T
11-16

C/B

a- call @ Eliz. Strong
(P2)
Send entire letter to Stowell?
my cover says - stop here?
RFC
Stowell retirement at 56! wait for Dale Reis?

INTEROFFICE MEMORANDUM

Doc. No: 009008
Date: 08-Oct-1993 03:06pm EDT
From: Elizabeth Strong @OFO
STRONG.ELIZABETH
Dept: Global Account Mgr. - Raytheon
Tel No: 274-6502

TO: Remote Addressee (RUSS GULLOTTI @MKO)

CC: Remote Addressee (STEVE NAGY @OFO)
CC: Tom Colatosti (COLATOSTI.TOM)
CC: Remote Addressee (GERRY LAGRO @MKO)

Subject: RAYTHEON - INTERNATIONAL AIR TRAFFIC CONTROL

Russ,

I've been tracking our activities with Raytheon on International Air Traffic Control (IATC), and am disappointed with our progress to date. It appears that Walter's enthusiasm for working together in this area is not contagious in his IATC organization.

The attached documents provide some detail. The first is an internal Raytheon memo from Pete Dunham, Deputy Director IATC, to Walter which summarizes Raytheon's view of our offerings/capabilities. We do not concur on many of his points. Steve Nagy's response (also attached) clarifies our position.

The bottom line is this: in April, we agreed that a benchmark was the necessary next step. After considerable delays on Raytheon's part, they delivered the benchmark, in mid August. However, the Raytheon person assigned was not familiar with the benchmark, and because he didn't have the input parameters, we were not able to complete it. We have requested that someone who is familiar with the benchmark work with us, but we are still waiting.

We will continue to pursue the IATC area, but I am not optimistic about our ability to do business together at least in the short term.

Regards,
Elizabeth

11.92 Vote

****** URGENT PLEASE HAND DELIVER ******

Raytheon

September 15, 1993

RAYTHEON COMPANY
EQUIPMENT DIVISION
INTERNATIONAL ATC
1001 BOSTON POST ROAD
MARLBOROUGH, MA 01752

TO: Steve Nagy

FAX # 617 273-6571

FROM: P. C. DUNHAM

FAX # 508-490-3050
TEL # 508-490-3569

MESSAGE:

PAGES IN ADDITION TO THIS PAGE 2

Attached please see a copy of a memeo I sent to W. Stowell regarding our meeting. Noted are action items which I recorded. I would appreciate your response, particularly any information which contradicts the conclusions I made from the meeting.

Peter Dunham

OCT 8 '93 15:58 FROM DIGITAL EQUIPMENT PAGE.003

Raytheon

Organization	Equipment International Air Traffic Control	Classification	Unclassified
		Contract Number	
Date	September 2, 1993	File Number	
To	W. Stowell	Memo Number	PCD93:030
From	P. C. Dunham	Distribution	As Listed
Subject	Digital Equipment Co. Meeting on 13 August		

As you know, DEC people came in on 13 August to brief us on the Alpha products and answer questions. This memo summarizes some of the noteworthy points and lists action items. Its issue has been delayed in order to verify some points which have taken some time on both sides. Also, none of the DEC promised items have been received to date.

Noteworthy Points:

The claims for products and capabilities are impressive, but when probed, the following resulted:

1. For the immediate future, all development must be performed using DEC systems (ie., not SUN, DG, Motorola or any other product).
2. The ELX real time Kernel has been developed for other machines including Motorola 68K but, there are no plans for an 88K version.
3. DEC plans to retain their little endian bit conventions. (SUN, Motorola, and DG use big endian) For our applications, additional software and loading results.
4. The Ada for Alpha is available in a limited feature version for testing now, but a complete Ada will not be released until December. By the way, this is claimed to be the worlds first 64 bit Ada compiler. DEC is actively helping to resolve bugs, etc. at at least one beta site.
5. Alpha products in VME chassis will be a special product, but they have a VME version Alpha processor SBC ready for ordering. They have not yet established a VME computer system which would be similar in configuration to our existing design with various third party VME I/O and time code modules.
6. DEC will demonstrate Alpha/OSF/X/Methius/Sony at ATCA.
7. DEC now accepts liability clauses for products.
8. Availability of OSF/1 with UNIX 5.4 features October 1993. Although a version with a subset of 5.4 features is available now, it would require a significant amount of effort to determine if all the features we require are appropriately implemented. DEC claims that OSF/1 will compile and run UNIX with few changes. This we will have to prove.
9. No feedback has yet been received regarding the benchmark provided several weeks before the meeting. It was reported at the meeting to have been compiled.

DEC Agreed to Provide:

1. TCP/IP latency figures for Ethernet and FDDI.
2. OSI availability information.
3. Polycenter information.

4. Details on interrupt response latency.
5. Raytheon benchmark results.
6. Standards definition and comparison of Alpha stats with other processors.
7. Information relating to 3rd party cards ie. FDDI.
8. Information on Cohesion works-DECFUZE environment.
9. Review of IATC "open" requirements and how DEC could be used on a selective basis.
10. Alpha sites where we could obtain references.
11. Details applicable to Alpha relevant activity in foreign countries.

Raythcon Agreed to Provide:

1. Interpretation of benchmark results. (SSL)
2. Provide DEC a specific system configuration to price. (P. McFerrin give to Lee Stammes 617 273-6754).

Other Comments

1. We had previously provided a LAN loading benchmark software package to DEC for evaluation.
2. We plan to conduct some compiling tests to determine how easily we might recompile our software to run on the Alpha.
3. We do not plan to do any significant running on the Alpha in the immediate future since it would be a major effort and require a number of systems and as of now we see no particular reason to do it.
4. We are, of course, concerned about the close relationship via special products, etc. and commonality with our competitor in IATC, TCSF and how we could possibly work closely together in this circumstance.
5. We plan to continue to consider and evaluate the product for possible use on bids where it offers advantages.
6. From the above stated availability of products, it will be late this year to early next year before results are obtainable in key areas.
7. It might also be pointed out that although the software products will probably become the richest in the industry, they are now very immature and should pose significant risk to commit to use in our systems for the next year or two at least.

P. C. Dunham
Deputy Director

cc:
M. Hoeffler
P. McFerrin
A. Nussbaum
J. Levinthal
M. Muchard
J. Gwinn

September 16, 1993

Mr. Peter Dunham
Deputy Director
Raytheon Company
Equipment Division
International ATC Directorate
1001 Boston Post Road
Marlborough, MA 01752

Subject: Your FAX dated 9/14 of Memo PCD93:030

Dear Peter:

We have received a copy of the subject memo and first of all must apologize for the delay in responding to our list of action items. Some of the conclusions that you have reached may indeed change after we exchange some additional information. Following are comments on certain points raised in your memo which we believe require clarification or are contradictory to more extensive evaluations completed by other Raytheon divisions or groups.

Reference your memo "Noteworthy Points"

"1. For the immediate future, all development must be performed using DEC systems (ie., not Sun, DG, Motorola or any other product)."

Raytheon Missile Systems Division selected Digital's Alpha hardware platform and our TEAM/SEE (Software Engineering Environment) because it provided the most flexible and open software development environment available in the marketplace. Software development will be done using Alpha, Sun, HP and Silicon Graaphics workstations. This decision was made by MSD after an extensive market survey of SEE features and the availability of third party products.

Alpha and TEAM/SEE are also being strongly considered by MSD as the software development environment for the Hawk FDOC (Fire Direction Operation Center) program.

"2. The ELX real time Kernel has been developed for other machines including Motorola 68K but, there are no plans for an 88K version."

Your statement is true, but results from the fact that there has been no demand for a Motorola 88K ELX kernel due to the limited market penetration of the 88K series.

OCT 8 '93 15:54 FROM DIGITAL EQUIPMENT PAGE.006

"4. The Ada for Alpha is available in a limited version for testing now, but a complete Ada will not be released until December. By the way, it is claimed to be the world's first 64 bit Ada compiler. DEC is actively helping resolve bugs, etc. at at least one beta site."

Our full feature Ada compiler for OSF/1 has been in beta test since last June. It is scheduled for revenue shipment in December 1993. Raytheon Sub Sig is one of many beta test sites for Ada where it is being used to port RADEX to OSF/1. Jack Brooks recently commented that our field test compiler was more stable than other production compilers they have used in the past.

"9. No feedback has yet been received regarding the benchmark provided several weeks before the meeting. It was reported at the meeting to have been compiled."

The referenced benchmark was received four days before our meeting of August 13, 1993. The benchmark was compiled and run with Raytheon supervision on Thursday August 12, 1993 (we were ready on Wednesday, but Dave Miles was not available until Thursday). As we discussed at the meeting on the 13th and several times thereafter, Dave Miles was not familiar enough with the benchmark or its results to provide an evaluation. Also certain input parameters unknown to Dave Miles are required to provide a complete run. We have an open request for someone from Raytheon familiar with the benchmark to work with us to complete the task. Enclosed is a copy of the benchmark output obtained on August 12, 1993 in case someone from Raytheon can intrepret the results obtained to date.

Reference your memo "Other Comments"

"1. We had previously provided a LAN loading benchmark software package to DEC for evaluation."

The only benchmark we have received was the one referenced above where we await further input from Raytheon. Please advise if there is another benchmark we should have.

"2. We plan to conduct some compiling tests to determine how easily we might recompile our software to run on the Alpha."

We are ready to support these efforts when requested.

"3. We do not plan to do any significant running on the Alpha in the immediate future since it would be a major effort and require a number of systems and as of now we see no particular reason to do it."

OCT 8 '93 15:54 FROM DIGITAL EQUIPMENT PAGE.007

"5. We plan to continue to consider and evaluate the product for possible use on bids where it offers advantages."

With respect to the above two comments we submit that the SIVAM RFP provides the opportunity and reason to seriously evaluate Alpha for your application. Whereas Digital and Raytheon MSD have agreed to team on this opportunity based on Digital's manufacturing and service presence in Brazil, it would seem appropriate to consider Alpha for the ATC Network as well as the Main Processing Network.

"7. It might be pointed out that although the software products will probably become the richest in the industry, they are now very immature and should pose significant risk to commit to use in our systems for the next year or two at least."

We would like to know specifically which software products you require for your application. In reality many premier UNIX applications are running on OSF/1 today with most others committed for short term (less than six months) availability.

As we discussed in the meeting of August 13, the industry is moving toward 64 bit computer architectures which will require unified or enhanced versions of UNIX similar to the products offered by Digital today. Raytheon has the opportunity to move forward now and take advantage of the capabilities offered by Alpha and OSF/1 just as many of your competitors are already doing.

Enclosed pleased find information on the following items referenced in your memo as "DEC Agreed to Provide" items. A single set of single sided, not stapled, material is provided in case multiple copies need to be made for distribution. The balance of the information will be provided no later than Friday September 24.

"2. OSI availability information.
3. POLYCENTER information.
6. Standards [benchmark] definition and comparison with other processors.
8. Information on COHESIONWorX and DEC FUSE.
9. Review of IATC "open" requirements and how DEC could be used on a selective basis. [We are still waiting to receive these requirements from Raytheon.]
10. Alpha sites where we could obtain references.

OCT 8 '93 15:55 FROM DIGITAL EQUIPMENT PAGE.008

Thank you for your continued interest in Digital products and services.

Very truly yours,

Stephen F. Nagy
Account Executive
Digital Equipment Corporation

Digital Equipment Corporation
New England District-Sales & Service
One Burlington Woods Drive
Burlington, Massachusetts 01803
617.273.6500

September 23, 1993

digital

Mr. Peter Dunham
Deputy Director
Raytheon Company
Equipment Division
International ATC Directorate
1001 Boston Post Road
Marlborough, MA 01752

Subject: Additional Follow-up to 8/13/93 Meeting

Dear Peter:

As promised in our letter of September 16, 1993 we are enclosing additional information concerning the open items from our meeting of August 13, 1993. Enclosed you will find information on the following as referenced in your memo as "DEC Agreed to Provide" items.

"1. TCP/IP latency figures for Ethernet and FDDI.
4. Details on interrupt response latency.
5. Raytheon bencmark results. [Still waiting for Raytheon input.]
7. Information relating to third party cards ie. FDDI.
11. Details applicable to Alpha relevant activity in foreign countries."

1. As you know the overall latency in network transmission is highly dependent on the overall network topology. Individual components (hardware and software) all contribute to the overall message transmission latency. Since the collision detection mechanism employed by Ethernet makes the medium fundamentally non-deterministic the latency of individual components is moot. FDDI with its token passing mechanism is deterministic, but latency can vary depending on overall topology. In either case, the latency due to the physical medium is probably small compared to the latency due to the protocol stack, which will depend on the actual system environment. We believe that the representative answer to this question can best be determined by running the Raytheon LAN loading benchmark referenced in your memo of September 2, 1993 (PCD93:030). Results of this benchmark are presumbably typical of the actual IATC configurations employed in your programs.

OCT 8 '93 15:56 FROM DIGITAL EQUIPMENT PAGE.010

Digital Equipment Corporation

4. Details on interrupt latency are included in the "Alpha AXP and DEC OSF/1 Performance Primer" transmitted previously in our memo of September 16, 1993. Refer to page 46 and following pages of this document for interrupt latency information.

