vessel Edda Freya working out of Kristiansund, Norway.

The Ormen Lange field in Norway is a large offshore natural gas field being installed on the site of a very large land slide remnant from the last ice age. The Storgata Slide as it is called covers an area similar to that of Great Britain. It is characterized by a steep 200m drop off at the point where the landslide occurred and a "rubble" field fanning out into the North Sea for hundreds of miles. The terrain presents some unique challenges to the owner, Norsk Hydro and such contractors as Nexans who are taking on the trenching work with their fleet of 1 MW pipeline trenching vehicles.



This is a shot of the 1 MegaWatt, 12m long, 14 Ton Capjet 650 being prepared to mobilize in Kristiansund, Norway. It is sitting in a ship building hanger. Probably the largest open building I have ever been in.



One of the two Capjet 650s loaded onto the Edda Freya. This photo was taken at 2:00am!



SeaView
Brochure.pdf

As part of our preparation for HydroVison 2006 we have issued an updated brochure. Please click the Icon to view.



Long Distance Remotely Operated Vehicle

Mackinaw City, MI

Back to the US. I arrived home at 6:00pm one night and I was up in Mackinaw City, MI with the Falcon DR ready to mobilize onto a dive barge for Veolia Environmental Services (ex Onyx Special Services) by 9:00pm the following day.

The project task was to provide Veolia diver and survey support with the Falcon DR. Veolia had two projects working in the Straits of Mackinaw diving to depths of up to 250ft in currents well in excess of 1 knot (possibly as much as 3 knots at peak times).

Fitted with an Imagenex 881a imaging sonar and a LinkQuest Tracklink HA1500 responder, the project was a great success. My respect and confidence continues to grow for the Seaeye Falcon DR. After 20 days of operating an average of 10 hours per day I experienced zero down time with the vehicle. The Falcon is a pleasure to fly and in contrast to earlier years where I was cranking well into every night to get a vehicle ready for the following day, the reliability was most welcome.

My friend and ex colleague from the University of Michigan, Mr. Hans Van Sumeren came up and ran the Falcon for a week. All who saw it were particularly impressed with the quality of the low light video that was generated by the standard Seaeye Falcon camera. In 250ft we were getting visibility out to 80+ feet.

Muskegon, MI

Returning home I had what proved to be a bigger task than I had anticipated to return all my equipment to Long Distance Pipeline Inspection mode. After the NOAA project and others all my sub assemblies were disassembled and all required to be re-integrated. A job I don't want to repeat in a hurry. No more cannibalizing the LDROV!

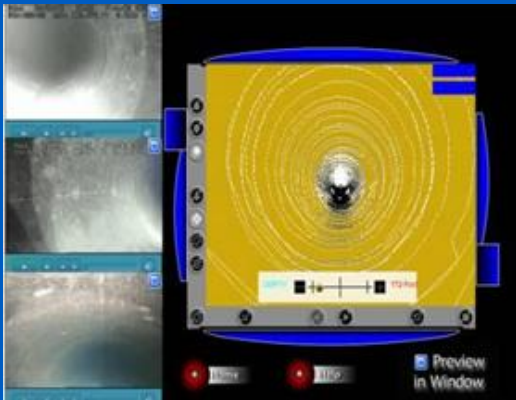
After a couple of weeks of intermittent work the LDROV was back ready to perform two pipeline investigations again for Veolia Environmental Services. These investigations involved penetrating Muskegon Heights Water Departments two intakes lines, one 42" and one 30". Due to the very warm weather we have been experiencing the lines could not be shut down totally for any length of time. Consequently the 42" was penetrated out to 4550ft against 0.8 knots of flow.

HydroVison 06

SeaView will make our trade show debut by exhibiting at HydroVison 06. Graphic designer Ms. Colleen Purcell has



[Seaeye Falcon DR](#)



[This image is a screenshot taken from the tunnel data viewer. Click on this image to be directed to the developmental website.](#)

been doing a champion job of developing our exhibit. I'm really pleased with the result and believe that with the help of Mr. Jeff Snyder of SeaVision Marine Services (www.seavisionmarine.com) who will be assisting me at the show, Hydro will be an excellent opportunity for us to showcase our full range of capabilities.

If you are heading to the show please stop by our booth 955. We would appreciate the opportunity to say "G'day" and discuss your projects and how we might be able to support them.

Custom 3 channel video/sonar data viewer

When you record as much data as we do during a typical pipeline investigation, the challenge becomes how to present it all in a manner that is meaningful and easily accessible to the end client.

