



MK 137  
SRBOC  
LAUNCHERS



LAUNCHER  
ELECTRONICS UNIT

MASTER POWER  
PANEL

SYSTEM  
PROCESSOR

UNINTERRUPTIBLE  
POWER CONTROL

MASTER CONTROL PANEL

SHIP MANEUVER  
INDICATORS

BRIDGE CONTROL  
PANEL

## ALEX (AUTOMATIC LAUNCH OF EXPENDABLES) SYSTEM



### THE NEED FOR SELF PROTECTION

Countermeasures are designed to protect critical assets against the ever-expanding threats of modern warfare and are a necessary part of any ship's layered, self-defense scheme. Throughout history, the successful use of countermeasures to protect high value targets has repeatedly been the key to victory. Countermeasure techniques include hard-kill weapons to blunt or destroy the attacking forces and soft-kill on-board ECM, or off-board devices to confuse and disorient the attacking forces. Of these, off-board countermeasures usually provide the lowest risk and offer the most cost effective method to assure survival. With the explosive growth in the cost of modern weapons systems, cost effectiveness is the key advantage of off-board countermeasures. More-over, as future tactics change, off-board countermeasures can easily be upgraded and adapted to keep pace with inevitable improvements in offensive weapons systems.

### ALEX- AUTOMATED LAUNCH OF EXPENDABLES

As tactics for anti-ship decoy use have become more complex, a decoy-launching system operator, under stressful combat conditions, is less able to assimilate all necessary information and quickly execute the best decoy deployment tactics. To overcome this deficiency, Sippican's Passive Decoy Systems Group has developed the ALEX System, linking the decoy launching system to the ship's ESM, wind, and navigation sensors. ALEX continuously provides all the necessary information to the operator, automatically (or semi-automatically) selects the best tactic for optimum decoy deployment and, if desired, automatically (or semi-automatically) implements the tactic.

Built with components that take full advantage of today's COTS technology, ALEX is the Countermeasure System of the future. It can function as an integral part of the EW suite or as a stand-alone system, capable of independently protecting a naval combatant against the offensive threat of anti-ship cruise missiles (ASCMs).

ALEX is readily expandable, allowing the number of launchers and ready service lockers to be easily adapted to the needs and size of an individual ship.

ALEX may be operated in an automatic or a semi-automatic mode. Manual override is available at all times, regardless of the operating mode selected.

## ALEX DECOY LAUNCHING SYSTEM



The ALEX System provides shipboard management of expendable decoy cartridges via a computer controlled countermeasure system used with deck-mounted launchers.

The system uses either the 130mm SRBOC or 112mm RBOC launchers and is compatible with both the SRBOC and RBOC family of cartridges. Sippican's Passive Decoy Systems Group supplies RF, IR, hybrid RF-IR, and anti-torpedo decoys for use with the system.

The ALEX operator may select a fully automatic mode, semi-automatic mode, or execute a manual override capability, for the purpose of launching countermeasure decoys to defeat hostile missile guidance and fire control systems.

### ALEX FEATURES:

- Fully integrated with ship's ESM/NAV/Wind sensors
- Provides and implements optimum tactics for every scenario
- Handles multiple threat scenarios
- Automatic decoy cartridge reseed
- Automatic Misfire Detection/Correction
- Built-in Test

### INTEGRATED SOFT-KILL SOLUTION

In the future, ALEX will be the basis for integration of all offboard and onboard EW countermeasures to avoid mutual interference/interaction among existing active and passive soft and hard kill systems, as well as any new countermeasure systems as they are developed into fleet inventories.

### SYSTEM CONFIGURATION

The system (depicted below) consists of pairs (one or more) of deck mounted launchers, under the control of one or more Launcher Electronics Units (LEU) (one LEU per pair of launchers) which receive commands from the System Processor (SP). Operator interface and control of the system is accomplished by the manipulation of fixed action buttons and the touch screen of the Master Control Panel (MCP). The MCP also displays menus, decoy inventories, mode status, ship input data status, system configurations, and fault alerts as required.

The Bridge Control Panel (BCP) is a manually operated alternate to the Master Control Panel. It contains safing, arming, and fire control switches as well as system status indicators. The ALEX operator can award control of the system to the BCP from the MCP.