7. As you point out in your September 2, 1993 memo Digital does not currently have an "off-the-shelf" VME based computer system. Our approach here is to employ our standard Alpha AXP single board computer in combination with third party VME options of choice for a specific customer situation. In your case we would configure an IATC specific system that would include the VME options that you currently use and we would provide the necessary OSF/1 driver support to ensure compatability with your current application software. As we pointed out during the meeting, our single board product will also employ the PCI (Peripheral Component Interconnect) bus which may provide some lower cost interface options that may be transparent to your application software. When we receive details on your typical system configuration we can evaluate any trade offs between VME and PCI that might afford you with a lower cost solution.

11. The Alpha AXP family of products is sold and supported on a worldwide basis. Current chip manufacturing is done by Digital in our Hudson, MA and South Queensferry, Scotland facilities. In calendar year 1994 Mitsubishi will be second source for chips in a facility presumably located in the Pacific rim. Actual system integration takes place in a variety of locations including plants based in the United States, Canada, Europe, Pacific rim and Australia. Support for Alpha AXP systems is available in all countries currently supported by Digital's field service organization. A list of supported countries and the associated service delivery locations is included on the attached list.

Should you have any questions or comments on this information please let us know.

Thank you for your continued interest in Digital products and services.

Very truly yours,

Stephen F. Nagy
Account Executive
Digital Equipment Corporation

(1) no differentiation on AK
of Digital. We know.

(2)

- taking a long time
- benchmarks

I call wait
- no real progress
- are doing a benchmark
- stack of memos -
- want to see them
- advise on proceed or stop?

Printed by RUSS GULLOTTI @MKO

INTEROFFICE MEMORANDUM

Doc. No: 062597
Date: 06-Oct-1993 10:10am DST
From: Elizabeth Strong @OFO
STRONG.ELIZABETH AT A1 at NEMAIL at NQO
Dept: Global Account Mgr. - Raytheon
Tel No: 274-6502

Customer file - Raytheon

TO: See Below

Subject: RAYTHEON EXECUTIVE DINNER ACTION ITEM STATUS

Attached please find the updated action item status lists, by date, from our Executive Dinners with Raytheon.

The Business/Technology Exchange is scheduled for November 23. I'm working with Bill Koteff, Peter George, Herb Shumway and Fred Hembrough (direct report to Phil Cheney) to plan the meeting. We will provide details as soon as possible.

Walter Stowell has just announced his retirement from Raytheon after 33 years of service. (Evidently, he had been planning to retire at 55 for some time, and has just turned 56.) Dale Reis, formerly GM of Submarine Signal Division, has been named as the new GM for the recently consolidated Subsig and Equipment Divisions. I expect Dale will be joining us for the next Executive dinner which is targeted for early December.

Regards,
Elizabeth

Action Items from Raytheon & Digital Executive Dinner - August 9, 1993

	ACTION	OWNER	STATUS
1.	Establish contact between Digital and Raytheon MSD in Taiwan and Korea.	B. Choonavala/ B. Swanson	in process
2.	Establish contact between Bruce Holbein and Rick Bartnick to address the Massachusetts Administration (e.g. elimination of export controls and restrictions.)	R. Gullotti/ E. Woollen	9/28 meeting postponed, to be rescheduled
3.	Collaborate to work with the Massachusetts legislature.	W. Hindle/E. Strong/ E. Woollen	in process
4.	Provide demonstration of ALPHA AXP/NT performance.	E. Strong	scheduled 10/13
5.	Conduct information exchanges (market presence, strategies, technologies) between RE&C and Digital's relevant Business Units. Include infrastructure opportunities with RE&C in GIA (General International Area).	J. Klein/ C. Miller	9/24 meeting postponed to be rescheduled
6.	Follow-up on Pixelvision Chips, ATM (partnering or competing), RDB, and VME.	B. Strecker/ W. Stowell	Pixelvision complete, others open
7.	Conduct Business and Technology Exchange.	B. Strecker/ P. Cheney	scheduled 11/23
8.	Examine joint opportunities in Semiconductor area such as gallium and wireless LAN's.	B. Strecker/ P. Cheney	open
9.	Examine Digital's ability to help with the SIVAM (Brazil program) financing strategy.	B. Choonavala/ B. Swanson	in process
10.	Evaluate IVHS (Intelligent Vehicle Highway System) partnering opportunity.	T. Colatosti/ B. Swanson	in process
11.	Schedule third executive dinner late November. Discussion to include agenda for CEO meeting. Include Bob Swam.	E. Strong	in process
12.	Explore partnering potential on TAC4.	T. Colatosti/ W. Stowell	in process

Action Items from Raytheon & Digital Executive Dinner - April 1, 1993

Each of the action items listed below was based on a commitment by both companies to explore specific opportunity areas to determine how to pursue them jointly.

1.	Develop a process to work together to pursue International Air Traffic Control business. Status: Ran preliminary benchmark - need to complete.	Gullotti/ Stowell	in process
2.	Identify appropriate team roles to pursue C4I programs such as Telemedicine, JPS, and SIVAM, based on respective core competencies. Status: Roles defined for GPALS (BMD) and JPS. Teaming roles outlined for SIVAM. Telemedicine discussions now underway with Raytheon Service Company.	McCabe/ Swanson	on-going
3.	Assess TAC-4 militarized/ rugged workstations opportunities. Determine how to jointly penetrate this market. Status: No mil requirement in TAC-4 RFP. Digital and Raytheon agreed to consider an unsolicited section on a mil solution/	Stowell/ McCabe	in process
4.	Conduct technology exchanges on engineering processes and technologies. Status: Conducted technology exchange on Open systems Integration and PC LAN's. Bob Sexton named to Storage Fellowship.	Strecker/ Cheney	on-going
5.	Explore opportunities and strategies in the Pacific Rim. Status: Meetings occurred 5/13/93, 5/18/93, and 7/6/93. Follow-up meeting to be scheduled in Taiwan.	Wood/ Choonavala/ Woollen	on-going

Follow-up discussions also planned with RE&C and Digital on infrastructure opportunities in China.

6.	Explore opportunities and strategies in Europe. (Elizabeth to discuss with Dick Poulsen.)	Poulsen/ Woollen	in-process
7.	Work with Bob Palmer to designate a point of contact with the State of Massachusetts. Status: Win Hindle named as primary contact with State of Massachusetts.	Gullotti	complete
8.	Conduct a joint meeting to review Raytheon's 5 year plan and Digital's view of where the technology is going. Review specific opportunity areas and determine next steps. Team expertise between our companies.	McCabe/ Swanson	scheduled 11/23
9.	Arrange a discussion between Dennis Picard and Bob Palmer. Status: To be discussed at next executive dinner.	Gullotti/ Woollen	in process
10.	Convene a second executive dinner in July to determine progress. Status: Scheduled for August 9 1993.	Swanson/ McCabe	complete

Distribution:

TO: FRANK MCCABE @MLO
TO: RUSS GULLOTTI @MKO
TO: BILL STRECKER @MLO
TO: BOBBY CHOONAVALA @AKO
TO: JOHN KLEIN @MLO

CC: Tom Colatosti (COLATOSTI.TOM AT A1 at NEMAIL at NQO)
CC: RAY WOOD @AKO

Raytheon Company
Executive Offices
141 Spring Street
Lexington, MA 02173

617 862 6600
Telex 92 3455
Cable Raytheonex

Raytheon

Biography

DR. PHILIP W. CHENEY

Raytheon Company
Vice President, Engineering

Dr. Philip W. Cheney is Raytheon Company's vice president of engineering. He is responsible for providing corporate direction and assistance to the engineering functions throughout the diversified, technology-based company. He was elected a company officer in January 1990.

Prior to his election as vice president, Dr. Cheney had been serving as director of engineering, a position he had held since November 1989.

Dr. Cheney was born December 3, 1935, in Portland, Oregon, where he graduated from Washington High School in 1953. He earned bachelor's and master's degrees in electrical engineering from Massachusetts Institute of Technology in 1957 and 1958 and a Ph.D. in electrical engineering from Stanford University in 1961.

Dr. Cheney joined Raytheon in 1961 and held a number of positions of increasing responsibility within the Missile Systems Division. He served as Manager of the Digital Systems Laboratory; Manager of the Bedford Laboratory; Assistant Programs Manager, Patriot Programs; and Deputy Programs Manager, Hawk Programs. In 1985, he became manager of the Advanced Medium Range Air-to-Air Missile (AMRAAM) program.

He is a member of the Institute of Electrical and Electronic Engineers and a director of Emerson Hospital, Concord, Mass.

Dr. and Mrs. Cheney reside in Acton, Mass.

Raytheon, headquartered in Lexington, Mass., is a diversified, technology-based company active in electronics, aircraft products, energy and environmental services, and major appliances.

Raytheon Company
Executive Offices
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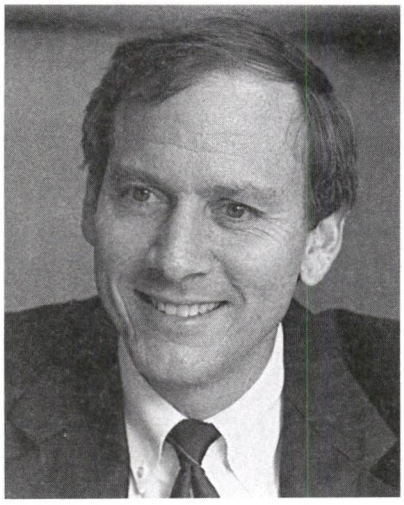
Raytheon

Biography



EDMUND B. WOOLLEN

Raytheon Company
Vice President,
Corporate Marketing

Edmund B. Woollen is Raytheon Company's vice president of corporate marketing , a position he has held since October 1, 1990. He had previously served for four years as director of government marketing. He was elected a vice president in September 1990.

Mr. Woollen was born on November 23, 1944 in Rocky Mount, N.C. He graduated from Ingraham High School, Seattle, Wash., in 1962 and received a bachelor of science degree in geophysical oceanography from the University of Washington in 1967.

After serving as an officer in the U.S. Navy from December 1967 until June 1975, Mr. Woollen served as a senior associate systems engineer for Hughes Aircraft in Canoga Park, Calif. and as a senior marketing representative for OTI in Burbank, Calif.

Mr. Woollen joined Raytheon in 1979 and marketed electronic warfare systems in the U.S. and internationally for the company's Electromagnetic Systems Division in Santa Barbara, Calif. From 1981 to 1986, he served as a vice president of Raytheon Overseas Limited, operating from the company's office in Brussels, where he was responsible for marketing activities in various NATO and Middle Eastern countries.

Raytheon, is a diversified, technology-based company active in electronics, aviation, appliances, industry and environmental services, publishing and construction.

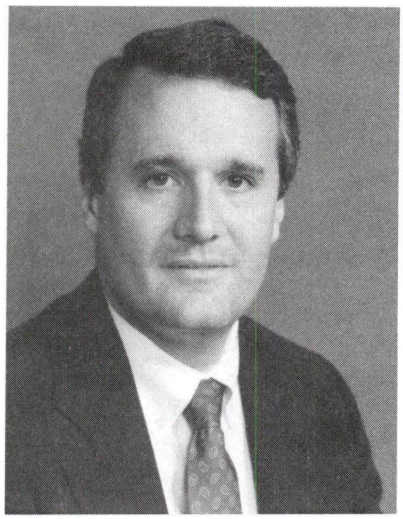
He and his wife, the former Marie Thompson of Maxton, N.C., reside in Windham, N.H.

Raytheon Company
Missile Systems Division
180 Hartwell Road
Bedford MA 01730-2487

617 274 5000
TWX 710 326 0549
Telex 92 3338

Raytheon

Biography



WILLIAM H. SWANSON

Raytheon Company
Senior Vice President
General Manager,
Missile Systems Division

William H. Swanson is the General Manager of Missile Systems Division. He was elected Vice President of Raytheon Company in June 1987 and Senior Vice President in June 1990.

As General Manager, Mr. Swanson provides leadership direction for 15,000 employees worldwide. Programs at the Division include: PATRIOT, HAWK, Stinger, Standard and AEGIS Extended Range surface-to-air missiles; Sparrow, AMRAAM, Sidewinder, Phoenix and AAAM air-to-air missiles; and Maverick and BAT air-to-ground missiles. In Massachusetts, besides its Bedford Headquarters and its Missile Systems Laboratories located in Tewksbury, the Division has major manufacturing facilities at Andover and Lowell. There are also plants at Bristol, Tennessee and Manchester, New Hampshire, as well as operations at the White Sands Missile Range, New Mexico and in Huntsville, Alabama.

Prior to assuming his present position, Mr. Swanson was Vice President and Assistant General Manager for Operations, Missile Systems Division. Concurrently, he was also responsible for the leadership and direction of the Andover Plant, the largest manufacturing facility within the Raytheon Company.

Under his leadership, the Andover Plant received the Army's highest Quality Recognition by being named a "Certified Contractor" in June 1987, a distinction the facility still enjoys. The plant was also honored by the Army for its outstanding performance on the Patriot Program during Desert Storm.

