Watkins-Johnson - Archived 7/99

Outlook

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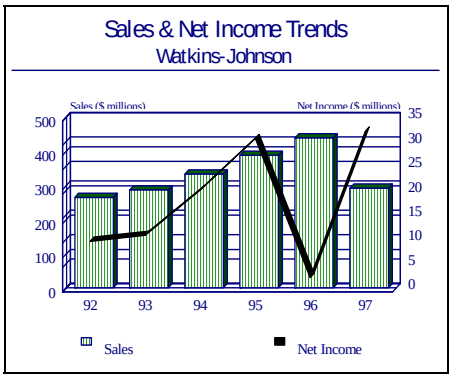
- Under the agreement, Watkins-Johnson divested its guided-missile subsystems, YIG-tuned devices and military components business
- Following this sale, Watkins-Johnson has exited the scope of this binder and this report will no longer be updated



Headquarters

Watkins-Johnson
Stanford Research Park
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Palo Alto, CA 94304-1204
Telephone (415) 493-4141
Web Site: http://www.wj.com

Watkins-Johnson is a leading manufacturer of defense- and aerospace-related equipment. The company was founded in 1957 and quickly established a reputation as a quality, high-technology supplier of radio frequency (RF) components and products. Since then, it has grown steadily in product recognition and diversification. Operational and functional realignment have occurred to accommodate growth and changes in the company's addressed markets. Importantly, the company has always maintained a robust technology investment program.

In late 1997, Watkins-Johnson sold its defense electronics and microwave components and subsystems business for $103 million to TSMD Acquisition Corp.

The company employs approximately 1,500 people, principally in California and the Washington, DC, area. Watkins-Johnson is a publicly owned company trading on most US exchanges under the symbol "WJ." The company's auditors are Deloitte & Touche.

Structure and Personnel

Dr. Dean A. Watkins
Chairman of the Board
Dr. H. Richard Johnson
Vice Chairman of the Board
Dr. W. Keith Kennedy, Jr.
President and Chief Executive Officer
Scott G. Buchanan
Vice President and Chief Financial Officer
Dr. Patrick Brady
Vice President
Malcolm J. Caraballo
Vice President
Robert G. Hiller
Vice President
Darryl T. Quan
Controller
Claudia D. Kelly
Secretary

Product Area

Watkins-Johnson is a technologically oriented company specializing in semiconductor-manufacturing equipment and advanced radio-frequency products for the wireless-infrastructure market.

The company manages its businesses as follows:

Watkins-Johnson

1. Semiconductor Equipment Group
2. Wireless Communications

Semiconductor Group. This Group produces the Chemical Vapor Deposition (CVD) equipment and other equipment for semiconductor, flat panel display and high-technology manufacturing. Overseas chip manufacturers are among W-J's largest customers for these products. This group also produces Automatic Test Equipment (ATE), primarily for the defense industry.

Wireless Communications. This Group manufacture solid-state devices, components, subassemblies and equipment for the telecommunications industry.

Facilities

The company locations listed below generate the bulk of this firm's aerospace and defense work. A breakdown of these operations and their capabilities by major geographical area follows.

Eastern Region

Communication Electronics Technology (CET) Division, 700 Quince Orchard Road, Gaithersburg, MD 20878. This unit produces electronic equipment for communication, direction finding and signal processing in the 20 Hz to 18 GHz frequency spectrum. The company's equipment can be found on fixed ground, mobile, airborne and shipboard installations worldwide.

Western Region

Electronic Systems Division, 2525 North First Street, San Jose, CA 95131. The San Jose facilities produce surveillance systems in the VHF to microwave spectrum. A typical system consists of antennas, pedestals, positioners, microwave tuners, IF and demodulator units, digital controllers and microprocessors. The division has also developed a series of modular subsystems for use with advanced EW simulation systems. *This unit was sold in 1997.*

W-J Commercial, 2525 North First Street, San Jose, CA 95131. This division makes automatic test equipment, digital through analog to microwave frequencies. ADATE is the division standard product.

Semiconductor Equipment Division, 440 Mount Hermon Road, Scotts Valley, CA 95060. The unit's products are DC to RF components, including VCOs, switches, linearizers, etc. This facility also makes commercial manufacturing equipment such as the Chemical Vapor Deposition (CVD) equipment and other heat processing automatic handling equipment. The Scotts Valley Plant is also located at this address.