To address this problem, I have commissioned the services of Mr. James Dragescue, an Electrical Engineer who I met through the University of Michigan. Among other things, James is very skilled at writing software in the 3D viewer language of VRML (Virtual Reality Markup Language). Over the last 8 months, James has been developing for SeaView a custom data viewer that will allow our clients to immediately access and display the recorded sonar data in a 3D format. In addition, the viewer will allow the user to view the 3 channels of video recorded at the same position as the sonar data.

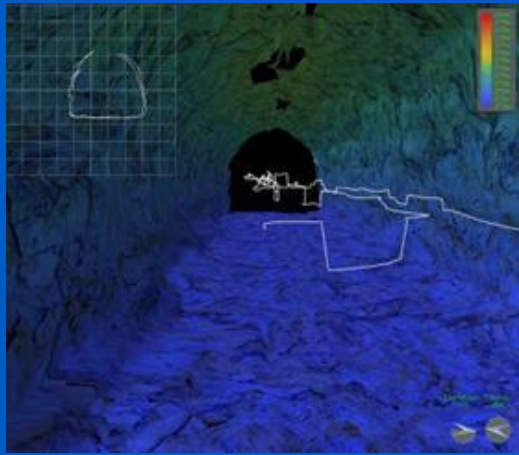
The user will be able to randomly access all data by driving a slider to a desired penetration distance. This is still a work in progress but we hope to roll it out as part of our service deliverables by the end of the year. I invite you to go to the following website to see how the viewer is coming along.

<http://www-personal.umich.edu/~jdragesc/SeaViewSystems/SeaView%20Systems.htm>

To use the viewer you will require a VRML viewer plugin to be installed into your web browser. Please go to the help section of the viewer for details on how to download this if you don't already have one installed on your computer.

Restricted access hydrographic survey using IMU

Lately I have been chewing the ear of anyone who will listen to me about the technology we put to use back in Newport,



This image is a screenshot taken from the CDL Tunnel Viewer. The viewer builds a 3D model based on the geo-referenced data points recorded by combining the IMU position with a profiling scanning sonar. Please contact us for a copy of a demonstration program displaying this technology.



Shown courtesy of SeaVision Marine, this is an example of a deliverable generated in part using data recorded with the minipos IMU system. The areas in red lay under two aircraft carriers with approximately 5ft of water under their keels.

Matthew Cook

SeaView Systems, Inc.

9890 Huron Creek Drive
Dexter, MI, 48130

Ph/Fax: 734 426 8978

Cell: 734 417 9362

E-mail: mcook@seaviewsystems.com

URL: www.seaviewsystems.com

RI and Battery Park in Manhattan.

Inertial Measurement Unit. What a gadget. Downright spooky! If Tasman, Cook or the others of the age of exploration could have seen this thing as a means of navigation I believe it would be the equivalent of us seeing a "teleporter" today as a means of getting to work.

Originally designed for navigating nuclear powered submarines and space craft, the IMU is essentially an array of very sensitive accelerometers (based around a fiber optic gyroscope) sensing movement in all 6 degrees of freedom. The device measures the rate of change of velocity in the fwd/rev, up/down, port/stbd planes as well as the corresponding rotational axis of the sensor. These accelerations are then integrated two times (the first integration giving velocity and the second integration giving displacement). This process is done many times a second to give the device the ability to not only dead-reckoning its position in space relative to a known start point but also to know its attitude to a very precise degree with respect to North and vertical.

When fitted to a specially designed skid on the Falcon DR and mated with Doppler sonar (to null out any drift errors when the unit is stationary) and a profiling scanning sonar, the system allows us to geo-reference any solid underwater object. This means we are able to say, model the interior of a tunnel or pipeline or perform very high resolution hydrographic surveys in locations otherwise inaccessible to conventional navigation devices (DGPS, acoustic positioning etc.)

I won't go on about it more here but invite you to read the paper written by Colin Crichton and Richard Hallyburton of CDL, the manufacturers of the IMU. Please click on the link to be routed to their website where you can download their paper [CDL flooded tunnel system](#) .

It is a very impressive technology. While CDL initially intended it for use in performing tunnel investigations we (SeaView Systems and SeaVison Marine Services) have been pioneering its application for performing other restricted access surveys.

Please do not hesitate to contact me if you would like me to give you further information about this technology, how we deploy it, the available deliverables and how they may be used to support your application.

