

ARCHIVED REPORT

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Magnavox - Archived 3/97

Headquarters

Magnavox Electronic Systems Company
1313 Production Rd
Fort Wayne IN, 46808
Telephone (219) 429-6000

In September 1995, Hughes Electronics reached an agreement with The Carlyle Group, LP, to purchase Magnavox Electronic Systems Company for \$370 million. Previously, Magnavox was owned by the Carlyle Group which purchased it from Philips Electronics North America in 1993. Magnavox was originally acquired by

North American Philips Corporation in 1974. North American Philips Corporation (NAPC) is owned by FGP Corporation, which is in turn wholly owned by N.V. Philips' Gloeilampenfabrieken of The Netherlands.

On October 1, 1991, Magnavox was officially renamed Magnavox Electronic Systems Company (MESC), replacing Magnavox Government and Industrial Electronics Company (MAGIEC). Magnavox employs about 3,700 people.

Structure And Personnel

MAGNAVOX

David P. Molfenter
President and Chief Executive Officer
Scott S. Meyers

Executive Vice President and Chief Financial Officer
Tofie M. Owen
Vice President, Marketing
A.B. Hausfield
Vice President and Treasurer

Product Areas

When Magnavox was acquired by North American Philips Corporation, its military and industrial electronics activities were established as a wholly owned NAPC subsidiary called Magnavox Government and Industrial Electronics Company, or MAGIEC. At the request of the Department of Defense, MAGIEC's stock was placed in a voting trust; thus the company qualifies for high-level industrial security. In October 1991, the company name officially became Magnavox

Electronic Systems Company (MESC). Following its acquisition by the Carlyle Group, MESC continued to operate in a substantially autonomous manner, conducting its defense-oriented business as follows:

Magnavox Electronic Systems Company

1. Communications
 - 1.1 Command Control Communications
 - 1.2 Airborne Communications
 - 1.3 Land Tactical Communications
 - 1.4 ECCM Communications
 - 1.5 Special Communications
2. Electronic Warfare
3. Anti-Submarine Warfare
4. Command Systems
5. Displays
 - 5.1 Air Traffic Control
6. Ordnance Electronics
7. Electro-Optics
8. Navigation and Positioning

Facilities

Eastern Region

East Coast Division, 46 Industrial Avenue, Mahwah, NJ, 07430. Telephone (201) 529-1700. This unit designs, develops, and manufactures small E-O devices, mostly for targeting.

Central Region

Magnavox Electronic Systems Company, 1313 Production Road, Fort Wayne, IN 46808. Telephone (219) 429-6000. Fort Wayne is headquarters for Magnavox. Units at this location account for a large portion of the gross sales at Magnavox. Products include electro-optics, displays, and IR systems, military communications gear, anti-submarine warfare systems, tactical information systems, ordnance,

and electronics. Customers include the tri-services and the defense ministries of Western world countries around the world. The unit does some work in automotive and agricultural electronics.

Western Region

Magnavox West Coast Operations, 2829 Maricopa Street, Torrance, CA 90503. Telephone (213) 618-1200. This unit manufactures military satellite navigation and communication gear and commercial marine electronics. The unit has considerable equipment associated with the Global Positioning System.

Corporate Overview

Magnavox is a broad-based organization dedicated to the development and manufacture of non-consumer electronic systems and equipment. The company is a major supplier to the US Department of Defense and to selected segments of the industrial electronics marketplace. At present, Magnavox is one of the world's largest producers of sonobuoys and airborne UHF radios. In addition, the company is a major supplier of communications, navigation, positioning and survey systems for the commercial marine, offshore survey and land survey markets.

New Products And Services

Next-Generation IFF. This program covers next-generation reliable, cooperative & non-cooperative Identification, Friend-from-Foe systems for military aircraft, surface ships, and ground combat vehicles. Magnavox is prime contractor for D356 Non-Cooperative Target Recognition - Electronic Support Measures (NCTR-ESM). This effort is tasked with exploiting the inherent and unique signatures of air platforms. ESM passively identifies aircraft by recognizing their electron emissions. The device collects, processes and analyzes data for comparison to a signature library to positively identify the aircraft. The NCTR-ESM device will be integrated into air defense weapons and/or sensors. The identification data will be added to radar track messages and/or displayed on the fire control display of air defense weapons. This system is currently under development.

Voice Switching and Control System (VSCS). The Voice Switching and Control System (VSCS) is a Federal Aviation Administration (FAA) voice system for communications among and between air traffic controllers and flight crews. Magnavox is providing display monitors for this system. First installation was scheduled for 1994. Twenty-five systems are slated to be produced and installed by the end of 1996.