Microwave Products, 3333 Hillview Ave, Stanford Industrial Park, Palo Alto, CA 94304. This unit, in addition to being headquarters, conducts research and development in microwave semiconductor devices, integrated circuits, solid state amplifiers and RF signal components. Products include signal processing components, thin film devices, diodes, and transistors. *This unit was sold in 1997.*

Corporate Overview

Following the divestiture of its Government Electronics segment, Watkins-Johnson no longer has a substantial interest in defense markets. The company does however maintain a slight presence in government markets through its wireless communication operations.

New Products and Services

No new aerospace or defense products have been announced by Watkins-Johnson in the past year.

Plant Expansion/Organization Update

Wireless Communications Unit Established. In 1995, Watkins-Johnson established its Wireless Communications business as a new reporting segment, separate and apart for the Electronics Group. The Electronics Group was renamed Government Electronics for segment reporting purposes.

Facility Reopened. In late 1995 Watkins-Johnson announced that it was reopening its San Jose facility to accommodate rapid growth in its Semiconductor business. Training, marketing and spares functions will relocate to San Jose in 1996, followed in 1997 by the group's engineering organization.

Previously, in an effort to reduce costs amid the declining defense market, Watkins-Johnson consolidated most of its Silicon Valley Electronics Group operations to its Palo Alto plant in 1994. The company closed its San Jose plant, relocating operations to Palo Alto. In addition, the company closed its facility in Savage, Maryland and consolidated the East Coast Electronics Group operation in Gaithersburg.

Mergers/Acquisitions/Divestitures

Samsung Unit Purchased. In January 1998, Watkins-Johnson announced that it will purchase the assets of Samsung Microwave Semiconductor (SMS), Inc., based in Milpitas, California. SMS is a subsidiary of Samsung Semiconductor, Inc., which in turn is a unit of Samsung Electronics Co., Ltd. of Seoul, Korea. Financial terms of the acquisition were not released.

The SMS operation will become part of WJ's Wireless Products Group, currently based in Palo Alto, California. Watkins-Johnson plans to gradually transfer its Palo Alto semiconductor-manufacturing operations to the Milpitas facility where SMS is located.

Historically, WJ has produced semiconductor devices primarily for its own use. In 1997, WJ began offering its highly linear, high-performance gallium-arsenide products to external customers. The addition of Samsung's Milpitas fabrication facility increases the company's capacity to produce devices in sufficient quantity to serve as a merchant supplier to the greater wireless products market. Under the agreement, WJ also receives non-exclusive license to manufacture SMS products and service SMS customers.

Defense Unit Sold. In October 1997, WJ completed the divestiture of its Palo Alto, Calif.-based defense electronics and microwave components and subsystems operations to Stellex Industries, an affiliate of Mentmore Holdings Corporation, for $103 million.

Under the agreement, Watkins-Johnson divested its guided-missile subsystems, YIG-tuned devices and military components business located in Palo Alto, Calif. WJ is retaining its Palo Alto-based gallium-arsenide (GaAs) integrated-circuit and thin-film foundry as well as its commercial subassemblies and components products for telecommunications-infrastructure applications. Watkins-Johnson will also maintain its Gaithersburg, Md.-based communications intelligence business, making it part of the Wireless Communications business segment.

Earlier, in April 1997, Watkins-Johnson announced that it would seek a buyer for its Palo Alto based operations which produce defense electronics components and subassemblies. The operations involved accounted for over $85 million in revenue. According to Watkins-Johnson president and CEO W. Keith Kennedy, Jr, "This move will complete WJ's transformation to a high-technology firm specializing in semiconductor-manufacturing equipment and wireless-infrastructure products. We will apply all of our resources and energy to the support of these commercial product areas."

Environmental Segment Sold. After four years of losses, Watkins-Johnson announced that it had divested its environmental operations at the end of 1994. The divestiture did not have any significant effect on the company's financial position for the year. The divestiture should allow the company to focus its resources on core markets in the semiconductor segments and the telecommunications market within the electronics segment.