Mr. Swanson joined the Raytheon Company in 1972, and has held a wide range of challenging positions including Manufacturing Manager of the Company's Equipment Division Manufacturing Operations in Waltham, Massachusetts.

A native of California, Mr. Swanson graduated Magna Cum Laude from California Polytechnic State University with a Bachelor of Science Degree in Industrial Engineering. His graduate work was performed in Business Administration at Golden Gate University. He was selected as the outstanding Industrial Engineering Graduate in 1972 and in 1991 was recognized the Honored Alumnus from California Polytechnic State University School of Engineering. Mr. Swanson is a member of Tau Beta Pi, Alpha Pi Mu, and Blue Key Honor Societies. He is also a graduate of Raytheon management programs.

In addition to his professional accomplishments, Mr. Swanson is a Trustee for the Greater Lawrence Community Foundation; serves on the California Polytechnic State University School of Engineering Advisory Council and the Massachusetts Military Affairs Council of the North Suburban Chamber of Commerce; and is a member of the American Defense Preparedness Association, the Association of the United States Army, the Navy League and the Air Force Association.

He and his wife Cheryl currently reside in North Andover, Massachusetts.

Raytheon Company
Equipment Division
1001 Boston Post Road
Marlborough, MA 01752

508 490 1000
Telex 798120

Raytheon

Biography

WALTER H. STOWELL

Senior Vice President &
General Manager
Equipment Division

Walter H. Stowell is a senior vice president of Raytheon Company and since 1986 has been general manager of its Equipment Division, headquartered in Marlborough, Mass. He was elected as an officer of the company in 1984 and was made a senior vice president in May 1989.

The Equipment Division is Raytheon's second largest organization, with more than 10,100 employees and sales in excess of $1 billion per year. It develops and builds military and commercial radars, air traffic control systems, satellite terminals, communications equipment, Navy missile fire control systems and military-qualified computers. The division has major facilities in Wayland, Sudbury, Waltham and Marlborough Massachusetts; as well as in Waterloo, Ontario, Canada and Harlow, Essex, England.

Mr. Stowell was born on July 29, 1937, in Burlington, Vt. He graduated from Spaulding High School, Barre, Vt., in 1955. He earned his bachelor's and master's degrees in electrical engineering from Rensselaer Polytechnic Institute in 1959 and 1962, respectively.

Mr. Stowell joined Raytheon in 1960 as a project engineer and has held increasingly responsible positions in engineering, program and general management. In 1977, he became the director of Equipment Division's data acquisition systems directorate, which is responsible for the company's large phased-array radar programs. He was named manager of the division's research and development laboratories in 1981. In 1983, Mr. Stowell was named assistant general manager, operations at Equipment Division and directed the unit's day-to-day operations.

Mr. Stowell is a member of the American Defense Preparedness Association, Armed Forces Communications and Electronics Association, Association of the U.S. Army, Institute of Electrical and Electronics Engineers and the Navy League.

Mr. Stowell is married to the former Carolyn S. Schneider of Madison, Conn. They reside in Sudbury, Mass., and have three children.

Raytheon, headquartered in Lexington, Mass., is a diversified, technology-based company active in electronics, aircraft products, appliances, and energy and environmental services.

Raytheon Engineers &
Constructors, Inc.

141 Spring Street
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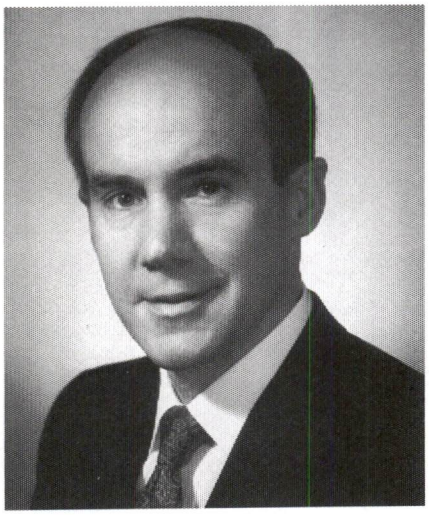
617 862 6600

Raytheon
Engineers & Constructors
A Consolidation of Badger and UE&C

Biography



CHARLES Q. MILLER

Senior Vice President
Group Executive
Raytheon Engineers & Constructors International

Chairman and CEO
Raytheon Engineers & Constructors, Inc.

Charles Q. Miller is a senior vice president and group executive for Raytheon Engineers & Constructors International, headquartered in Lexington, Mass. He was named to this position in June 1993. Mr. Miller also has served as chairman and CEO of Raytheon Engineers & Constructors, Inc., since its inception in March 1993.

Raytheon Engineers & Constructors International consists of Raytheon Engineers & Constructors, Inc., Raytheon Service Company, and Cedarapids, Inc. Raytheon Engineers & Constructors, Inc., was formed to consolidate the operations of United Engineers & Constructors International, Inc., and The Badger Company, Inc.

Mr. Miller previously was United Engineers & Constructors' president and chief executive officer.

RE&C ranks among the largest engineering, construction, operations and maintenance companies in the world. Its worldwide markets include the Department of Defense and Department of Energy; NASA; infrastructure; petroleum and gas; chemicals and polymers; environmental; fossil and nuclear power generation and maintenance; pharmaceutical and biotech; test range, base and facilities management and maintenance; air traffic control support services; chemical munitions destruction; metals, mining, and light industry; and consumer products.

With more than 13,000 professional employees and an equal number of craft employees worldwide, the group generates annual sales exceeding $1.7 billion and is involved in projects around the world with a total cost exceeding $5 billion. The group has major operational centers and offices in Cambridge and Burlington, Mass.; Philadelphia; New York City; Greenville, S.C.; Winston-Salem, N.C.; Cedar Rapids, Iowa; Eugene, Oregon; Knoxville, Tenn.; Tampa, Fla.; Chicago, Houston, and Denver.

Its primary overseas offices are in London, The Hague, and Taipei.

Mr. Miller was born in Baltimore, Md., in 1945. He graduated from Baltimore Polytechnic Institute in 1963. He received a bachelor of science degree from the U.S. Naval Academy in 1967, a master of science degree in applied mechanics from Stanford University in 1970, and a juris doctor degree from Rutgers in 1980. Mr. Miller is a registered professional engineer in 22 states.

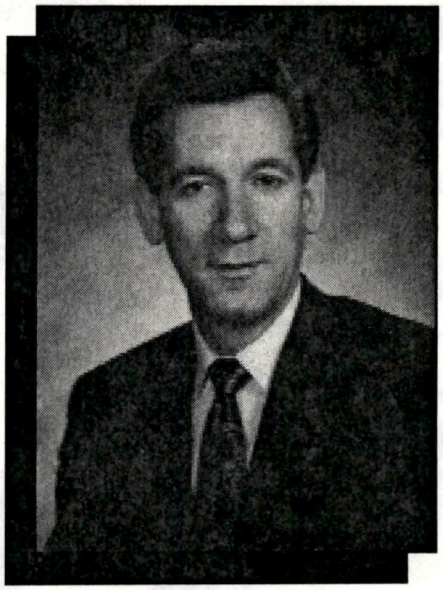
Mr. Miller joined UE&C in 1974. Prior assignments included vice president and general manager of UE&C's Stearns-Roger Division in Denver and vice president of the Power Division in Philadelphia.

Raytheon, headquartered in Lexington, Mass., is a diversified, international, technology-based company active in electronics, aircraft products, appliances, and energy and environmental services.

Mr. and Mrs. Miller and their three children will be relocating to the area.

digital

THOMAS J. COLATOSTI



THOMAS J. COLATOSTI, VICE PRESIDENT, GENERAL MANAGER, U.S. DEFENSE, AEROSPACE, MANUFACTURING AND ELECTRONICS BUSINESS UNIT, IS RESPONSIBLE FOR LEADING THE SALES, MARKETING AND SERVICES OPERATIONS TO ACHIEVE AND SUSTAIN LEADERSHIP MARKET SHARE, REVENUE, GROWTH, PROFITABILITY, AND CUSTOMER SATISFACTION IN THESE INDUSTRIES. IN ADDITION, HE IS RESPONSIBLE FOR THE MANAGEMENT OF THE U.S. STATE AND LOCAL GOVERNMENT INDUSTRY GROUP.

COLATOSTI JOINED DIGITAL IN 1973 IN THE CORPORATE TREASURY GROUP. FROM 1974 TO 1980, HE HELD A SUCCESSION OF MANAGEMENT POSITIONS.

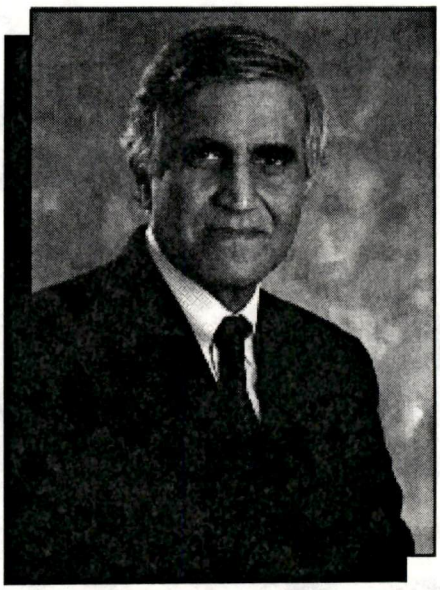
IN 1980, COLATOSTI WAS APPOINTED "CHIEF FINANCIAL OFFICER" FOR DIGITAL'S LARGEST INTERNATIONAL SUBSIDIARY, DIGITAL EQUIPMENT CORPORATION OF CANADA. HE RETURNED TO THE U.S. IN 1984 TO BECOME FINANCE AND ADMINISTRATION MANAGER FOR U.S. FIELD OPERATIONS.

HE WAS APPOINTED ASSISTANT CORPORATE CONTROLLER IN 1987 AND, SUBSEQUENTLY, WAS MANAGER OF STRATEGIC OPERATIONS. BEFORE ASSUMING HIS CURRENT POSITION, HE WAS RESPONSIBLE FOR DIGITAL'S SALES AND SERVICES BUSINESS OPERATIONS FOR THE EASTERN UNITED STATES.

COLATOSTI EARNED A BACHELOR OF SCIENCE DEGREE IN MANAGEMENT AND FINANCE AND A MASTERS IN BUSINESS ADMINISTRATION FROM SUFFOLK UNIVERSITY.

digital

Bobby Choonavala



Bobby Choonavala is corporate vice president and president of Digital Equipment Corporation International (GIA). He is responsible for conducting business in 40 countries, including Canada and countries in South America, Asia, the Pacific Rim, and the South Pacific.

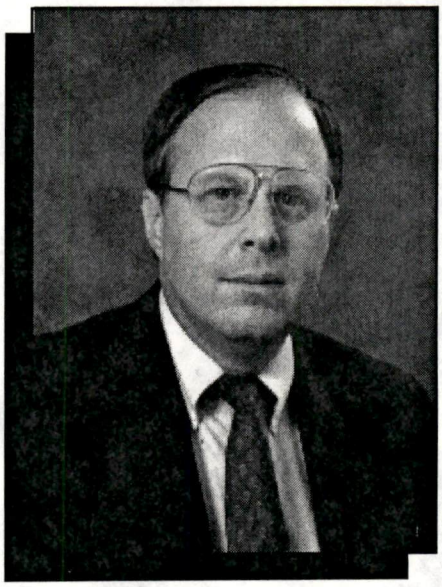
Choonavala joined Digital in 1966 as project engineer in Maynard, Mass., and two years later became the first manager of the company's Dutch subsidiary. He then served as a district manager in Europe before becoming manager of the former southwest region in Europe from 1973 to 1978.

In 1983, after five years as the European sales manager based in Geneva, Choonavala was appointed vice president, International Sales for Digital's European operation. Prior to being named president of GIA, he was president and managing director of Digital Equipment Asia, based in Hong Kong.

Choonavala earned a bachelor of science degree in Physics from Bombay University and a master of science degree in Electrical Engineering from the Technischer Hochschule in Germany.

digital

William D. Strecker



William D. Strecker, vice president of Engineering and chief technology officer, is responsible for Digital's overall technology strategy and heads Digital's Engineering organization which includes hardware, operating systems, networks, layered software, systems engineering, and research. In this role, he reports to President and CEO Bob Palmer.

Strecker joined Digital in 1972 as a member of the Corporate Research and Development group, where his work on cache memories and system simulation led to the development of the PDP-11/70. He led the development of the VAX architecture. He played a key role in the development of the Computer Interconnect (CI) and led the development of the Systems Communications Architecture, both major elements of VAXclusters.

