

DEFENCE *RiD* DÉFENSE

Characterization of Small Surface Targets Signature in the IR

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Canada

Damaged hull of the U.S.S Cole after being hit by suicide small boat at port in Yemen.

Source: Photo by Nelson Jemel. Associated Press.
<http://www.washingtonpost.com/wp-dyn/content/article/2000/05/03/AR200005030047.html>

Canada

This talk presents RHIB signature extraction methodology and results.

Miramer 2008 trial

Miramer signature editor

Results

Canada

Miramer trial objectives were to acquire IR signatures of small boat at different elevation.

DRDC Sensors

Canada

LWIR and MWIR images were saved on magnetic tape and digitized afterward.

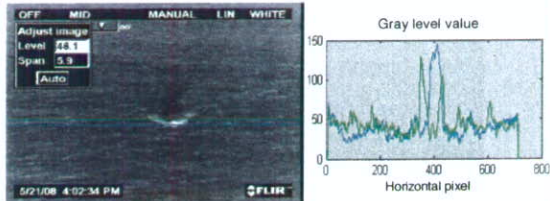
	ThermoVision3000 (LWIR)	Radiance (MWIR)
	<small>Image Source: FLIR</small>	<small>Image Source: imaging1.com</small>
Spectral band	8.0-9.2 μm	3-5 μm
Sensor type	QWIP	InSb
Sensor Size	640 x 480	256 x 256
Narrow FOV	1.3° x 0.96°	2.2° x 2.2°
Video outputs	NTSC	NTSC
Video compression	dvsd	dvsd
Image size	720 x 480	720 x 480

Canada

RHIB signatures were obtained from, static, inbound and outbound runs.

Canada

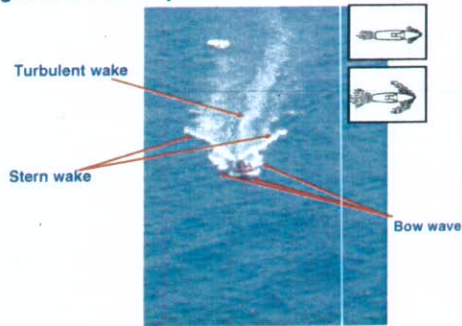
The double lobes of the stern wake are present in the horizontal profile.



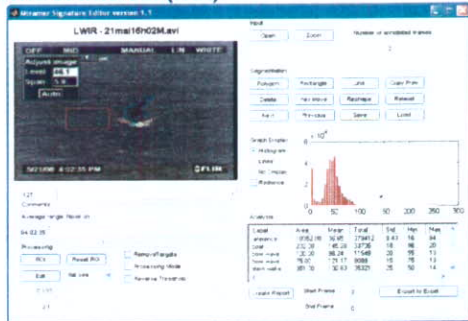
LWR sensor
May 21st, 2008



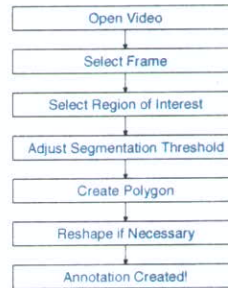
Bow wave and stern wake contribution to the boat signature will be quantified.



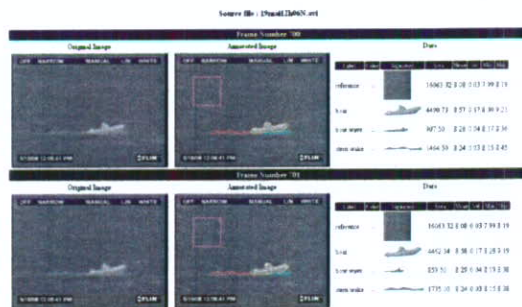
A signature editor (MSE) was developed to isolate regions of interest (ROI).



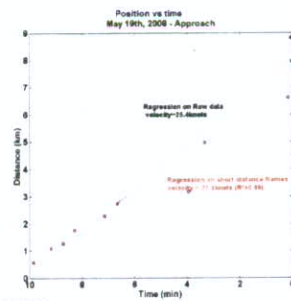
The methodology to isolate RHIB signature is based on semi-automatic segmentation.