Mergers/Acquisitions/Divestitures

Hughes Electronics Acquires Magnavox Electronic Systems Company. In September 1995, Hughes reached an agreement with The Carlyle Group, LP, to purchase Magnavox Electronic Systems Company for \$370 million. Magnavox had 1994 sales of more than \$400 million. The deal was concluded in December 1995. Magnavox will report to the Hughes Aircraft Company unit of Hughes Electronics. Hughes beat four other bidders, including Litton, ITT, Rockwell and Loral, for the company.

Carlyle Acquires Magnavox. In October 1993, The Carlyle Group purchased Magnavox Electronic Systems Co from North American Philips Corporation. Magnavox will join Carlyle's three defense-related holdings: consulting firm BDM International, previously part of Ford Aerospace; Vought Aircraft, acquired from LTV; and GDE Systems, formerly General Dynamics Electronics. As is customary in Carlyle acquisitions, Magnavox will be allowed to operate independently, and as such, no major changes in business strategy or personnel are anticipated. The purchase price was not disclosed. This sale marks the end of Philips activities in the field of defense systems.

Teaming/Competition/Joint Ventures

ERAPSCO. Magnavox and Sparton, the two major competitors in the sonobuoy market, have teamed to develop the next-generation sonobuoy known as SSQ-75 ERAPS, or Expendable Reliable Acoustic Path Sonobuoy. The joint venture is known as ERAPSCO. Funding of \$23 million was received on July 1, 1988, to commence joint efforts. Low-rate production was begun in 1992.

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Financial Results/Corporate statistics

Due to Magnavox's recent acquisition by Hughes Electronics, no financial information is available. In addition, no financial information concerning Magnavox

was published when the company was part of the Carlyle Group. However, annual revenues for Magnavox are estimated to be in the \$400 million range.

STRATEGIC OUTLOOK

After several changes of hand, Magnavox has finally found a home in which it is welcome. As a part of Hughes Electronics, Magnavox brings a whole slew of products to further enhance its new parents market share. Most of Magnavox's programs and capabilities are in high DoD priority areas (tactical C2 and weapon components, ASW, EW, and communications) and will receive some future funding, but quantities will be lower and new programs

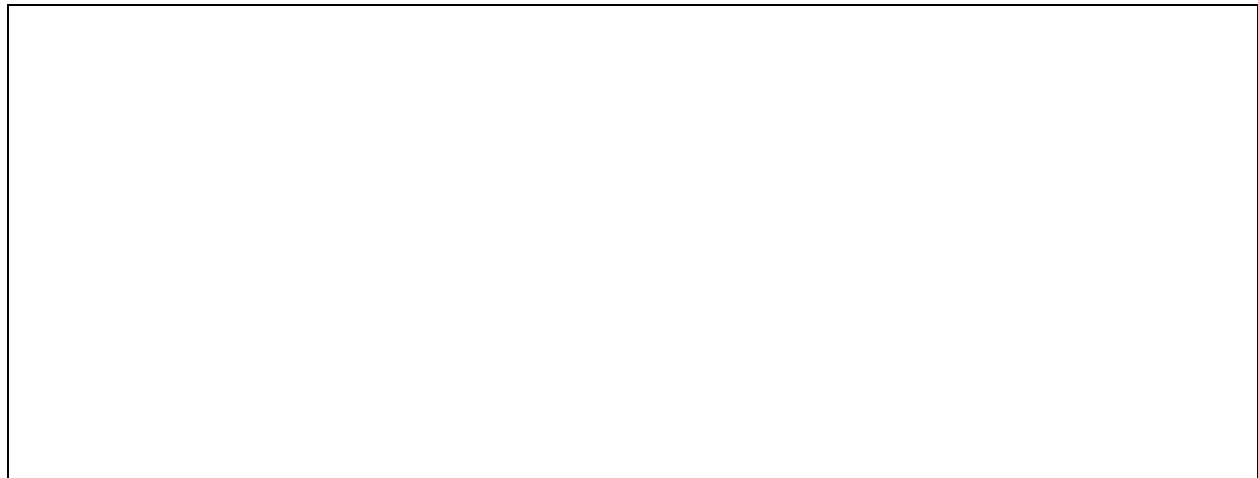
will progress at a slower rate. However, coupled with Hughes' current operations the resulting synergies should provide ample growth opportunities for the new Hughes Magnavox combination.