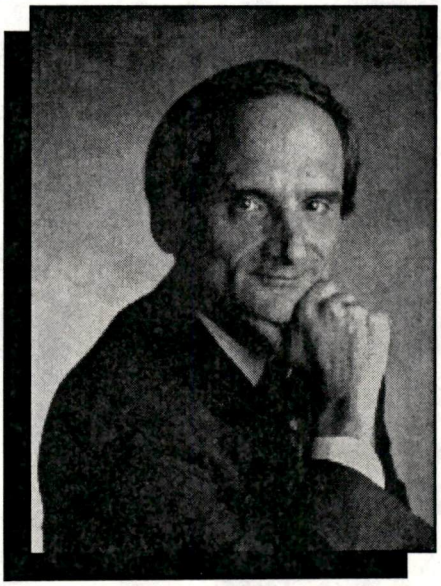
After holding a series of engineering and management positions, Strecker became manager of Engineering Product Strategy and Architecture in 1984. He was named vice president in 1985. He was subsequently named vice president, Distributed Systems Software in 1989 where he was responsible for all operating system and layered software development. Strecker was named vice president of Engineering in 1990 and Chief Technology Officer in 1992.

Strecker holds Bachelors, Masters, and Ph.D. degrees in Electrical Engineering from Carnegie Mellon University.

digital

RUSS GULLOTTI

This was supposed to be changed - I'll talk to Nora



RUSS GULLOTTI IS VICE PRESIDENT, U.S. AREA, RESPONSIBLE FOR ALL U.S. SALES, SERVICES, AND CUSTOMER SUPPORT. GULLOTTI JOINED DIGITAL IN 1977 AS THE U.S. MANUFACTURING MANAGER FOR THE COMPUTER SPECIAL SYSTEMS (CSS) ORGANIZATION AND LATER WAS PROMOTED TO THE POSITION OF CORPORATE MANUFACTURING MANAGER IN CSS. HE SERVED AS PLANT MANAGER AT DIGITAL'S FINAL ASSEMBLY AND TEST PLANT IN SALEM, N.H., AND LATER RETURNED TO CSS TO ASSUME THE POSITION OF U.S. BUSINESS MANAGER.

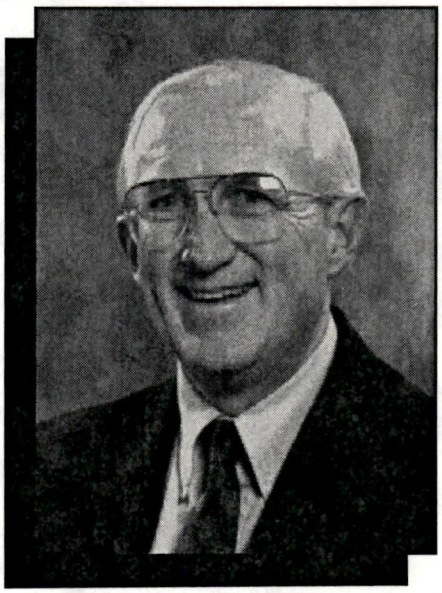
HE SOON WAS PROMOTED TO THE POSITION OF CORPORATE BUSINESS MANAGER FOR CSS, AND IN MARCH 1987, HE WAS PROMOTED TO THE POST OF VICE PRESIDENT OF CSS, WHERE HE SERVED UNTIL MAY 1989. AT THIS TIME HE BECAME VICE PRESIDENT OF CORPORATE ENTERPRISE INTEGRATION SERVICES (EIS).

GULLOTTI WAS THEN NAMED VICE PRESIDENT OF DIGITAL SERVICES, WHERE HE HAD COMPANY-WIDE RESPONSIBILITY FOR DIGITAL'S SYSTEMS INTEGRATION AND SUPPORT SERVICES, EDUCATION AND CONSULTING GROUP, AND DIGITAL PRODUCT SERVICES ORGANIZATION.

GULLOTTI IS AN HONORS GRADUATE WITH A BACHELOR'S DEGREE FROM BOSTON UNIVERSITY, HAS EARNED A MASTER'S IN BUSINESS ADMINISTRATION (MBA) DEGREE FROM THE UNIVERSITY OF NEW HAMPSHIRE, AND IS A GRADUATE OF DARTMOUTH COLLEGE'S TUCK EXECUTIVE PROGRAM.

digital

JOHN E. KLEIN



JOHN E. KLEIN

JOHN E. KLEIN RECENTLY JOINED DIGITAL AS VICE PRESIDENT, CONSUMER PROCESS TRANSPORTATION CUSTOMER BUSINESS UNIT, DIGITAL EQUIPMENT CORPORATION. HE IS RESPONSIBLE FOR ACHIEVING AND SUSTAINING INDUSTRY-LEADER GROWTH AND PROFITABILITY FOR DIGITAL WITH CUSTOMERS IN THE FOLLOWING INDUSTRIES, WORLDWIDE: TRAVEL AND TRANSPORTATION, RETAIL AND WHOLESALE, CONSUMER PACKAGE GOODS, FORESTRY, MINING, METALS AND GLASS, OIL AND GAS, CHEMICAL AND UTILITIES.

IN ADDITION, KLEIN IS RESPONSIBLE FOR SEVERAL APPLICATION AREAS WHICH SERVE CUSTOMERS IN MULTIPLE INDUSTRIES. THESE TARGET AREAS INCLUDE ENVIRONMENT, SUPPLY CHAIN, AND GIS.

OVER THE PAST 25 YEARS, KLEIN HAS BEEN IN THE INFORMATION TECHNOLOGY INDUSTRY, WHERE HIS MOST RECENT POSITION WAS VICE PRESIDENT OF WORLDWIDE MARKET SELECTION/MARKET DEVELOPMENT, INDUSTRIAL SECTOR DIVISION, IBM. OTHER POSITIONS INCLUDED GENERAL MANAGER OF THE MANUFACTURING SYSTEMS PRODUCTS UNIT AND DIRECTOR OF DIRECT RESPONSE MARKETING.

KLEIN HOLDS A BACHELOR'S DEGREE IN MECHANICAL ENGINEERING FROM THE U.S. MERCHANT MARINE ACADEMY, AND AN MBA IN MARKETING MANAGEMENT FROM NEW YORK UNIVERSITY. HE IS A MEMBER OF THE BOARD OF ADVISORS OF THE NATIONAL COALITION FOR ADVANCED MANUFACTURING, AND A MEMBER OF THE SOCIETY OF MECHANICAL ENGINEERS.

(1) Sounds like no progress on A+C??
— follow up on all items
Seems relatively
weak.

I N T E R O F F I C E M E M O R A N D U M

Doc. No: 007703
Date: 04-Aug-1993 08:10am EDT
From: Elizabeth Strong
STRONG.ELIZABETH
Dept: AGM - Raytheon
Tel No: 274-6502

TO: See Below

Subject: Second Raytheon & Digital Executive Dinner

This will be the second Raytheon & Digital Executive Dinner. Digital hosted the first, which was held on April 1, 1993, at Chez Claude Restaurant in Acton, MA. Raytheon is hosting this dinner, and we will be meeting at the Westin Hotel in Waltham. Directions and logistics are enclosed.

At the first meeting, we acknowledged that both companies are interested in an expanded business relationship. During the course of the evening, we identified ten (10) action items to support this goal. The action items and current status are included in this briefing package.

Our objectives at this second dinner are:

(1) To review commitments and status from the last meeting.

(2) To identify additional areas and/or to expand on any given opportunity area.

(3) To further develop business relationships between our companies at the executive level.

The participants from both companies will be the same, with the addition of Chuck Miller, CEO of Raytheon Engineers & Constructors (RE&C), and John Klein who were both out of the country at the time of our last dinner meeting. We have just begun discussions with RE&C on two major areas: the Saudi Aramco project and infrastrucure opportunities in Taiwan, Hong Kong, and PRC. Follow-up meetings are scheduled for each to identify specific requirements and our respective capabilities.

The enclosed "Briefing Package for Digital Participants" is essentially the same information you received for the last dinner. The last two sections, "Status on Key Current Business Activities", and the P&L have been updated.

I look forward to seeing you at the dinner. Thank you for your support of the Raytheon Account.

Regards,
Elizabeth

Distribution:

TO:	Remote Addressee	(Russ Gullotti @MKO)
TO:	Remote Addressee	(Bill Strecker @MLO)
TO:	Remote Addressee	(Tom Colatosti @OFO)
TO:	Remote Addressee	(Bobby Choonavala @AKO)
TO:	Remote Addressee	(John Klein @MLO)
CC:	Remote Addressee	(Frank McCabe @MLO)

William H. Swanson
Senior Vice President
General Manager

Raytheon Company
Missile Systems Division
Bedford MA 01730

Raytheon

3 August 1993

Mr. Russ Gulloti
Vice President US Area
Digital Equipment Corporation
Digital Drive
Merrimack, NH 03054

Dear ~~Russ~~ Russ:

The second Raytheon and Digital Technology Exchange Executive Dinner is scheduled for 9 August 1993 at 6:30 PM at the Westin Hotel in Waltham, Massachusetts.

During dinner, we plan to discuss the actions from our last meeting, and to continue to explore new areas of potential business that would benefit both companies.

For your information, I have attached a list of actions from the last meeting and directions to the Westin Hotel. Also included is a biography of Chuck Miller who was not at the first dinner.

I look forward to seeing you soon and please call me at (617) 274-5033 if you require more information.

Sincerely,

William H. Swanson

Directions to:
Westin Hotel Waltham
70 Third Avenue
Waltham, MA 02154
(617) 290-5600

From the North:

I95 South become I95/Route 128 South near metro Boston area.

Exit 27A Totten Pond Road.

Cross overpass to stoplight.

Right onto Third Avenue at the stoplight.

From The West:

Route 2 East to Junction I95/Route 128 South.

Exit 27A Totten Pond Road.

Cross overpass to stoplight.

Right onto Third Avenue at the stoplight.

Or, I90 Massachusetts Turnpike East to Junction I95/Route 128 North.

Exit 27A Totten Pond Road.

Hairpin turn to right onto Third Avenue.

From the South:

I90 Mass Pike East to Junction I95/Route 128 North.

Exit 27A Totten Pond Road.

Hairpin turn to right onto Third Avenue.

From Logan Airport:

Follow signs to exit airport.

After exiting airport, follow signs to Sumner Tunnel (stay in the right lane of tunnel).

Take I93 South to I90 Mass Pike West to I95/Route 128 North.

Exit 27A Totten Pond Road.

Hairpin turn to right onto Third Avenue.

Raytheon & Digital Executive Dinner

Briefing Package
for
Digital Participants

August 9, 1993

Elizabeth A. Strong
Global Account Manager

RAYTHEON COMPANY OVERVIEW

Raytheon is a diversified, international, technology-based company ranked among the 100 largest U.S. industrial corporations. Statistics include:

- 1992 Sales: $9.1B
- 54% to the U.S. government, 46% commercial.
- Profits: 75% from government, 25% from commercial
- Non U.S. Sales: 18% of revenues
- Headquartered in Lexington, MA
- 21 divisions and subsidiaries in 38 states
- 22 overseas subsidiaries and affiliates, principally in Europe and the Pacific Rim
- 4 Business Segments:

  Electronics
  Aircraft Products
  Energy and Environmental
  Major Appliances

- 30 quarters of continuous revenue growth
- 33 quarters of continuous income growth
- 61,400 employees and downsizing
- R&D Expenditures - 3%

RAYTHEON BUSINESSES

ELECTRONICS: 1992 Sales of $5.5B

Government:

- Electromagnetic Systems Division
- Electronic Components Division
- Equipment Division
  - Cossor Electronics, Ltd.
  - Raytheon Canada
- Missile Systems Division
- Research Division
- Submarine Signal Division

Commercial:

- Raytheon Marine Company
- Seiscor Technologies
- Semiconductor Division
- Sorensen Company
- Switchcraft, Inc.
- Raytheon Europe
  - Balinger Schalttechnik GmbH & Co.
  - Electrical Installations, Ltd.
  - TAG Semiconductors, Ltd.

Educational Publishing:

- D.C. Heath and Company

AIRCRAFT PRODUCTS: 1993 Sales of $1B

- Beech Aircraft Corporation
  - Beech Aerospace Services, Inc.
  - Beech Holdings, Inc.