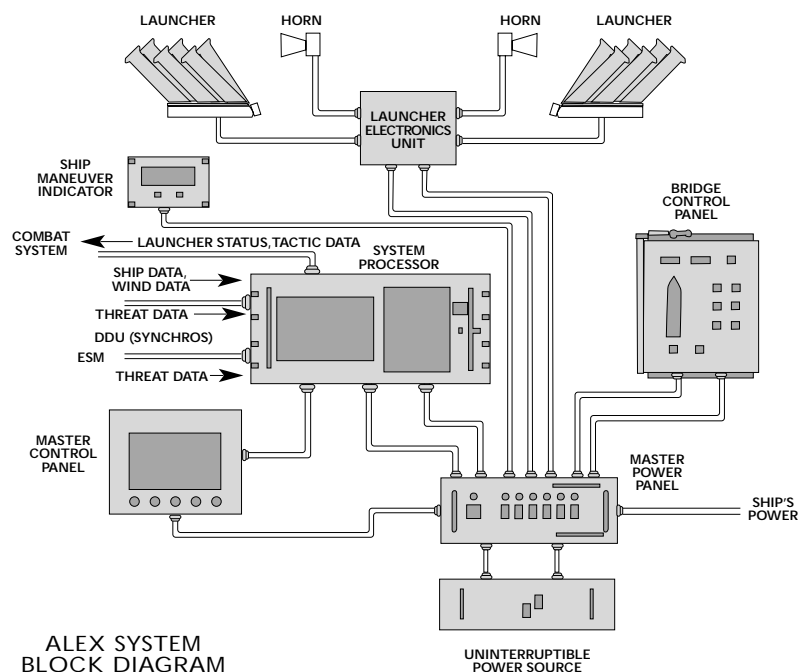
A Ship Maneuver Indicator (SMI) also interfaces with the System Processor. An audible alarm on the SMI provides an alert when a recommended course-to-steer is displayed as part of the recommended tactic.

The data and power circuits to all ALEX modules are routed through, and can be controlled with, the circuit breakers on the ALEX Master Power Panel (MPP).

Launch alert warning horns are mounted in the vicinity of the launchers and sound at predetermined intervals whenever the system is in the "Enable Fire" mode.

An Uninterruptable Power Supply (UPS) provides conditioned AC power to the system and, without operator intervention, will continue to supply back-up power in the event of a ship power failure or a decrease in power level.

The System Processor Operational Software (SPOS) is the set of instructions, resident in the non-volatile memory of the System Processor, which manages and controls the ALEX system. When the ALEX System is operated in the automatic or semiautomatic mode the software uses information from the ship's ESM, anemometry, and navigation systems to determine the optimum response to the tactical situation using expendable decoys and ship maneuvers.



ALEX SYSTEM  
BLOCK DIAGRAM

## ALEX DECOY LAUNCHING SYSTEM

### TACTICAL ANALYSIS WORKSTATION (TAWS)

While prevented by US export regulations from providing USN tactics information to international customers and since most customers are unwilling to discuss classified threat details or tactics, Sippican's Passive Decoy Systems Group provides an analysis tool to assist international customers in developing their own expert tactics.

TAWS provides a tool for engagement analysis of anti-ship missile scenarios that allows the user navy's tactical analyst to devise expert tactics. TAWS uses the Sippican-developed Missile Attack Computer Simulation (MACS) software, running on an IBM-compatible desktop computer. TAWS operates in one of two modes: Automatic or Manual.

Automatic mode runs user-directed parametric engagement analyses to produce a summary report and plots, and creates the ALEX System Mission Data File (MDF), a binary version of the summary report. The MDF contains the tactics to be used by the ALEX Operational Shipboard System or the ALEX computer-based training. The file also contains data reflecting the specific ALEX installation on a particular ship, including the decoy complement. Manual mode runs individual scenarios with full animation and produces a detailed report.

The TAWS support package consists of the following elements:

- Tactical Analysis Workstation (TAWS)
- Missile Attack Computer Simulation (MACS) software
- TAWS training
- TAWS documentation
- Warranty and support

Each package is tailored to the individual customer's anticipated decoy inventory, operational requirements, and budget to ensure the best total support package for each customer.

### ALEX COMPUTER-BASED TRAINER (CBT)

The ALEX Computer-Based Trainer (CBT) provides a vehicle for decoy launching system operator training. The CBT uses Sippican-developed software and an IBM personal computer (PC/AT compatible).