As Magnavox is no longer an independent company, this report will be combined with Hughes Electronics in 1996 and will no longer be individually updated.

Prime Award Summary

Magnavox's summary of prime awards for the past five years is presented below. Dollars are in millions. Zeros stand for no contract award or totals less than \$50,000. 1995 data are for three quarters only.

(\$ millions)	1991	1992	1993	1994	1995
AIR FORCE	36.6	36.8	74.5	4.1	4.5
ARMY	106.8	83.5	130.4	114.7	8.3
DEF COMMUNICATIONS AGENCY	0.8	0.2	0.0	0.0	0.2
DEF LOGISTICS AGENCY	0.8	0.1	0.1	0.0	0.0
DEPT OF COMMERCE	0.1	0.6	0.2	0.0	0.0
DEPT OF STATE	0.0	0.0	0.4	0.0	0.0
DEPT OF TRANSPORTATION	0.0	0.0	1.7	0.0	0.0
NAVY	46.7	77.5	66.9	16.6	42.0
TOTALS	191.8	198.7	274.2	135.4	55.0



The following are the company awards by location.

Fort Wayne, IN

(\$ millions)	1991	1992	1993	1994	1995
AIR FORCE	36.5	36.5	72.5	3.6	3.6
ARMY	48.0	44.9	76.7	93.9	0.6
DEF LOGISTICS AGENCY	0.0	0.0	0.1	0.0	0.2
DEPT OF TRANSPORTATION	0.0	0.0	0.1	0.0	0.0
NAVY	14.1	1.9	10.4	5.4	0.3
TOTALS	98.6	83.3	159.8	102.9	4.7

Torrance, CA

(\$ millions)	1991	1992	1993	1994	1995
AIR FORCE	0.0	0.2	0.2	0.5	0.9
ARMY	26.1	11.6	45.0	15.9	5.4
DEF COMMUNICATIONS AGENCY	0.0	0.2	0.0	0.0	0.0
DEF LOGISTICS AGENCY	0.7	0.1	0.0	0.0	0.0
DEPT OF COMMERCE	0.0	0.0	0.1	0.0	0.0
NAVY	1.5	3.4	2.0	0.4	0.2
TOTALS	28.3	15.5	47.3	16.8	6.5

Program Activity

Some important aerospace and government programs currently underway at Magnavox are listed below. The briefs are intended to provide a listing of programs that are of major importance to the company. For detailed information or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate FORECAST INTERNATIONAL binder (for example, AIRCRAFT, MILITARY VEHICLES, WARSHIPS, MISSILES, ELECTRONICS, and GAS TURBINES). The following is an outline of the company's business interests:

- .. Defense Electronics
- .. ASW
- .. Communications
- .. C3I Systems
- .. Electronic Warfare
- .. Sensors
- .. Space Systems
- .. Systems Integration

Electronic Programs

Airborne Electronics

ALQ-128

The ALQ-128 multimode threat warning receiver is one of the four units that make up the F-15's Tactical Electronic Warfare Suite (TEWS). Procurement is tied directly to F-15 procurement, with no separate funding breakout.

ARC-164(V)

The ARC-164(V) is a family of highly versatile airborne UHF radios that cover the 225-to-400 MHz range in

25 kHz increments. It has 7,000 channels and up to 20 channels are preselectable. Magnavox is currently delivering the new ARC-164(V) HAVE QUICK II front panel control that features an LED readout and a fill port for the electronic loading of the HAVE QUICK II multiple-word-of-the-day.

ARC-187(V)

The ARC-187(V) is derived from the ARC-164(V) family of UHF radios. The US Navy is currently procuring the ARC-187(V) as part of an ongoing communications upgrade for the P-3C fleet.

ARC-222

This is an airborne, SINCGARS-compatible AM/FM VHF transceiver. Magnavox was awarded the initial development and production contract for the ARC-222 in July 1992. Procurement requirements for the ARC-222 have not been released, though media reports state that it could be for upwards of 3,000 radios. The ARC-222 is in production with an estimated 30 units produced to date.

URC-126

The URC-126 is an improved anti-jam, secure voice UHF transceiver for tactical aircraft and ground-based communications applications. Magnavox is the prime for development and preproduction validation prototypes.

JSTARS

JSTARS is an airborne multimode advanced synthetic aperture radar system. JSTARS is an acronym for Joint Surveillance Target Attack Radar, sometimes referred to

as Joint STARS. Magnavox is working on the UHF communication system for this system.