Teaming/Competition/Joint Ventures

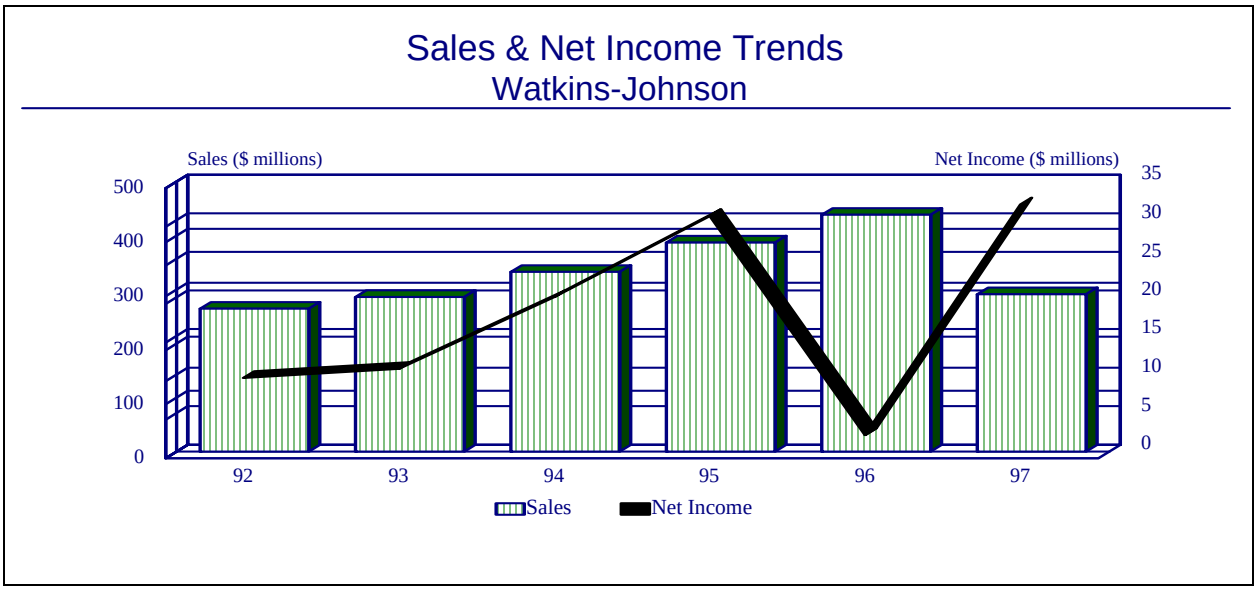
Hughes. The company, in a strategic partnership with Hughes, provides modules for the AMRAAM seeker. Hughes has proven a significant customer of Watkins-Johnson, accounting for sales of $28 million in 1992, $25 million in 1991, and $23 million in 1990.

MIMIC. Watkins-Johnson is a member of the ITT and Martin Marietta MIMIC team.

Financial Results/Corporate Statistics

Following the sale of the Government Electronics segment, Watkins-Johnson posted 1997 sales of $291.3 million. Net income for 1997 was $32.9 million thanks to a gain on the sale of the Government Electronics unit during the year. The decline in 1996 was due to a slow down in the world computer memory devices market. The improvement in income was the result of outstanding performance in the company's Semiconductor Equipment Group. The following tables list the company's financial achievements for the past several years. Government sales percentage is composed of figures from the Wireless Communication segment.

Y/E December 31	1992	1993	1994	1995	1996	1997
($ millions)						
Net Sales	264.4	286.3	332.6	387.0	438.3	291.3
Percent Govt	26.0	22.0	17.0	11.0	7.0	12.0
Net Income	10.4	11.6	20.9	31.9	3.0	32.9
Backlog	207.8	222.6	235.9	250.3	228.4	98.1
R&D Expenditures	27.2	27.1	34.4	47.6	56.6	50.1

