The Growing Costs of RADARSAT-1 and -2

RADARSAT-1

The Canadian Space Agency estimates that RADARSAT-1 cost about $620 million. Of that, the taxpayers' share was about 90%: $500 million from the federal government (81%) and about $57 million (9%) from four provincial governments (BC, Ontario, Quebec and Saskatchewan.)[1]

On the other hand, the corporate sector is said to have chipped in about $63 million (10%).[2] However, saying that these companies 'shared the cost' of RADARSAT requires some creative accounting. Since these were the same companies the government hired to build RADARSAT, we could say their share was also paid with public funds. Their contributions were, in effect, self-serving business expenses. At best, their donations were "discounts" offered in exchange for lucrative contracts to profit their businesses.

The $620-million pricetag *does not include* RADARSAT-1's launch. It was blasted into space on November 4, 1995, by a Delta-II rocket from California's Vandenberg Air Force Base. This was arranged through war-industry goliath, McDonnell-Douglas, with whom NASA has a launch-services contract.[3]

The launch, worth some $50 million,[4] was done "in exchange for rights to access the satellite on a *pro rata* basis."[5] So, in lieu of paying NASA for the launch, Canada gave the U.S. government a supposedly proportionate share of RADARSAT's data and mission time. A NASA media release noted:

"U.S. government agencies will have access to all 6-month-old archived RADARSAT data and direct approximately 15 percent of the satellite's observing time."[6]

Because RADARSAT-1 has operated day and night—regardless of weather conditions—for 10 years, the U.S. government has been able to control some 90,000 hours of RADARSAT-1's "observing time." Besides giving the U.S. government this direct control of the satellite's operations, the deal also gave U.S. agencies unlimited access to years of its archived data.

However, all that guaranteed access was not enough for the U.S. Department of Defense, the CIA and other

Guarding the henhouse? That's nothin'. I *own* it!

A sly fox offered to provide the farmer with a henhouse but asked for several months rent in advance. The farmer paid the fox using taxes he'd collected from the hens. The fox then used their money to build a henhouse. The farmer thought it was a great deal because the fox had "invested" in the project. The fox, who's clever, always votes for the farmer; while the chickens vote for him because they're not.

U.S. spy agencies, which have purchased millions of dollars worth of *additional* RADARSAT-1 data and time.

RADARSAT-2

According to the Canadian Space Agency (CSA), the "total project cost" for RADARSAT-2, including its launch,

"is estimated at $525 million, with the government contributing $434 million, and the balance of $91 million provided by [MacDonald, Dettwiler and Associates] MDA."[7]

That means the government, i.e., the taxpayers', share is about 83%.

The CSA reported that these cost estimates had doubled from the original contract, which it described as a "firm price agreement." In December 1998, when the CSA and its prime contractor, MDA, signed their "Master Agreement," the CSA agreed to pay $225 million (74%), while MDA would "invest" $80 million (26%).[8] So, while the government's share of the costs rose from 74% to 83%, private industries' share dropped from 26% to 17%.

However, the ownership, control and (burdensome) profit-making responsibilities of this project, were never intended to be shared with the people of Canada. Following on the 'success' of privatising the marketing and sale of

RADARSAT-1 data, the government's cunning plan for RADARSAT-2 was to cover almost all of its costs while handing it over completely to MDA.

The public money spent on RADARSAT-2 was apparently not for *building* or *buying* the satellite. Rather, the funds given to MDA are described as advance payments "in exchange for data" once RADARSAT-2 is operational. While privatisation advocates see this as a sensible way to do business, others see evidence of a corporate-welfare state gone awry.

Even those praising the business acumen of standing 'free enterprise' on its head, may not like how RADARSAT-2's costs skyrocketed while the satellite itself remained earth bound. Here's the CSA account of how costs grew from the "firm" $225 million:

"In March 2000, Treasury Board approved an increase of $47.1 million to cover the cost of changing bus suppliers...and an increase of $12.3 million for upgrades to existing satellite ground station infrastructures. In June 2000, Treasury Board approved an increase of $108 million to cover...a commercial launch as a result of NASA withdrawing from the agreement to provide launch for RADARSAT-2 in exchange for data.... In June 2001, Treasury Board

approved an increase of $6 million to cover...a potential future tandem mission with RADARSAT-3.

.... Additional delays will require the CSA RADARSAT-2 project office remain operational..., at an additional cost of $3.8 million."[9]

Until RADARSAT-2 is actually operational, one wonders how firm the current $434-million estimates really are.

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Meet MacDonald, Dettwiler and Associates
RADARSAT Given to Subsidiary of U.S. "Missile Defense" Firm

Formed in 1969 by John MacDonald and Werner Dettwiler,[1] MacDonald, Dettwiler & Assoc. (MDA) soon began trading on the Toronto Stock Exchange.[2]

On August 31, 1995, MDA became a wholly-owned subsidiary of Orbital Sciences,[3] a top U.S. rocket maker and contractor for the "missile defense" weapons program. Orbital's purchase of MDA US$67 million[4] was finalised in November 1995,[5] the month of RADARSAT-1's launch.[6] When our government privatised the $1.15-billion RADARSAT system, MDA was the beneficiary.

In Dec. 1999, Orbital sold 33% of MDA shares to Montreal's CAI Capital Partners, for US$75 million.[7] In four years, MDA's value had increased by 335%.