ASW

AQA-7(V)

The AQA-7(V) is an airborne anti-submarine warfare (ASW) acoustic sonobuoy signal processor used on Orion P-3A/B/C Maritime Patrol Aircraft. The AQA-7 sonobuoy signal processor is used to process the information received from the SSQ-53 and the SSQ-77 Direction Finding and Ranging (DIFAR) sonobuoys. Approximately 1,325 AQA7(V) systems have been produced. It is estimated that 20 IPADS upgrades for the US Navy have been completed through 1995.

SSQ-75 Eraps Sonobuoy

The SSQ-75 Expendable Reliable Acoustic Path Sonobuoy (ERAPS) is an expendable command-activated long-range active sonobuoy designed to fill the anti-submarine warfare mission of locating and tracking hostile submarines. The sonobuoy is produced by ERAPSCO, a joint venture of Magnavox and Sparton. Approximately 900 preproduction units will have been produced by the end of 1995.

SSQ-53

This is a passive Directional Frequency Analysis and Recording (DIFAR) sonobuoy. It was developed and is produced by Magnavox.

SSQ-57

This special-purpose sonobuoy is used either for calibrating ambient sea noise, for monitoring exercises, or for collecting acoustic intelligence. Procurement of the SSQ-57 is completed, and no additional orders will be forthcoming. The last order for the SSQ-57B was completed in 1991, and no interest has been shown since that time.

SSQ-77(V)

The SSQ-77(V) VLAD (Vertical Line Array DIFAR) is a passive tactical search and surveillance sonobuoy. The SSQ-77A is in service but no longer in production. The SSQ-77B is in service and production.

SSQ-62(V) Dicass

The SSQ-62 is an air or surface ship-deployed sonobuoy used to detect hostile submarines in anti-submarine warfare operations. Using processors and displays such as the AQA-7(V), ASA-76, OL-82/AYS, and Sparton TD-1135/A, it can determine the range and direction of a target relative to its own position. In late 1991, the Navy awarded two contracts to Magnavox and Sparton to develop the SSQ-62C for the service. This version completed development in 1994 and entered service in

1995. The SSQ-62C is reported to have more advanced capability than previous versions.

C3I

ATCCS

The Army Tactical Command and Control System (ATCCS) is a C³I system for the US Army. Magnavox is a subcontractor on the program, providing the LCU tactical communications interface module. The ATCCS program will result in the procurement of common computer hardware and software for the five major segments of the Army's Sigma battlefield management concept: air defense, combat service support, fire support, intelligence/electronic warfare, and maneuver control.

FAADS C2I

This is the Forward Area Air Defense System Command, Control and Intelligence system. Magnavox is providing the Model 1 Electronic Support Measures (ESM) system for the Non-Cooperative Target Identification (NCTR) devices. The program as a whole is in engineering and manufacturing development phase. The ground sensor contract was awarded in February 1992.

TRI-TAC

TRI-TAC is a tri-service tactical communications system. The program apparently is also being referred to as the Multi-Service Communications System (MSCS). Magnavox is working on the Digital Non-secure Voice Terminal (DNVT) and the UXC-7 Lightweight Digital Facsimile. TRI-TAC is enhancing interoperability between Army and other DoD telecommunications systems, providing new equipment that reflects the most recent technology and eliminating duplication in developments among the services and agencies.

Defense Satellite Communications System

The Defense Satellite Communications System provides super high-frequency satellite communications for secure voice and high data rate transmissions. Magnavox is the prime for the DSCS's Universal Modem system. DSCS satellites are designed to provide secure communications to users worldwide. Typical DSCS uses include worldwide military command and control, crisis management, relay of intelligence and early warning data, treaty monitoring and surveillance information, and diplomatic traffic.

Regency Net

Regency Net is a high-frequency (HF) communications network. Regency Net will provide the US European

Command and the United States Forces in Korea with a survivable and secure HF radio communications system. Operational testing has been completed. Fielding of this system was completed in FY93.

AFATDS

Advanced Field Artillery Data System (AFATDS). AFATDS will eventually replace the US Army's TACFIRE system and is intended to make up for TACFIRE's vulnerabilities. The US Marine Corps joined the AFATDS program (calling their version MAFATDS), with AFATDS becoming the replacement for the MIFASS program canceled in 1987. The Marine procurement is part of the FIREFLEX (Flexible Fire Support System) requirement. AFATDS is in development. Full-scale development contract for Version 1 was awarded in April 1990. Complete fielding of AFATDS scheduled for fourth quarter 1998.