A report is created with label name, image and statistical values.



The RHIB distance can be approximated with the MSE distance calculation option.



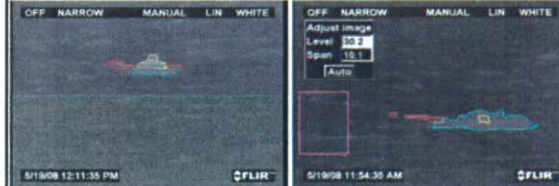
For distant target, the labelling is less accurate.



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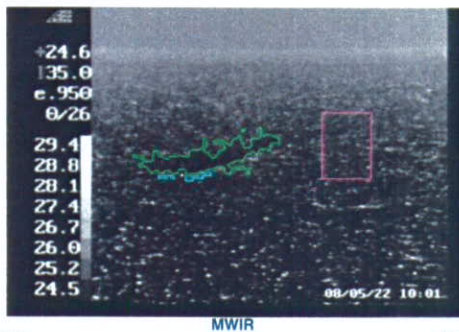
The segmentation between the boat hull and the bow wave is user-subjective.



AEREX

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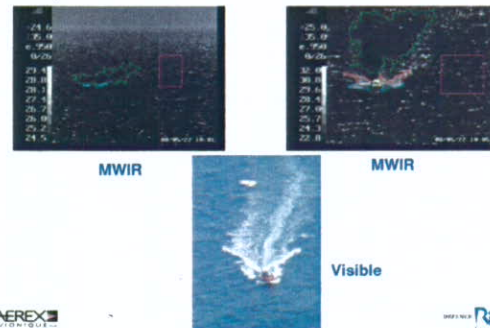
The "flat sea" phenomenon can be observed in both LWIR and MWIR.



AEREX

RT

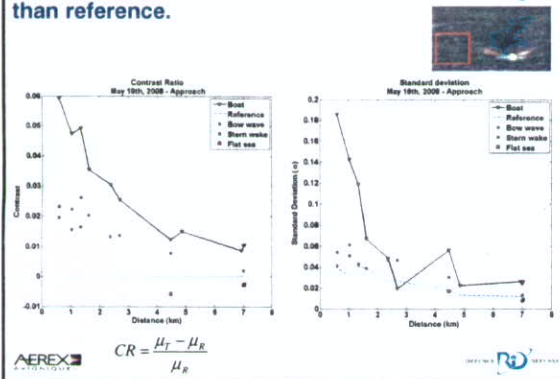
The "flat sea" phenomenon can be observed in both LWIR and MWIR.



AEREX

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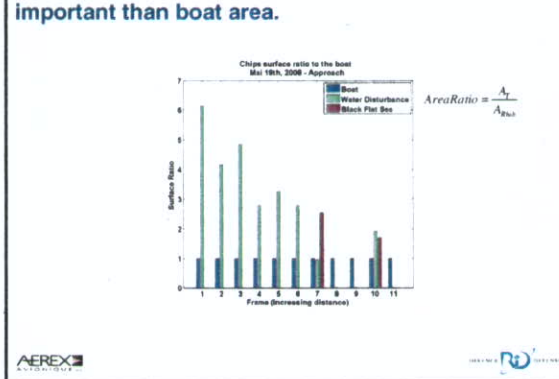
As expected RHIB and wave contrasts are stronger than reference.



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For close distance, water disturbance area is more important than boat area.



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In summary, segmentation was applied to RHIB and wave signature.

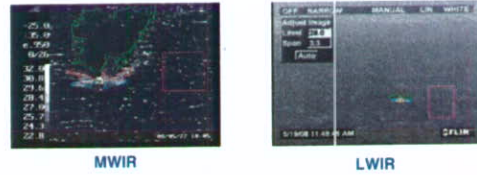


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The "flat sea" phenomenon can be observed in both LWIR and MWIR.



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