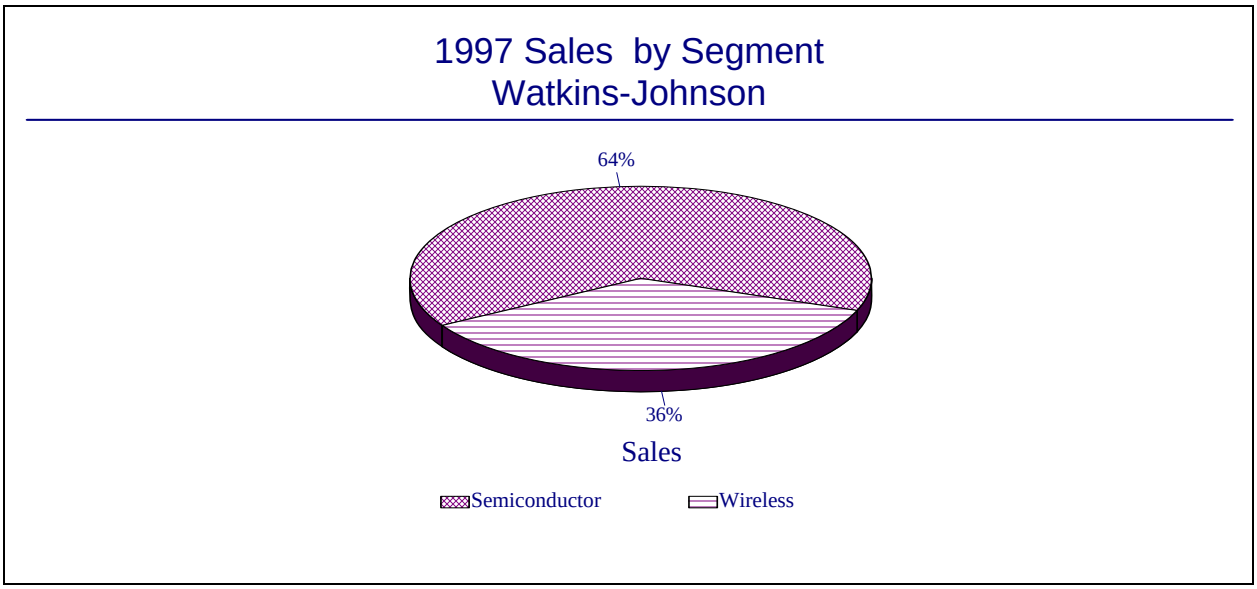


Industry Segments

Segment information as to sales and profit for the past four years are as follows.

SALES	1993	1994	1995	1996	1997
($ millions)					
Semiconductor Equipment	80.7	143.5	222.2	272.4	186.4
Wireless Communications	20.0	23.2	30.4	46.6	104.8
Government Electronics	181.4	165.8	134.4	119.3	-
TOTAL	282.1	332.5	387	438.3	291.2

OPERATING INCOME	1993	1994	1995	1996	1997
($ millions)					
Semiconductor Equipment	10.6	22.2	33.0	7.1	-13.3
Wireless Communications	-0.6	0.3	-1.8	-5.8	-0.9
Government Electronics	7.8	8.1	10.9	3.6	-
Corporate	0.0	0.0	-0.3	-0.6	7.3
TOTAL	7.8	30.6	38.4	4.3	-6.9



Strategic Outlook

With defense markets slowly sliding for the company, Watkins-Johnson has steadily reorganized its operations to reduce its overall dependency on defense products for a majority of its products mix. This strategy reached its climax in early 1997, when the company announced its intentions to sell its defense units in order to focus entirely on its commercial operations.

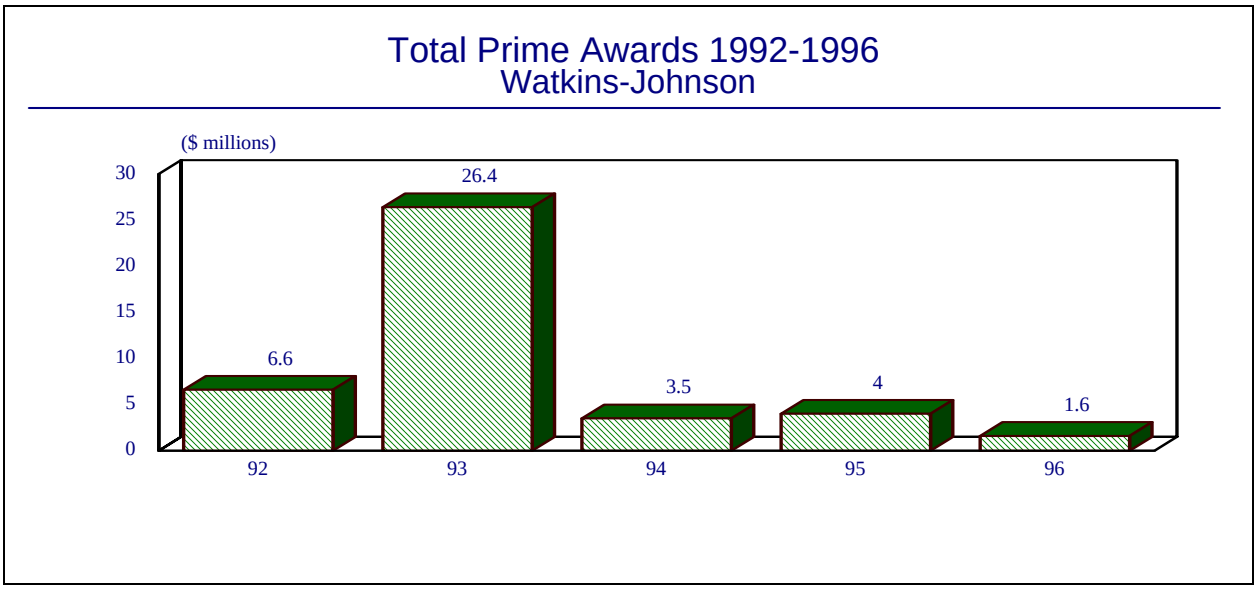
So far management's decision to transform the company from a defense electronics supplier to a commercial company appears to be working. As proof, Watkins-Johnson's commercial semiconductor operation is the fastest growing segment in the organization. The segment is growing so rapidly that the company was forced to reopen its San Jose facility which was closed in 1994 to accommodate the rapid growth.