Electronic Systems

Have Quick II/IIA

This is an anti-jamming applique for UHF communications. Magnavox is the developer of HAVE QUICK/HAVE QUICK II/IIA. The company is the prime contractor on the following radios: ARC-164, ARC-187; ARC-204 HQ A-Net; and URC-126 development. HAVE QUICK II is currently in production. The airborne versions of HAVE QUICK IIA are not expected to enter production until later in the decade. The original HAVE QUICK I is no longer in production.

SCOTT (TSC-124)

The Single Channel Objective Tactical Terminal (SCOTT) is an EHF transportable ground terminal for the MILSTAR satellite communication system. SCOTT terminals are designed to provide theater commanders-in-chief with secure communications capabilities that can continue to function even in the presence of nuclear, biological, and chemical weapons, or in conditions encountered as the result of a nuclear blast. The program was terminated in FY93.

EW

IEWCS

The Intelligence and Electronic Warfare Common Sensor is a standardized, interoperable, and inter-changeable system for tactical signal interception, direction finding, and electronic countermeasures. The IEWCS program

will develop special tracked vehicles equipped for battlefield electronic warfare and capable of keeping up with today's fast-moving front-line units.

GBCS-Light will support Airborne and Air Assault Divisions; GBCS-Heavy will support Armored and Mechanized Infantry Divisions. Magnavox is working on the programs communication subsystems. IEWCS is in engineering development.

Land & Sea-Based Electronics

PRC-126(V)

The PRC-126 is a short-range, VHF/FM hand-held tactical radio for use primarily at the squad/platoon level. Production is ongoing.

VRC-83(V)

The VRC-83(V) VHF/UHF Vehicular Transceiver is part of the Pacer Speak program. Pacer Speak is employed by all three US services for forward air control, air traffic control, and airlift support operations. The Pacer Speak program is expected to continue out to the mid-1990s when procurement is to be completed. From that point on, spares activity will be the focus of the program to maintain the radios operationally past the turn of the century.

PAS-18 WASP

The PAS-18 Wide Angle Stinger Pointer (WASP) is a thermal sight used with the Stinger missile system. Magnavox Electro-Optical Systems has developed a family of thermal sights based on the technology used in the WASP. In 1994, Magnavox received a \$4.5 million contract to provide PAS-18 sights for Danish troops.

Space System Programs

Navstar GPS Airborne Terminals

NAVSTAR is a three-dimensional (3-D) space-based navigation system. This brief covers Global Positioning System (GPS) terminals for military and commercial aircraft applications. Magnavox is responsible for GPS receivers including MX 4200, and the company is the leader of the EURONAV consortium and also licensor of its GPS technology to the EURO NAV group.

Milstar

Milstar is a joint service, advanced, satellite-based, military communications system. Magnavox provides terminals to the US Army under this program.

US Contract Awards

Below is a listing of major contracts awarded to Magnavox from the United States Government in the past two years (contracts as of press date).

<u>Date</u>	<u>Award (\$ millions)</u>	<u>Contract #</u>	<u>Description</u>
1993			
3/19/93	\$24.2	N00163-92-C-0087	62,470 SSQ-77B sonobuoys.
7/23/93	\$5.5	N00163-92-C-0087	11,694 SSQ-77B sonobuoys.
8/13/93	\$5.8	F09603-93-C-1139	124 receiver/transmitters, 79 mounting bases for ARC-187.
9/30/93	\$44.4	F04606-93-D-0540	836 upgrade packages for the GRC-206(V)5 ground radio.
11/29/93	\$10.1	N00019-91-C-0134	Stinger night sights for US Marine Corp.
1994			
1/6/94	\$163.2	DAAB07-94-D-A010	6,000 non-developmental PSC-5 manpack UHF terminals.
9/29/94	\$5.4	F09603-94-C-1088	Modification kits for the ARC-164(V) Have Quick II radios.
1995			
6/12/95	\$34.5	N00163-95-C-0125	43,376 SSQ-110A sonobuoys.
8/18/95	\$8.1	N00163-95-C-0177	8,277 SSQ-62C sonobuoys.
8/21/95	\$23.4	DAAB07-95-D-4011	Spare parts to support the enhanced manpack ultra high frequency radio.
8/30/95	\$13.1	F19628-92-C-0093	801 receivers/transmitters & 600 control heads for SINCGARS.
8/31/95	\$6.1	F09603-94-G-0005	129 VRC-83 and 146 PRC-113 portable radios and associated equipment.