FATA MORGANA

TNO innovation for life

Royal Netherlands Navy's plans the replacement of the current LRS processing system. While this process is ongoing, an intermediate solution is necessary to assist the current LRS processing chain within the Walrus class submarines.

During the FATA MORGANA project, a stand-alone LRS processing system has been developed using COTS components, which processes and displays Flank & Towed Array data in a similar way as the current LRS system. This pre-prototype performs well, under operational conditions.

In the FATA MORGANA system, the LRS processing is divided into the following three steps:
– Data Acquisition
– Processing
– Data Display

The FATA MORGANA system is installed in the sonar room and in the command centre. The components in the sonar room take care of the data acquisition and signal processing. The components in the command centre take care of the display of the user interface. With respect to the current LRS processing, FATA MORGANA brings several improvements.

Some examples are:
– For the Flank Array hydrophones, pre-processing is applied in order to reduce the effect of local noise sources.
– In the Surveillance Wide Band and Classification Narrow Band modes, more frequency bins are computed and displayed

The FATA MORGANA LRS processing system has the following processing and user-interface functions:
– Broad Band
– Surveillance Wide Band
– Threat Verniers
– Classification Narrow Band for at least one sonar beam with the following functions:
  – Classification Wide Band
 – Classification Verniers
  – Demodulation of noise (DEMON)

EXAMPLES

The following figures show some examples of the main display screens that are produced by the FATA MORGANA system.
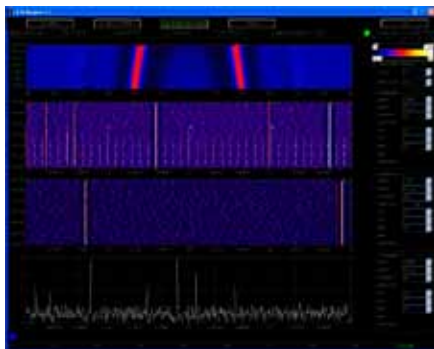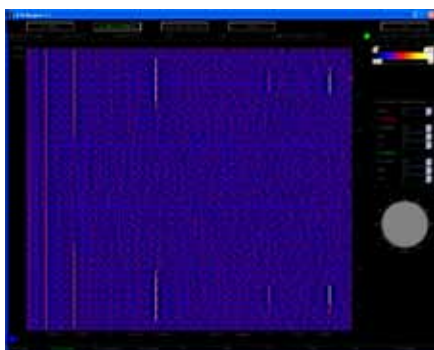

CLASSIFICATION NARROW BAND DISPLAY

The Classification Narrow Band display is used for the classification of targets by analysing the narrow band signature.
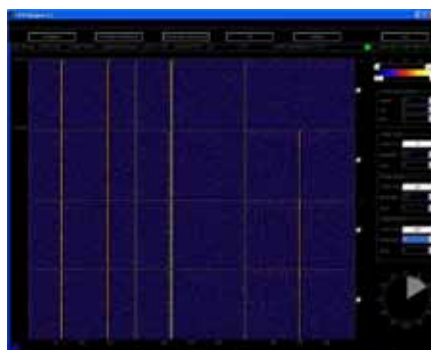

SURVEILLANCE WIDE BAND DISPLAY

The Surveillance Wide Band Display is used for narrowband detection of targets, i.e. looking for tonals.
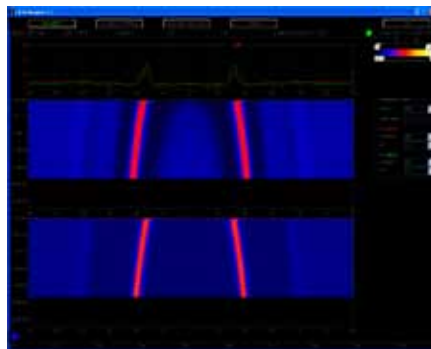
BROAD BAND DISPLAY

The Broad Band Display is used for the broadband detection of targets.

THREAT VERNIERS DISPLAY

The Threat Verniers Display is used to detect possible threats by analysing specific, user settable frequency bands.

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TNO

TNO is an independent innovation organisation that connects people and knowledge in order to create the innovations that sustainably boost the competitiveness of industry and wellbeing of society.

TNO focuses its efforts on seven themes including Defence, Safety and Security: TNO works on a safe and secure society by creating innovations for people working in defence organisations, the police, emergency services and industry.

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