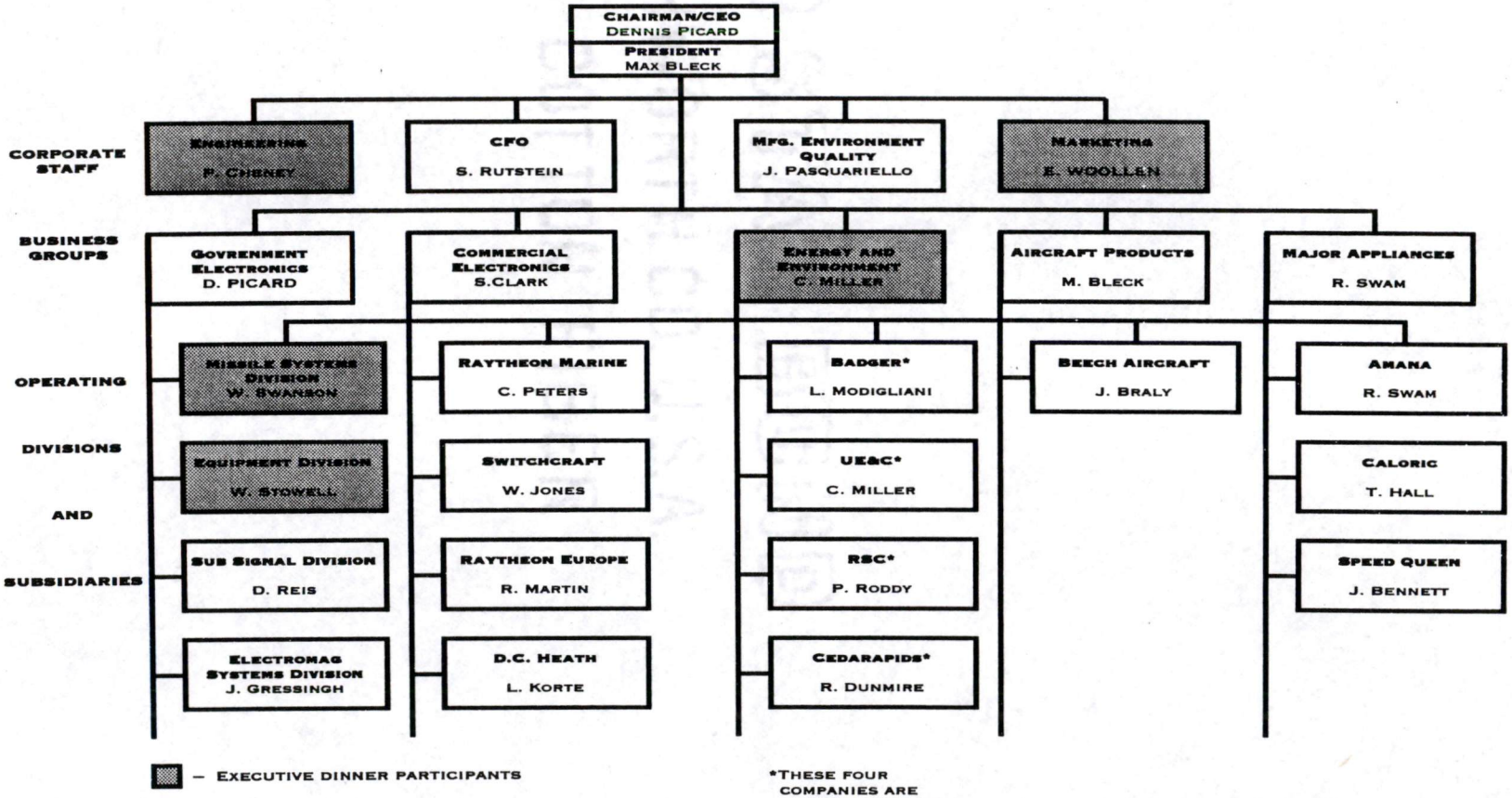
ENERGY and ENVIRONMENTAL: 1993 Sales of $1.6B

- The Badger Company
- Cedarapids, Inc.
  - El Jay
  - Standard Havens
- Raytheon Service Company
- United Engineers & Constructors
  - Yeargin
  - UE&C - Catalytic

MAJOR APPLIANCES: 1993 Sales of $1B

- Amana Refrigeration, Inc.
- Caloric Corporation
  - Glenwood Range Company
  - Modern Maid Company
- Speed Queen Company

RAYTHEON COMPANY



— EXECUTIVE DINNER PARTICIPANTS

*THESE FOUR COMPANIES ARE NOW PART OF THE NEWLY FORMED RAYTHEON ENGINEERS & CONSTRUCTORS (RE&C). CHUCK MILLER IS CEO OF RE&C.

DIGITAL CONFIDENTIAL

RAYTHEON PRODUCTS

ELECTRONICS:

- Missiles
  - Surface to Air (PATRIOT)
  - Air to Air (AMRAAM)
  - Air to Surface (MAVERICK)
  - Ship-launched (SPARROW)
  - Smart Munitions (BAT)
- Radars
  - Wide area surveillance (ROTHR)
  - Missile warning/track (GBR)
  - Low orbit surveillance COBRA DANE)
  - Weather (TDWR)
- Submarine/surface ship systems
  - Transducers
  - Combat/fire control systems (BSY-1/2)
  - Minehunting (SQQ-32)
- Electronic Combat - ECM (ALQ-184)
- Military Communications (MILSTAR)
- Military Computer (MILVAX/ALPHA)
- Air Traffic Control and Air Safety
  - AAS Consoles
  - IATC Systems
- Electronic Components
  - VLSI
  - VHSIC
  - MMIC
- Service and Support
  - Range Ops (Eastern Test Range)
  - Facility Management (NTR - GOCO)
  - Treaty Verification (Portal Perimeter)

AIRCRAFT PRODUCTS:

- King Air - Turbo-Prop
- Bonanza - Single Engine
- Beech Jet - Business Jet
- Starship - Advance Composite Aircraft

RAYTHEON PRODUCTS

ENERGY and ENVIRONMENTAL:

- Design & Contruction of Power Plants
- Engineering, Design & Construction of Petro-chemical, Refining, Waste Water Treatment Plants
- Oil & Gas Geophysical Exploration Services

MAJOR APPLIANCES:

- Amana refrigerators, gas glass cooktops, high-efficiency gas furnaces, large-capacity air conditioners
- Caloric gas ranges, dishwashers
- Speed Queen commercial laundry equipment

POOR STANDARD
SOUTHWORTH USA
25% COTTON FIBER

Raytheon's Challenge and Five Year Strategy

Raytheon's primary challenge, as with all defense contractors, is to convert their defense capabilities to commercial applications. In many ways, they are better positioned for this conversion than their counterparts, because their business is already highly diversified. In 1964, under the guidance of then CEO Tom Philips, Raytheon launched a diversification strategy which resulted in the aquisition of several commercial enterprises. These companies account for 46% of Raytheon's revenues, however, they contribute only 25% of the profits.

Raytheon's five year strategy focuses on the following:

- Increase foreign military sales (FMS) to 40% of the company's total defense business (currently 20%).
- Triple sales and profits of Energy and Environmental
- Double sales at Beech Aircraft
- Increase Appliance Group sales by 60%
- Derive as much profit from commercial sales as from military sales

Raytheon's Operational Style

- Ultra conservative
- Government oversight headset impacts all relationships
- CEO is very active tactically
- Risk adverse - heavy focus on passing risk to vendors, partners, even customers
- Extreme confidence in their engineering excellence
- Win/Lose, "It's never done" negotiation style
- Program Management is an embedded discipline

DIGITAL'S BUSINESS WITH RAYTHEON

- Corporate Account since 1984
- Tom Philips, former Raytheon CEO for 23 years is on Digital's Board of Directors
- Ken Olsen had close, personal relationships with Tom Philips and the current CEO, Dennis Picard
- Business heavily focused in Equipment Division, Data Aquisition Systems (DAS) Directorate and Mil-Spec Operations, under Walter Stowell
- Licensed to militarize VAX systems since 1986
- Digital's first Alpha AXP licensee (June 1992); current license is for militarization of Alpha AXP systems; very close to finalizing greement for board level license (VME and Futurebus)

Digital's business with Raytheon has been heavily dependent on government program wins. Equipment Division (ED) under Walter Stowell, and Missile Systems Division (MSD) under Bill Swanson,are the two largest divisions focused on this business. Our penetration into MSD has been primarily in software development labs and factory test equipment (FTE). However, with the introduction of Alpha AXP, discussions are underway in the areas of airborne missiles and embedded realtime.

Our presence in Beech, Appliance Group, and Energy and Environmental has been minimal. We believe our greatest growth potential is with Energy and Environmental, which maps directly to their growth plan.

This approach is supported by two key factors: (1) in large part, the government is still the customer, albeit the Department of Transportation and the Department of Energy vs. the DoD, and Raytheon understands government procurement, and (2) many of Raytheon's core competencies readily convert to this market (hazardous waste cleanup, clean-air services, etc.). The Clean Air Act of 1990 has stimulated this market growth.

In the words of George Sarney, Sr. V.P. Energy & Environmental Group, "Building a large refinery or a power plant involves thousands of drawings and steps along the way, not unlike managing a Patriot Program."

The Raytheon account strategy includes the following:

- Develop a run rate or base of business which will ensure a profiable Raytheon Account P&L with less dependence on program wins.
- Diversify Digital's business with Raytheon to include substantial

business with Energy & Environmental.

- Grow government end-user program business by identifying and winning programs with MSD as well as ED, and by developing and winning civilian programs such as Air Traffic Control, Personal Rapid Transit, and Vessel Tracking.
- Pursue new business as a Raytheon partner in international markets. Establish Raytheon as a Digital international account.
- Grow Mil-Spec business through greater market penetration with Mil-Alpha and embedded solutions. Due to the royalty structure, this is highly profitable business for Digital.
- Develop and win non-traditional service business such as network integration, multi-vendor services, in-country infrastructure capabilities, and facilities management.
- Continue focused effort in Appliance Group and Aircraft Group. Grow these areas over time, but first focus on Energy & Environmental and MSD as priority growth areas.
- Continue to develop executive relationships across all major divisions and subsidiaries.
- Evolve the relationship from vendor to business alliance in as many business areas as possible.
- Leverage our positions as the two largest Massachusetts companies with the Weld Administration and work as industrial partners to support Massachusetts' economic development.

Status on Key Current Business Activities

GBR (Equipment Division):

Ground Based Radar (GBR) is the largest program Raytheon Equipment Division has ever won, at a value of approximately $600M. GBR represents $30M of business to Digital over a two year period, approximately half of that in FY93.

Digital's GBR business is a combination of VAX based data processing, and DECmpp signal processing. It was sold at a program price, including program profit.

Mil-Spec (Equipment Division):

The first implementation of Mil-Alpha is the JSTARS program which involves militarized flamingo workstations (Raytheon's 920) onboard the aircraft. Raytheon is a sub to Grumman on this program, which is on schedule to release product within the next week.

"Raytheon displayed mock-ups of the 920 at our November Alpha AXP announcement, participated in our TOEM roadshow, and exhibited with us at the Paris Air Show."

This business is a true partnership, and as mentioned earlier, is highly profitable because of the royalty structure. The Mil business is also important to us because it generates additional commercial business. The embedded market is a key growth area.

GPALS (Missile Systems Division):

GPALS (Global Positioning Against Limited Strikes) was a Strategic Defense Initiative Organization program. With the new administration, the name has been changed to Ballistic Missile Defense (BMD) and is a Ballistic Missile Defense Organization (BMDO) program. The purpose of BMD is to provide a Ballistic Missile Defense system consisting of surface and space-based elements to rpovide continous defenses on a worldwide basis. The scope of BMD includes National Missile Defense (NMD - such as GBR), Global Missile Defense (GMD), and Theatre Missile Defense (TMD).

At our last Executive Dinner, Raytheon agreed to view a demo of Digital's ISEE (Integrated Software Engineering Environment) solution. The demo was conducted over the weekend, and as a result Digital was selected for the Raytheon BMD team. This was an eleventh-hour displacement of HP, and was particularly key because the SEE environment chosen for BMD will be used in multiple other programs as well.

We are currently in Phase I of the program, a 15 month Options Assessment (OA), or proof of concept. During this phase, Digital and all of the other team members are investing in the program. Phase II, Demonstration/Validation (DEM/VAL), is valued at $100M-$150M per year for 5 or 6 years to the winning team. The program has the potential value of $15M - $20M per year to Digital during DEM/VAL.

The program is on schedule and Raytheon has already brought Digital into two additional programs as a result of our successful teaming on BMD. In addition, we are being asked to quote ISEE for several other opportunities.

Brazil Opportunities (Missile Systems Division):

SIVAM is a significant program opportunity in the Amazon region. Raytheon has met with Digital Brazil on several occasions, and we have identified the basis for a teaming agreement for this program. We expect Brazil to release the RFP this month, and we are prepared to solidify our role during proposal development.

Raytheon Account P & L - Budget & YTD Actual

	FY93 BUDGET	% BOD	FY93 ACTUALS	% GROSS
CERTS	16,416		27,873	
GROSS	28,194		37,201	100.0%
DISCT	4,799	17.02%	4,054	10.9%
ALLOW	4,012	14.23%	3,162	8.5%
NOR	19,383	68.75%	29,986	80.6%
BUP	8,058	28.58%	13,429	36.1%
SVC DEL	5,962	21.15%	5,830	15.7%
VALUE+	5,363	19.02%	10,727	28.8%
ACCT				
DIR SELL	1,853	6.57%	413	1.1%
SALE SP	804	2.85%	356	1.0%
R&C	28	0.10%	1	0.0%
DIR O/H	592	2.10%	781	2.1%
ACCT	3,277	11.62%	1,551	4.2%
DIR MG	2,086	7.40%	9,175	24.7%
SUPP				
SVC	267	1.90%	246	0.7%
MKT	536	1.90%	707	1.9%
BUS UN	1,241	4.40%	1,572	4.2%
CORP	141	0.50%	186	0.5%
SUPP	2,185	7.75%	2,711	7.3%
ABU$	-99		6,464	17.4%
ABU%	-0.51%		21.6%	

Gil Set on this?