With the sale of its defense operations now complete, Watkins-Johnson has exited the scope of this binder and this report will no longer be updated.

Prime Award Summary

Watkins-Johnson's five-year summary of awards by customer is given below. Dashes indicate unavailable information and zeroes indicate awards, if any, of less than $50,000.

($ millions)	1992	1993	1994	1995	1996
AIR FORCE	3.1	24.2	1.3	0.5	0.3
ARMY	1.0	-0.3	0.4	0.1	0.1
DEF LOGISTICS AGENCY	0.0	0.0	0.2	0.1	0.1
DEPT OF STATE	0.0	0.0	0.0	0.2	0.0
FCC	0.0	0.0	0.0	0.2	0.0
NAVY	2.5	2.5	1.6	2.9	1.1
TOTAL	6.6	26.4	3.5	4.0	1.6



The five-year summary of awards by key location within major geographical area and by customers is reported below. Details may not equal total due to rounding.

EASTERN REGION

Gaithersburg, MD	**1992**	**1993**	**1994**	**1995**	**1996**
($ millions)					
AIR FORCE	0.0	0.2	0.0	0.0	0.2
ARMY	0.8	-0.3	0.4	0.1	0.1
NAVY	0.2	0.5	0.7	0.7	0.6
TOTAL	1.0	0.4	1.1	0.8	0.9

WESTERN REGION

Palo Alto, CA	**1992**	**1993**	**1994**	**1995**	**1996**
($ millions)					
AIR FORCE	0.1	-0.4	0.0	0.3	0.1
DEF LOGISTICS AGENCY	0.0	0.0	0.2	0.1	0.1
NAVY	0.1	1.1	0.3	1.8	0.4
TOTAL	0.2	0.7	0.5	2.2	0.6

Program Activity

Some important aerospace and government programs currently underway at Watkins-Johnson 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
- C3I Systems
- Electronic Warfare
- Sensors
- Missiles
- Systems Integration
- Training Systems

These programs are now owned by Stellex Industries.

Electronic Programs

The aerospace and defense business activity for Watkins-Johnson falls into four major areas: (1) a component supplier for defense electronics, (2) a subsystems supplier for classified EW and countermeasures programs requiring SIGINT surveillance and communications, (3) a device and assembly supplier for missile systems and (4) a supplier for electronic Automated Test Equipment (ATE).

Watkins-Johnson produces the following types of components for system and/or subsystem application: amplifiers, converters, backwave oscillators, YIG oscillators, filters and harmonic generators, VCOs, frequency mixers, power dividers, RF switches and transformers, and integrated assemblies and millimeter devices. Some of the systems using W-J components, assemblies and modules are listed below:

- EW system receivers and jammers
- Missiles in all categories
- RF sensor systems
- SIGINT and Intelligence systems
- ASW systems
- Trainers, testers and simulators

ACTS

ACTS is an experimental communications satellite. The Advanced Communications Technology Satellite was developed to prove the feasibility of certain advanced communications satellite techniques. These include the use of multiple fixed and scanning spot antenna beams using the 20- and 30-GHz Ka-bands; frequency reuse; beam interconnectivity at both intermediate frequencies (I-F) and at baseband; satellite switching and processing techniques; advanced system network concepts; and dynamic rain-compensation techniques. The objective of the ACTS program is to keep US industry competitive in the world marketplace. Technologies developed in the ACTS program are needed for the increased satellite capacity in the mid-1990s. Watkins-Johnson was a principal subcontractor on the program providing traveling wave tubes. ACTS was launched from the Space Shuttle Discovery in August 1993.