The system provides effective training of operators and officers through the realistic simulation of missile attacks and decoy launching system performance. The system uses an ALEX Master Control Panel (MCP) so that the student can interact with the trainer exactly as he interacts with the operational equipment.

The CBT has three modules:

- Tutorial
- Operator Training
- Engagement Analysis



ALEX Tactical Analysis Workstation



TAWS Screen

## TOTAL SYSTEM SUPPORT

Sippican's Passive Decoy Systems Group offers total customer support from initial inquiry through final acceptance test and, most important, post delivery in-service support.

- **Program Management**

A dedicated Program Manager has total responsibility for the project from initial contact to final acceptance.

- **Engineering** Our engineers work under the direction of the Program Manager.

- **Production** Modern production techniques and facilities as well as highly trained personnel ensure that a quality product is produced on-time and within budget to meet the customer specifications.

- **Support Services** We support a wide variety of support services to meet each customer's needs. A detailed platform survey precedes each equipment installation to ensure appropriate equipment integration and interface compatibility.

- **Training** No system can operate any better than operator and maintainer competence will allow. Training programs are offered to assist customer personnel in learning to operate and maintain our equipment. Computer-based training is available to enhance the training experience.

## POST-DELIVERY IN-SERVICE SUPPORT

Our engineers provide continuing Post Delivery In-Service Support for each of our hardware and software products. This service often solves minor operational problems and keeps our customers aware of enhancements offered for installed Sippican systems to prolong their service life.

## INTEGRATED LOGISTICS SUPPORT

- **Complete Single Source Provider**

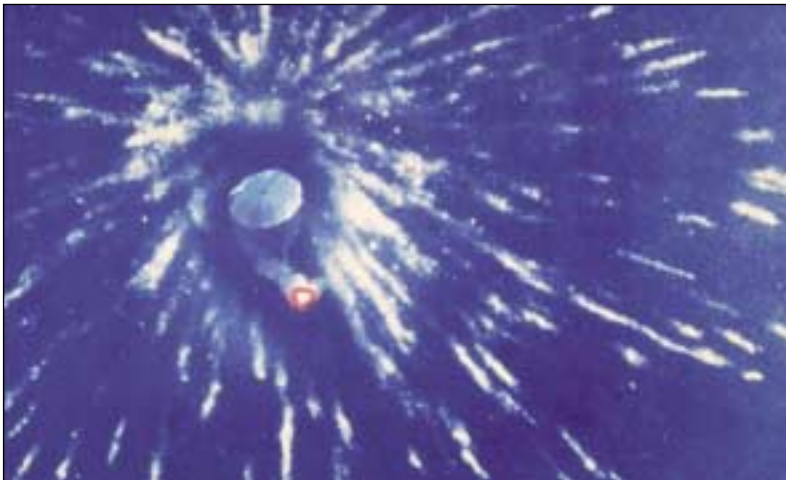
- ALEX Systems
- Launching Systems
- Decoys/Cartridges
- Installation Kits
- Spare Parts Kits
- Depot Test Equipment
- Special Tools
- Tactical Analysis Workstation (TAWs)
- Computer-Based Training

- **Total Integrated Engineering Support**

- Installation
- Factory Acceptance Test
- Harbor/Sea Acceptance Test
- Operational Test & Evaluation
- Training: In-county or at Sippican
- Maintenance
- Configuration Management
- Safety
- Packaging/ Handling/Transportation
- Facilities/Support Equipment
- Post Delivery In-service Support

Sippican's Passive Decoy Systems Group is the world leader in the design, development, testing and production of Off-Board Countermeasures Systems and Decoy Cartridges. Sippican, Inc. acquired the Hycor Group in January, 1998 from L-3 COMMUNICATIONS CORP. The Group is now fully integrated into Sippican's Countermeasure Systems Division.

Since its inception in 1967, Hycor has been supplying expendable cartridges for ship-borne chaff, infra-red and acoustic decoys, decoy launchers and decoy launching systems (ALEX), and related training and tactics development systems to the US Navy as well as to twenty-five international navies.



Super Gemini Dual-Mode RF/IR Decoy

**Sippican, Inc.**

COUNTERMEASURE SYSTEMS DIVISION  
PASSIVE DECOY SYSTEMS GROUP

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