4/27

I N T E R O F F I C E M E M O R A N D U M

Doc. No: 054501
Date: 12-Apr-1993 02:08pm EST
From: RUSS GULLOTTI @MKO
GULLOTTI
Dept: U.S. AREA
Tel No: 264-6209

TO: See Below

Subject: RATHEON/AIR TRAFFIC CONTROL

At the Raytheon/Digital meeting of a couple of weeks ago, you will recall, I took the action to see if there was any potential for Digital and Raytheon to work together to develop an air traffic control solution. Walt Stowell was the Senior Vice President from Raytheon who had the strongest interest here.

Digital is already a partner with Hughes, Thompson, and Westinghouse on several air traffic control opportunities around the world. Oliver Crosswhite, who is part of Pekka Roine's organization would be happy to talk further with the Raytheon folks about exploring this possibility.

Unless anyone has any difficulties with this, I urge Oliver Crosswhite to contact Elizabeth Strong to learn more about this opportunity. Once they have put a little bit more "meat on the bones", then I would be prepared to draft a letter from you and I Frank, to Walt Stowell in response to our meeting.

5-25

S-19

I will proceed along this course unless I hear otherwise from anyone.

T

DICTATED NOT READ

Set up 10 min call with Elizabeth Strong p2 (within 3 weeks)

Distribution:

TO: Remote Addressee (FRANK MCCABE @MLO)

CC: Remote Addressee (ELIZABETH STRONG @OFO
CC: Remote Addressee (OLIVER CROSSWHITE @MR
CC: Remote Addressee (DIANE ALBANO @MRO)
CC: Remote Addressee (PEKKA ROINE @GEO)
CC: Remote Addressee (JOHN KLEIN @MLO)

RFC

Use the RDL option to see remainder of distribution lists.

Raytheon objections

1. Difficult alpha port — Demo this
2. Benchmark demo
3. Thompson/Plessey competitors

We're talking with ATC = Pete Dunham, Mike Hoefler

See if there's progress
Walt Stowell
508-490-1101

Insure market differentiation

4. ATC in India working together on it.

6-10

Follow up phone call

1. - our people and yours working together - Elizabeth Strong, Oliver Crossenhite and ~~Pete~~ Pete Dunham, Mike Hoefler

2. - your concerns
   a) - tough to port to alpha - demo set up to prove otherwise
   just what ATC needs!

3 objections
   b) - Benchmark data - benchmark is set up.
   c) - Market differentiation required (we already work with Thompson/Plessey - their competitors)
   - Trying to work out use of our in country presence to help.

3. - working together on India ATC - local teams and home office teams.

A- Schedule a phone call
with Walt Stowell
VP Raytheon

508-490-1101

follow up from Digital/Raytheon
meeting re: Air Traffic
Control.
— when he can fit it in —

RFC

C/B

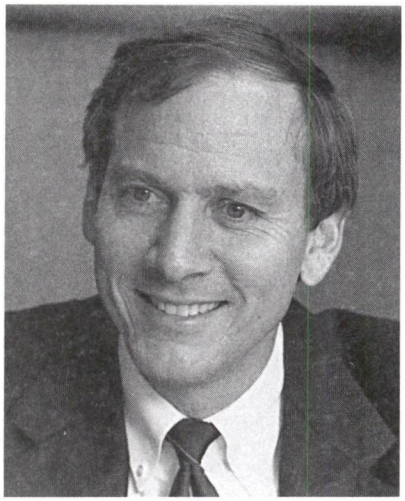
~~Toni~~
Geri

Raytheon Company
Executive Offices
141 Spring Street
Lexington, MA 02173

617 862 6600
Telex 92 3455
Cable Raytheonex

Raytheon

Biography



EDMUND B. WOOLLEN

Raytheon Company
Vice President,
Corporate Marketing

Edmund B. Woollen is Raytheon Company's vice president of corporate marketing , a position he has held since October 1, 1990. He had previously served for four years as director of government marketing. He was elected a vice president in September 1990.

Mr. Woollen was born on November 23, 1944 in Rocky Mount, N.C. He graduated from Ingraham High School, Seattle, Wash., in 1962 and received a bachelor of science degree in geophysical oceanography from the University of Washington in 1967.

After serving as an officer in the U.S. Navy from December 1967 until June 1975, Mr. Woollen served as a senior associate systems engineer for Hughes Aircraft in Canoga Park, Calif. and as a senior marketing representative for OTI in Burbank, Calif.

Mr. Woollen joined Raytheon in 1979 and marketed electronic warfare systems in the U.S. and internationally for the company's Electromagnetic Systems Division in Santa Barbara, Calif. From 1981 to 1986, he served as a vice president of Raytheon Overseas Limited, operating from the company's office in Brussels, where he was responsible for marketing activities in various NATO and Middle Eastern countries.

Raytheon, is a diversified, technology-based company active in electronics, aviation, appliances, industry and environmental services, publishing and construction.

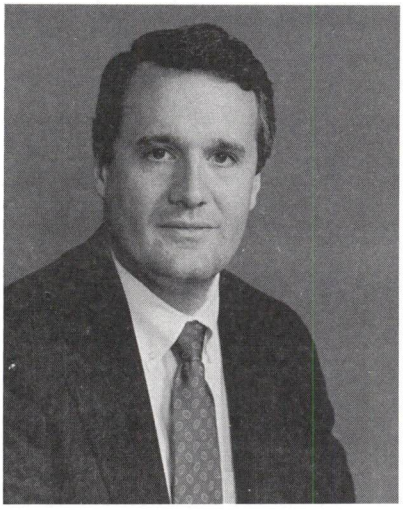
He and his wife, the former Marie Thompson of Maxton, N.C., reside in Windham, N.H.

Raytheon Company
Missile Systems Division
180 Hartwell Road
Bedford MA 01730-2487

617 274 5000
TWX 710 326 0549
Telex 92 3338

Raytheon

Biography



WILLIAM H. SWANSON

Raytheon Company
Senior Vice President
General Manager,
Missile Systems Division

William H. Swanson is the General Manager of Missile Systems Division. He was elected Vice President of Raytheon Company in June 1987 and Senior Vice President in June 1990.

As General Manager, Mr. Swanson provides leadership direction for 15,000 employees worldwide. Programs at the Division include: PATRIOT, HAWK, Stinger, Standard and AEGIS Extended Range surface-to-air missiles; Sparrow, AMRAAM, Sidewinder, Phoenix and AAAM air-to-air missiles; and Maverick and BAT air-to-ground missiles. In Massachusetts, besides its Bedford Headquarters and its Missile Systems Laboratories located in Tewksbury, the Division has major manufacturing facilities at Andover and Lowell. There are also plants at Bristol, Tennessee and Manchester, New Hampshire, as well as operations at the White Sands Missile Range, New Mexico and in Huntsville, Alabama.

Prior to assuming his present position, Mr. Swanson was Vice President and Assistant General Manager for Operations, Missile Systems Division. Concurrently, he was also responsible for the leadership and direction of the Andover Plant, the largest manufacturing facility within the Raytheon Company.

Under his leadership, the Andover Plant received the Army's highest Quality Recognition by being named a "Certified Contractor" in June 1987, a distinction the facility still enjoys. The plant was also honored by the Army for its outstanding performance on the Patriot Program during Desert Storm.

Mr. Swanson joined the Raytheon Company in 1972, and has held a wide range of challenging positions including Manufacturing Manager of the Company's Equipment Division Manufacturing Operations in Waltham, Massachusetts.

A native of California, Mr. Swanson graduated Magna Cum Laude from California Polytechnic State University with a Bachelor of Science Degree in Industrial Engineering. His graduate work was performed in Business Administration at Golden Gate University. He was selected as the outstanding Industrial Engineering Graduate in 1972 and in 1991 was recognized the Honored Alumnus from California Polytechnic State University School of Engineering. Mr. Swanson is a member of Tau Beta Pi, Alpha Pi Mu, and Blue Key Honor Societies. He is also a graduate of Raytheon management programs.

In addition to his professional accomplishments, Mr. Swanson is a Trustee for the Greater Lawrence Community Foundation; serves on the California Polytechnic State University School of Engineering Advisory Council and the Massachusetts Military Affairs Council of the North Suburban Chamber of Commerce; and is a member of the American Defense Preparedness Association, the Association of the United States Army, the Navy League and the Air Force Association.

Raytheon, headquartered in Lexington, Mass., is a diversified, technology-based company active in electronics, aircraft products, energy and environmental services, and major appliances.

He and his wife Cheryl currently reside in North Andover, Massachusetts.

Raytheon Company
Executive Offices
141 Spring Street
Lexington, MA 02173

617 862 6600
Telex 92 3455
Cable Raytheonex

Raytheon

Biography

DR. PHILIP W. CHENEY

Raytheon Company
Vice President, Engineering

Dr. Philip W. Cheney is Raytheon Company's vice president of engineering. He is responsible for providing corporate direction and assistance to the engineering functions throughout the diversified, technology-based company. He was elected a company officer in January 1990.

Prior to his election as vice president, Dr. Cheney had been serving as director of engineering, a position he had held since November 1989.

Dr. Cheney was born December 3, 1935, in Portland, Oregon, where he graduated from Washington High School in 1953. He earned bachelor's and master's degrees in electrical engineering from Massachusetts Institute of Technology in 1957 and 1958 and a Ph.D. in electrical engineering from Stanford University in 1961.

Dr. Cheney joined Raytheon in 1961 and held a number of positions of increasing responsibility within the Missile Systems Division. He served as Manager of the Digital Systems Laboratory; Manager of the Bedford Laboratory; Assistant Programs Manager, Patriot Programs; and Deputy Programs Manager, Hawk Programs. In 1985, he became manager of the Advanced Medium Range Air-to-Air Missile (AMRAAM) program.

He is a member of the Institute of Electrical and Electronic Engineers and a director of Emerson Hospital, Concord, Mass.

Dr. and Mrs. Cheney reside in Acton, Mass.

Raytheon, headquartered in Lexington, Mass., is a diversified, technology-based company active in electronics, aircraft products, energy and environmental services, and major appliances.

Raytheon Company
Equipment Division
1001 Boston Post Road
Marlborough, MA 01752

508 490 1000
Telex 798120

Raytheon

Biography

WALTER H. STOWELL

Senior Vice President &
General Manager
Equipment Division

Walter H. Stowell is a senior vice president of Raytheon Company and since 1986 has been general manager of its Equipment Division, headquartered in Marlborough, Mass. He was elected as an officer of the company in 1984 and was made a senior vice president in May 1989.

The Equipment Division is Raytheon's second largest organization, with more than 10,100 employees and sales in excess of $1 billion per year. It develops and builds military and commercial radars, air traffic control systems, satellite terminals, communications equipment, Navy missile fire control systems and military-qualified computers. The division has major facilities in Wayland, Sudbury, Waltham and Marlborough Massachusetts; as well as in Waterloo, Ontario, Canada and Harlow, Essex, England.

Mr. Stowell was born on July 29, 1937, in Burlington, Vt. He graduated from Spaulding High School, Barre, Vt., in 1955. He earned his bachelor's and master's degrees in electrical engineering from Rensselaer Polytechnic Institute in 1959 and 1962, respectively.

Mr. Stowell joined Raytheon in 1960 as a project engineer and has held increasingly responsible positions in engineering, program and general management. In 1977, he became the director of Equipment Division's data acquisition systems directorate, which is responsible for the company's large phased-array radar programs. He was named manager of the division's research and development laboratories in 1981. In 1983, Mr. Stowell was named assistant general manager, operations at Equipment Division and directed the unit's day-to-day operations.

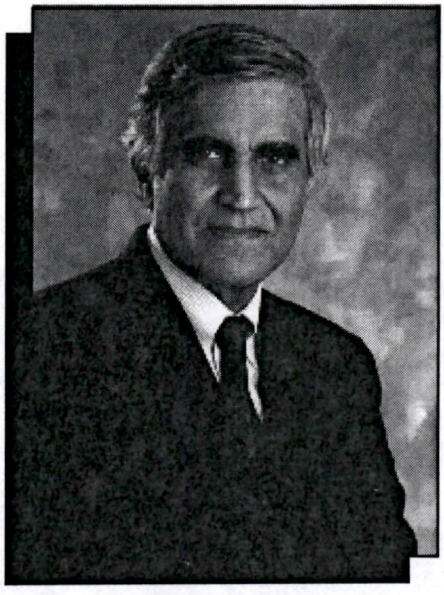
Mr. Stowell is a member of the American Defense Preparedness Association, Armed Forces Communications and Electronics Association, Association of the U.S. Army, Institute of Electrical and Electronics Engineers and the Navy League.

Mr. Stowell is married to the former Carolyn S. Schneider of Madison, Conn. They reside in Sudbury, Mass., and have three children.

Raytheon, headquartered in Lexington, Mass., is a diversified, technology-based company active in electronics, aircraft products, appliances, and energy and environmental services.

digital

Bobby Choonavala



Bobby Choonavala is corporate vice president and president of Digital Equipment Corporation International (GIA). He is responsible for conducting business in 40 countries, including Canada and countries in South America, Asia, the Pacific Rim, and the South Pacific.