Automatic Dynamic Assembly Test Equipment (ADATE)

Designed to test a wide range of intelligence, communication and manufacturing equipment, and currently in production, ADATE contributes to foreign and commercial sales. The company plans to develop a complete set of menu-driven programs offering true generic functional testing of RF and microwave assemblies, through the use of virtual software drivers. Later upgrades will include EMI testing capabilities. Production is continuing on ADATE testers. At present, the Navy is the largest user, although the Air Force and another government agency have placed orders for the equipment.

GWEN

The Ground Wave Emergency Network (GWEN) is a series of low-frequency (150-175 kHz), EMP-hardened, unmanned radio relay stations located across the US. Watkins-Johnson is responsible for producing the system's WJ-8790-1 receivers. This program was killed in FY94.

MIMIC

Microwave/Millimeter Wave Monolithic Integrated Circuits (MIMIC) are advanced analog microcircuits being developed for US DoD applications. MIMIC is an effort to accelerate the development, manufacturing and demonstration of Gallium Arsenide analog integrated circuits (ICs). It will create an industrial base for analog ICs by encouraging industry to develop a family of military-specific analog ICs with the design and manufacturing tools necessary for high-yield production, as well as to accelerate the advance of reliable and maintainable state-of-the-art analog devices. Watkins-Johnson was involved in Phase 1 (Material/Development) as part of ITT's joint venture with Martin Marietta which completed work in FY91. A MIMIC follow-on was slated to begin in FY96.

TRC-170(V)

Tactical digital tropospheric scatter radio operating on 4.4-5 GHz frequency band. The TRC-170 was developed to provide high-capacity backbone and spur links for C^3 systems in accordance with the TRI-TAC (Joint Tactical Communications Program) system's architecture. All four branches of the armed forces are involved. Watkins-Johnson provides the tuned cavity and circuit card assemblies for the system. The radio is currently in production.

Signals Intelligence Receiving System (SIRS)

SIRS is made for strategic electronic intelligence collection and analysis. The system employs modular, interchangeable tuners and a parallel microprocessor for high-speed, automatic tracking of multiple threats over broad frequency ranges. Designated the WJ-36500, it is compatible with a wide variety of vehicles as well as ground installations.

WJ-8969 Microwave Receiver

A low-cost, high-performance, compact receiver for intelligence collection systems, it is suited to hands-off, remote operation.

WQS-5

The Naval Surface Weapons Center, Dahlgren, VA, awarded the company, in 1986, a contract to develop a carry-on ESM system. The total value of the contract, which included options for production units through 1990, exceeded $42 million. The first system was delivered in late 1987. This Deception Waveform Receiver Facility (DWARF) system has evolved into new equipment, which provides multiple coverage over the 0.5 to 18 GHz frequency range. Signal-analysis and emitter-identification functions have been added to the system. In 1987, the company was selected by the Royal Australian Navy to provide WQS-5 electronic support measures (ESM) equipment. On this program, Watkins-Johnson was awarded a contract valued at about $8 million by Rockwell Ship Systems Australia, Pty Ltd. Under the contract, Watkins-Johnson supplied submicrowave collection and analysis systems for the RAN. The contract included a substantial amount of Australian industry involvement.

Missile Programs

AIM-120A
Advanced Medium-Range Air-To-Air Missile

The AMRAAM is an all-weather, short-to-medium range fire-and-forget air-to-air missile for the destruction of hostile aircraft. The AIM-120 AMRAAM is the AIM-7 Sparrow follow-on. Watkins-Johnson is a major subcontractor on this program, supplying radar guidance processors to both Hughes and the program's second-source supplier, Raytheon.

AGM-88A/B/C HARM

The High-speed Anti-Radiation Missile (HARM) is designed to achieve air superiority and reduce aircraft attrition through the destruction and/or suppression of enemy land-based and sea-borne radar-directed surface-to-air missiles, and air defense artillery. Watkins-Johnson is the major subcontractor on this program.

US Contract Awards

Watkins-Johnson has received no major contracts from the United States Government in the past four years. Most of the company's defense work is done as a subcontractor.

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