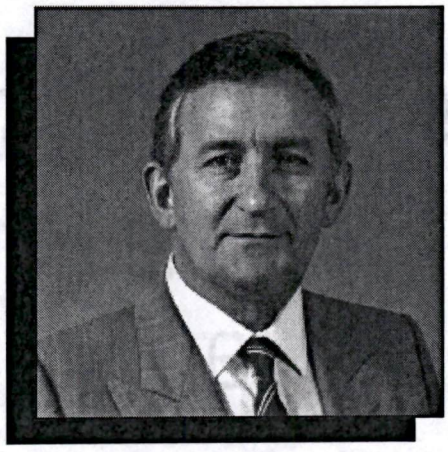
Choonavala joined Digital in 1966 as project engineer in Maynard, Mass., and two years later became the first manager of the company's Dutch subsidiary. He then served as a district manager in Europe before becoming manager of the former southwest region in Europe from 1973 to 1978.

In 1983, after five years as the European sales manager based in Geneva, Choonavala was appointed vice president, International Sales for Digital's European operation. Prior to being named president of GIA, he was president and managing director of Digital Equipment Asia, based in Hong Kong.

Choonavala earned a bachelor of science degree in Physics from Bombay University and a master of science degree in Electrical Engineering from the Technischer Hochschule in Germany.

digital

FRANK MCCABE



FRANK MCCABE IS VICE PRESIDENT OF THE DISCRETE MANUFACTURING AND DEFENSE INDUSTRIES BUSINESS UNIT, REPORTING TO BOB PALMER, DIGITAL PRESIDENT AND CEO.

MCCABE IS RESPONSIBLE FOR ACHIEVING AND SUSTAINING INDUSTRY-LEADING GROWTH AND PROFITABILITY FOR DIGITAL WITH CUSTOMERS IN THE FOLLOWING INDUSTRIES: AEROSPACE, AUTOMOTIVE AND GENERAL DISCRETE MANUFACTURING, ELECTRONICS, AND DEFENSE.

MCCABE JOINED DIGITAL IN 1979 AS THE EUROPEAN PRODUCT MANUFACTURING MANAGER. IN 1984 HE WAS NAMED CORPORATE QUALITY MANAGER, AND LATER NAMED VICE PRESIDENT, CORPORATE QUALITY. IN 1991 HE WAS APPOINTED VICE PRESIDENT, GLOBAL INFORMATION SYSTEMS, WHERE HE WAS RESPONSIBLE FOR DIGITAL'S VAX SYSTEMS AND SERVERS, NETWORKS, SYSTEMS ENGINEERING, AND ALPHA PROGRAM OFFICE.

PRIOR TO JOINING DIGITAL, MCCABE HELD ENGINEERING MANAGEMENT POSITIONS AT ASEA (SWEDEN) AND GENERAL ELECTRIC (IRELAND), INCLUDING THE POSITION OF MANAGING DIRECTOR, EUROPEAN OPERATIONS, GENERAL ELECTRIC.

MCCABE EARNED A BACHELOR OF SCIENCE DEGREE IN MECHANICAL AND ELECTRICAL ENGINEERING FROM UNIVERSITY COLLEGE, DUBLIN, IRELAND, AND A MASTER OF SCIENCE DEGREE IN INDUSTRIAL MANAGEMENT FROM CLARKSON UNIVERSITY, POTSDAM, NEW YORK.

digital

William D. Strecker

William D. Strecker, vice president of Engineering and chief technology officer, is responsible for Digital's overall technology strategy and heads Digital's Engineering organization which includes hardware, operating systems, networks, layered software, systems engineering, and research. In this role, he reports to President and CEO Bob Palmer.

Strecker joined Digital in 1972 as a member of the Corporate Research and Development group, where his work on cache memories and system simulation led to the development of the PDP-11/70. He led the development of the VAX architecture. He played a key role in the development of the Computer Interconnect (CI) and led the development of the Systems Communications Architecture, both major elements of VAXclusters.

After holding a series of engineering and management positions, Strecker became manager of Engineering Product Strategy and Architecture in 1984. He was named vice president in 1985. He was subsequently named vice president, Distributed Systems Software in 1989 where he was responsible for all operating system and layered software development. Strecker was named vice president of Engineering in 1990 and Chief Technology Officer in 1992.

Strecker holds Bachelors, Masters, and Ph.D. degrees in Electrical Engineering from Carnegie Mellon University.

I N T E R O F F I C E M E M O R A N D U M

Doc. No: 054090
Date: 01-Apr-1993 12:42pm EST
From: Elizabeth Strong
STRONG.ELIZABETH AT A1 at NEMA
IL at NQO

Dept: AGM - Raytheon
Tel No: 274-6502

TO: russ gullotti @mko

Subject: Raytheon Dinner

Based on our conversation last night, I've captured a few bullets for your welcoming comments at the Raytheon dinner. Once we are seated, I will make introductions. I will ask Ed Woollen to make a few comments first, and then turn to you for your comments.

- Raytheon and Digital have a longstanding business relationship which we value very highly.

- We'd like to take this opportunity to congratulate you on your recent GBR win, and thank you for the business we are doing together on that program. (Walt Stowell)

- Our Mil-spec partnership began in 1986 with Mil-VAX and was extended to include Alpha AXP systems in June of 1992. In fact, Raytheon is Digital's first Alpha licensee.

- With the introduction of Alpha AXP, we are able to address Raytheon's program requirements in new areas, such as with airborne missiles and embedded solutions.

- We recognize the challenge your industry faces today with decreased defense spending, and as you know, we have a number of our own challenges in the computer industry.

- Our business has changed dramatically over the last several years. Today, in addition to providing complex systems, we have a business focus on commodity products as well as Enterprise Integration and Consulting Services. In fact,we are one of the top five Systems Integrators in the world.

- We appreciate this opportunity to explore an expanded business relationship with you to develop new business areas and new markets.

RAYTHEON & DIGITAL EXECUTIVE DINNER: BRIEFING PACKAGE FOR DIGITAL PARTICIPANTS

Some Comments about the Dinner

This executive dinner is the result of a series of conversations I have had with Raytheon executives. It is clear that they think of Digital as a hardware vendor. It is also clear that they need to develop new businesses and need a computer systems partner to do so, as well as expertise in the commercial marketplace.

Ed Woollen's simplified version of the opportunity is that Raytheon is in the business of sensing and reacting. Central to this capability, are the systems requirements for data acquisition, data management, and data analysis. Ed has also emphasized that Raytheon's international presence is somewhat limited compared to Digital's, and that our international infrastructure is of significant interest to them. A third theme in our discussions, is Raytheon's acute interest in the Massachusetts economy. They would like Digital to take a proactive role with them in the Weld administration's economic development plans. This presents us with a unique opportunity, as being partners in Massachusetts is a differentiator unavailable to our primary competitors.

The purpose of the dinner, then, is to explore the potential for an expanded business relationship. Does Raytheon want Digital to be more than a computer vendor? What might the mutual benefits be of a broader relationship? What are our complementary core competencies? How would we proceed?

Ideally, we will conclude the dinner with a mutual commitment to go forward, and some key business areas to pursue.

I will be at the dinner, and will make introductions. I will then ask Ed Woollen and Russ Gullotti to each make a few opening remarks about why we're here.

We currently have approximately 7% market share in Raytheon. Our goal is to grow that share profitably, in spite of decreased defense spending.

Included in this briefing package is information on Raytheon's businesses, our business with Raytheon, and the FY93 P&L - Budget and YTD actuals.

RAYTHEON COMPANY OVERVIEW

Raytheon is a diversified, international, technology-based company ranked among the 100 largest U.S. industrial corporations. Statistics include:

- 1992 Sales: $9.1B
- 54% to the U.S. government, 46% commercial.
- Profits: 75% from government, 25% from commercial
- Non U.S. Sales: 18% of revenues
- Headquartered in Lexington, MA
- 21 divisions and subsidiaries in 38 states
- 22 overseas subsidiaries and affiliates, principally in Europe and the Pacific Rim
- 4 Business Segments:

  Electronics
  Aircraft Products
  Energy and Environmental
  Major Appliances

- 30 quarters of continuous revenue growth
- 32 quarters of continuous income growth
- 63,900 employees and downsizing
- R&D Expenditures - 3%

RAYTHEON BUSINESSES

ELECTRONICS: 1992 Sales of $5.5B

Government:

- Electromagnetic Systems Division
- Electronic Components Division
- Equipment Division
  - Cossor Electronics, Ltd.
  - Raytheon Canada
- Missile Systems Division
- Research Division
- Submarine Signal Division

Commercial:

- Raytheon Marine Company
- Seiscor Technologies
- Semiconductor Division
- Sorensen Company
- Switchcraft, Inc.
- Raytheon Europe
  - Balinger Schalttechnik GmbH & Co.
  - Electrical Installations, Ltd.
  - TAG Semiconductors, Ltd.

Educational Publishing:

- D.C. Heath and Company

AIRCRAFT PRODUCTS: 1993 Sales of $1B

- Beech Aircraft Corporation
  - Beech Aerospace Services, Inc.
  - Beech Holdings, Inc.

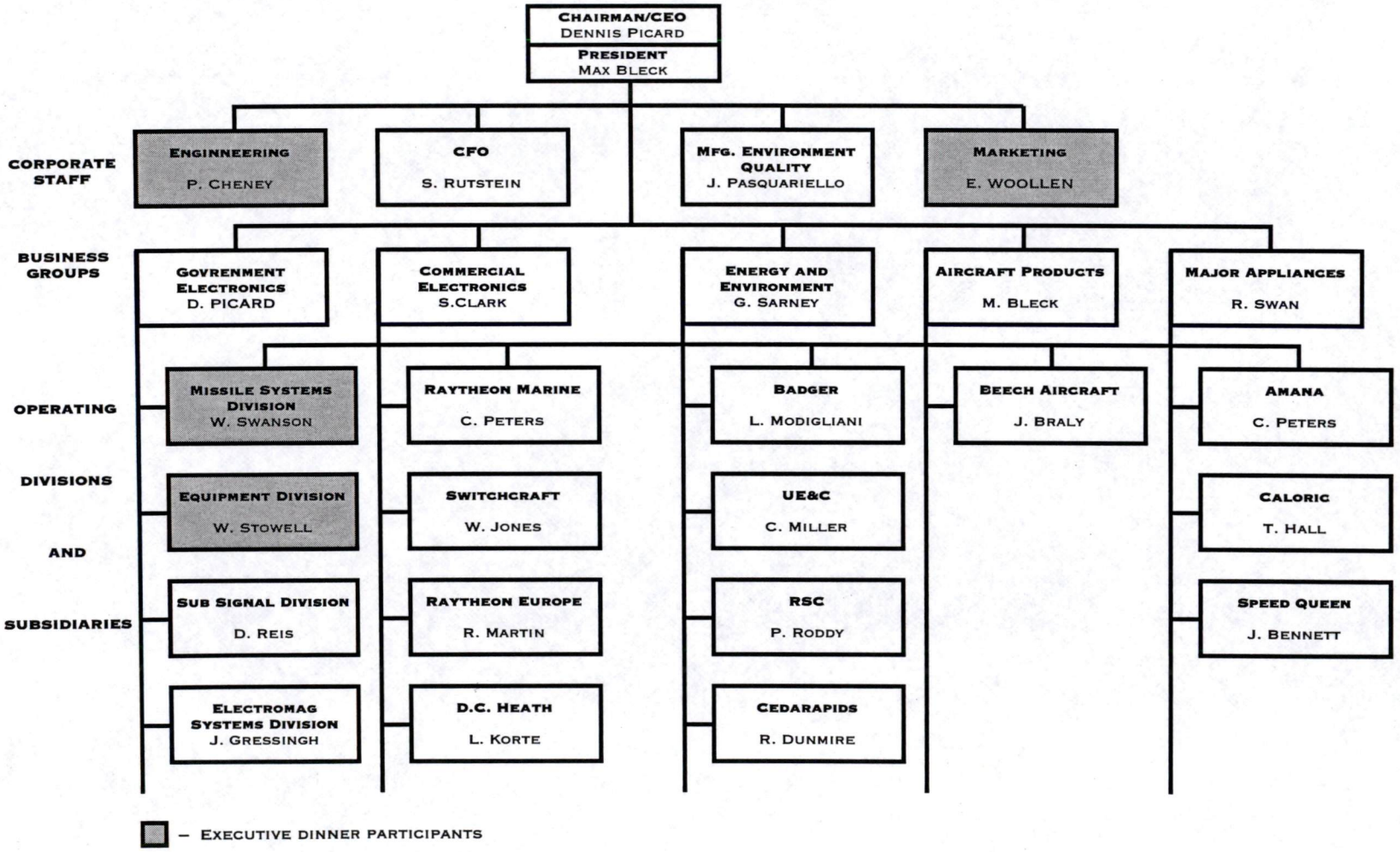
ENERGY and ENVIRONMENTAL: 1993 Sales of $1.6B

- The Badger Company
- Cedarapids, Inc.
  - El Jay
  - Standard Havens
- Raytheon Service Company
- United Engineers & Constructors
  - Yeargin
  - UE&C - Catalytic

MAJOR APPLIANCES: 1993 Sales of $1B

- Amana Refrigeration, Inc.
- Caloric Corporation
  - Glenwood Range Company
  - Modern Maid Company
- Speed Queen Company

RAYTHEON COMPANY



RAYTHEON PRODUCTS

ELECTRONICS:

- Missiles
  - Surface to Air (PATRIOT)
  - Air to Air (AMRAAM)
  - Air to Surface (MAVERICK)
  - Ship-launched (SPARROW)
  - Smart Munitions (BAT)
- Radars
  - Wide area surveillance (ROTHR)
  - Missile warning/track (GBR)
  - Low orbit surveillance COBRA DANE)
  - Weather (TDWR)
- Submarine/surface ship systems
  - Transducers
  - Combat/fire control systems (BSY-1/2)
  - Minehunting (SQQ-32)
- Electronic Combat - ECM (ALQ-184)
- Military Communications (MILSTAR)
- Military Computer (MILVAX/ALPHA)
- Air Traffic Control and Air Safety
  - AAS Consoles
  - IATC Systems
- Electronic Components
  - VLSI
  - VHSIC
  - MMIC
- Service and Support
  - Range Ops (Eastern Test Range)
  - Facility Management (NTR - GOCO)
  - Treaty Verification (Portal Perimeter)

AIRCRAFT PRODUCTS:

- King Air - Turbo-Prop
- Bonanza - Single Engine
- Beech Jet - Business Jet
- Starship - Advance Composite Aircraft

RAYTHEON PRODUCTS

ENERGY and ENVIRONMENTAL:

- Design & Contruction of Power Plants
- Engineering, Design & Construction of Petro-chemical, Refining, Waste Water Treatment Plants
- Oil & Gas Geophysical Exploration Services

MAJOR APPLIANCES:

- Amana refrigerators, gas glass cooktops, high-efficiency gas furnaces, large-capacity air conditioners
- Caloric gas ranges, dishwashers
- Speed Queen commercial laundry equipment

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Raytheon's Challenge and Five Year Strategy

Raytheon's primary challenge, as with all defense contractors, is to convert their defense capabilities to commercial applications. In many ways, they are better positioned for this conversion than their counterparts, because their business is already highly diversified. In 1964, under the guidance of then CEO Tom Philips, Raytheon launched a diversification strategy which resulted in the aquisition of several commercial enterprises. These companies account for 46% of Raytheon's revenues, however, they contribute only 25% of the profits.

Raytheon's five year strategy focuses on the following:

- Increase foreign military sales (FMS) to 40% of the company's total defense business (currently 20%).
- Triple sales and profits of Energy and Environmental
- Double sales at Beech Aircraft
- Increase Appliance Group sales by 60%
- Derive as much profit from commercial sales as from military sales

Raytheon's Operational Style

- Ultra conservative
- Government oversight headset impacts all relationships
- CEO is very active tactically
- Risk adverse - heavy focus on passing risk to vendors, partners, even customers
- Extreme confidence in their engineering excellence
- Win/Lose, "It's never done" negotiation style
- Program Management is an embedded discipline

DIGITAL'S BUSINESS WITH RAYTHEON

- Corporate Account since 1984

- Tom Philips, former Raytheon CEO for 23 years is on Digital's Board of Directors

- Ken Olsen had close, personal relationships with Tom Philips and the current CEO, Dennis Picard

- Business heavily focused in Equipment Division, Data Aquisition Systems (DAS) Directorate and Mil-Spec Operations, under Walter Stowell

- Licensed to militarize VAX systems since 1986

- Digital's first Alpha AXP licensee (June 1992); current license is for militarization of Alpha AXP systems; very close to finalizing greement for board level license (VME and Futurebus)

Digital's business with Raytheon has been heavily dependent on government program wins. Equipment Division (ED) under Walter Stowell, and Missile Systems Division (MSD) under Bill Swanson,are the two largest divisions focused on this business. Our penetration into MSD has been primarily in software development labs and factory test equipment (FTE). However, with the introduction of Alpha AXP, discussions are underway in the areas of airborne missiles and embedded realtime.

Our presence in Beech, Appliance Group, and Energy and Environmental has been minimal. We believe our greatest growth potential is with Energy and Environmental, which maps directly to their growth plan.

This approach is supported by two key factors: (1) in large part, the government is still the customer, albeit the Department of Transportation and the Department of Energy vs. the DoD, and Raytheon understands government procurement, and (2) many of Raytheon's core competencies readily convert to this market (hazardous waste cleanup, clean-air services, etc.). The Clean Air Act of 1990 has stimulated this market growth.

In the words of George Sarney, Sr. V.P. Energy & Environmental Group, "Building a large refinery or a power plant involves thousands of drawings and steps along the way, not unlike managing a Patriot Program."

The Raytheon account strategy includes the following:

- Develop a run rate or base of business which will ensure a profiable Raytheon Account P&L with less dependence on program wins.
- Diversify Digital's business with Raytheon to include substantial

business with Energy & Environmental.

- Grow government end-user program business by identifying and winning programs with MSD as well as ED, and by developing and winning civilian programs such as Air Traffic Control, Personal Rapid Transit, and Vessel Tracking.
- Pursue new business as a Raytheon partner in international markets. Establish Raytheon as a Digital international account.
- Grow Mil-Spec business through greater market penetration with Mil-Alpha and embedded solutions. Due to the royalty structure, this is highly profitable business for Digital.
- Develop and win non-traditional service business such as network integration, multi-vendor services, in-country infrastructure capabilities, and facilities management.
- Continue focused effort in Appliance Group and Aircraft Group. Grow these areas over time, but first focus on Energy & Environmental and MSD as priority growth areas.
- Continue to develop executive relationships across all major divisions and subsidiaries.
- Evolve the relationship from vendor to business alliance in as many business areas as possible.
- Leverage our positions as the two largest Massachusetts companies with the Weld Administration and work as industrial partners to support Massachusetts' economic development.

Status on Key Current Business Activities

GBR (Equipment Division):

Ground Based Radar (GBR) is the largest program Raytheon Equipment Division has ever won, at a value of approximately $600M. GBR represents $30M of business to Digital over a two year period, approximately half of that in FY93.

Digital's GBR business is a combination of VAX based data processing, and DECmpp signal processing. It was sold at a program price, including program profit.

Mil-Spec (Equipment Division):

The first implementation of Mil-Alpha is the JSTARS program which involves militarized flamingo workstations (Raytheon's 920) onboard the aircraft. Raytheon is a sub to Grumman on this program, which is on schedule to release product within the next week.

Raytheon displayed mock-ups of the 920 at our November Alpha AXP announcement, is participating in our TOEM roadshow, and will be exhibiting with us at the Paris Air Show.

This business is a true partnership, and as mentioned earlier, is highly profitable because of the royalty structure. The Mil business is also important to us because it generates additional commercial business. The embedded market is a key growth area.

GPALS (Missile Systems Division):

GPALS stands for Global Positioning Against Limited Strikes and is being run by the Strategic Defense Initiative Organization (SDIO). The intent of GPALS is to provide a Ballistic Missile Defense (BMD) system consisting of surface and space-based elements to provide continous defenses on a worldwide basis. The scope of GPALS includes National Missile Defense (NMD - such as GBR), Global Missile Defense (GMD), and Theatre Missile Defense (TMD).

This will undoubtedly be foremost on their minds the evening of the dinner, as proposal development is currently underway and on a very tight schedule. Led by MSD, this is a joint divisional effort. On May 1, four teams will each be awarded $5M to do Options Assessment (OA). OA is a 15 month proof of concept. At the conclusion of OA, one of the teams will be awared Demonstration/Evaluation (DEM/VAL) at a value of $100-$150M per year for 5 or 6 years. Following DEM/VAL, the program will go into production.

Raytheon currently has four partners: Rockwell, Loral, Alphatec, and Wally Schaffer (a DC consultant). We are competing to be their fifth partner, the systems provider. Our approach is ISEE (Integrated Software Engineering Environment) on Alpha AXP. We are also providing them with proposal support. This program has the potential value of $15M - $20M per year to Digital during DEM/VAL. It is also significant in that the technological approach chosen for GPALS will be Raytheon's approach for multiple other programs. We estimate that a win with GPALS would impact $10M additional business in FY94 alone.

If there is significant new information on the status of this program before the April 1 dinner, I will send you an update memo.

Brazil Opportunities (Missile Systems Division):

SIVAM is a significant program opportunity in the Amazon region. Raytheon has met with Digital Brazil on two occasions, and together we are evaluating Digital's potential as a partner for this program. There is an obvious workstation opportunity, and the potential of providing Raytheon in-country resources, including our manufacturing capablility in Brazil. The Brazilian government has already selected ESCA as the SI partner for the program. Digital has experience with ESCA, and is also working to indentify our unique strengths as a potential member of the team.

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RAYTHEON ACCOUNT P & L - BUDGET & YTD ACTUAL

23-MAR-93	BUDGET	% BOD	ACTUAL	% ACT	PROJECTED FY93TOT	% BOD
CERTS	16,416		18,870		25,818	157%
GROSS	28,194		20,849		31,043	110%
DISCT	4,799	17.02%	3,063	14.69%	4,279	89%
ALLOW	4,012	14.23%	1,856	8.90%	2,784	69%
NOR	19,383	68.75%	15,930	76.41%	23,979	124%
BUP	8,058	28.58%	7,356	35.28%	10,270	127%
SVC DEL	5,962	21.15%	3,161	15.16%	4,524	76%
VALUE+	5,363	19.02%	5,413	25.96%	9,185	171%
ACCT						
DIR SELL	1,853	6.57%	288	1.38%	958	52%
SALE SP	804	2.85%	205	0.98%	496	62%
R&C	28	0.10%	1	0.00%	11	40%
DIR O/H	592	2.10%	438	2.10%	652	110%
ACCT	3,277	11.62%	932	4.47%	2,117	65%
DIR MG	2,086	7.40%	4,481	21.49%	7,069	339%
SUPP						
SVC	267	1.90%	132	0.63%	229	86%
MKT	536	1.90%	396	1.90%	590	110%
BUS UN	1,241	4.40%	887	4.25%	1,336	108%
CORP	141	0.50%	104	0.50%	155	110%
SUPP	2,185	7.75%	1,519	7.29%	2,309	106%
ABU$	-99		2,962		4,760	
ABU%	-0.51%		18.59%		19.85%	

Digital Equipment Corporation
Corporate Account Headquarters
One Burlington Woods Drive
Burlington, Massachusetts 01803
617.273.6502

508 443 9143

digital

Raytheon

March 26, 1993

Mr. Russ Gullotti
V.P. U.S. Area
Digital Equipment Corporation
Digital Drive (MKO2-2/C12)
Merrimack, N.H. 03054-0430

Dear Russ,

I am pleased to confirm the Raytheon & Digital Executive Dinner at 6:30 PM on April 1, 1993, at Chez Claude Restaurant in Acton, MA. (Address and directions follow.)

The purpose of the dinner is to explore the potential of an expanded relationship between Raytheon and Digital, the motivation being our mutual need to develop new business and the possibility of synergy in our core businesses.

The discussion is unstructured by design. To facilitate the conversation, Mr. Woollen will be the Raytheon host, and Mr. Gullotti will be the Digital host.

The participant list and biographies are included in this package. If you require further information, please call me at (617) 273-6502.

Sincerely,

Elizabeth A. Strong
Worldwide Account Group Manager
for Raytheon Company
Digital Equipment Corporation

RAYTHEON & DIGITAL EXECUTIVE DINNER

Thursday, April 1, 1993

6:30 p.m.

Chez Claude Restaurant
5 Strawberry Hill Road
(Corner of Rt. 2A and Strawberry Hill Road)
Acton, MA 01720

(508) 263-3325

Directions to Chez Claude:

Traveling west from the Rt 2 rotary in Concord, take the Rt 2A West exit out of the rotary. Follow Rt 2A for approximately 2 miles to Strawberry Hill Road. From here, the Chez Claude sign is prominent from Rt. 2A. Turn right onto Strawberry Hill Road, and take an immediate right into the Chez Claude parking lot.

Traveling east on Rt 2A from Rt 495, Strawberry Hill Road is approximately 1 mile from the intersection of Rt 2A and Rt 27. Turn left onto Strawberry Hill Road and take an immediate right into the Chez Claude parking lot.

Participant List

Raytheon:
Dr. Phil Cheney, *V.P. Corporate Engineering*
Mr. Walter Stowell, *Sr. V.P. and GM, Equipment Division*
Mr. Bill Swanson, *Sr. V.P. and GM, Missile Systems Division*
Mr. Ed Woollen, *V.P. Corporate Marketing*

Digital:
Mr. Bobby Choonavala, *President General International Area*
Mr. Russ Gullotti, *V.P. U.S. Area*
Mr. Frank McCabe, *V.P. Discrete Manufacturing and Defense*
Mr. Bill Strecker, *V.P. Engineering, Chief Technology Ofcr.*
Ms. Elizabeth Strong, *Worldwide Account Group Manager, Raytheon Company*