In July of 2000, Orbital sold some more MDA shares on the Toronto Stock Exchange.[8] Of the 6 million shares offered by Orbital for $14 each,[9] it sold about 1.5 million ($21 million). So, Orbital still held about 62% of MDA.[10] Orbital finally gave up its control of MDA in early 2001, by selling 18 million shares for some US$163 million.[11] The Canadian investors that bought Orbital's remaining shares included the Ontario Teachers' Pension Plan Board, the BC Investment Management Corp. and CAI Capital Partners.[12]

This put MDA back into the hands of Canadian investors after six years of control by Orbital. This U.S. war-industry certainly did well by its purchase of MDA for US$67 million, because its sales of MDA shares brought in about US$259 million. This

www.mda.ca

When RADARSAT-1 was launched in 1995, a U.S. "missile defense" firm purchased MDA for US$67 million. When our government privatised RADARSAT, MDA was the beneficiary.

gave Orbital a profit of about 390%.

During Orbital's control of MDA, the Liberal government privatised to MDA the marketing of all RADARSAT-1 data and ownership of RADARSAT-2. This largesse accounts for much of Orbital's financial success.

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- **Donations to Liberal Party:** MDA made regular donations to the Liberal Party, but no other, giving them at least $139,000 (1993-2004).[13] (This amount may not be complete as Election Canada statistics do not include donations made to riding associations, to MPs between elections or to party leadership campaigns.)
- **Canada Pension Plan (CPP):** The CPP has about $7.5 million invested in MDA.[14]
- **Industry Canada:** The Defence Industry Productivity Program and Technology Partnerships Canada have given MDA grants of least $43 million.[15]

MacDonald, Dettwiler & Assoc.
13800 Commerce Parkway,
Richmond BC V6V 2J3
Web: <www.mda.ca>

Selling Off the Rights to RADARSAT and its Data

The Canadian government privatised the marketing and sale of all RADARSAT-1 data. Then, the entire ownership and control of RADARSAT-2 was privatised. In both cases, the lucky beneficiary was Vancouver-based MacDonald, Dettwiler and Assoc. (MDA). At the time of these privatisation deals, MDA was wholly-owned by Orbital Sciences, one of America's largest rocket manufacturers and a major supplier for the "missile defense" weapons program.

Through the Canadian Space Agency, MDA received government contracts to help build two of the world's most advanced satellites, namely RADARSAT-1 and -2.

In 1995, the year RADARSAT-1 was launched, MDA was purchased outright by Orbital Sciences for a mere $67 million.[1] (See p.29.) Considering that MDA was to benefit from the Canadian government's privatisation of the world's most advanced commercial satellites, worth about $1.15 billion, this U.S. war industry got a great deal.

An even bigger U.S. "missile defense" contractor, Lockheed Martin, which is the world's top war industry, also got a piece of the RADARSAT action. Lockheed Martin, had the exclusive rights to sell RADARSAT-1 data in the U.S. from the day it was launched until September of 1999. The media release announcing the launch noted that "Lockheed Martin... has distribution rights in the United States."[2]

1998: A Sweetheart Deal

In 1998, another wholly-owned subsidiary of Orbital Sciences, namely Orbital Imaging (aka ORBIMAGE), signed a sweetheart deal with its Canadian "sister" company, MDA. ORBIMAGE thus received the "worldwide sales and distribution rights" for all of the imagery from Canada's RADARSAT-2 satellite.[3]

In this "license agreement," MDA sold to ORBIMAGE "exclusive use of the data collected by the satellite until 2008." The agreement was expected to "generate US$60 million in revenues until...2003, and US$10 million per year until 2008."[4]

MDA, then owned by a U.S. "missile defense" firm called Orbital Sciences, sold to another subsidiary of its parent company, namely ORBIMAGE,

"the full rights to all economic benefit from RADARSAT-2, in exchange for certain payments to MDA during its construction and operation."[5] So, in exchange for making what was a relatively small investment in the building of RADARSAT-2, ORBIMAGE "acquired worldwide rights to the data."[6]

The ORBIMAGE contract with MDA gave the U.S. firm the rights to "exclusive distribution of the RADARSAT-2 data"[7] to clients in all countries besides Canada. It was "ten-year exclusive license"[8] that gave

"beneficial ownership to all data or capacity of the [RADARSAT-2] satellite that was not used by the Canadian Space Agency."[9]

ORBIMAGE had also acquired the data-marketing rights for other satellites besides RADARSAT. However, when it announced its deal with MDA in January 1999, ORBIMAGE gratefully noted that its purchase of worldwide rights to sell RADARSAT-2 data effectively "doubled" the volume of imagery that they were able to sell access to.

"RADARSAT-2 will provide ORBIMAGE with the ability to acquire imagery at night and through clouds. With up to 75% of the Earth's surface covered by either darkness or clouds at any given time, its space-based radar imagery *should double the effective imagery capacity of the ORBIMAGE constellation of satellites*."[10] (Emphasis added.)

At the time, ORBIMAGE noted that "advanced imagery products generated by RADARSAT-2" were "expected to be of interest to users in a wide variety of market applications" including "national defense."[11]

With this deal in place, ORBIMAGE began selling RADARSAT-2 data to non-Canadian customers, although the satellite was not yet launched.

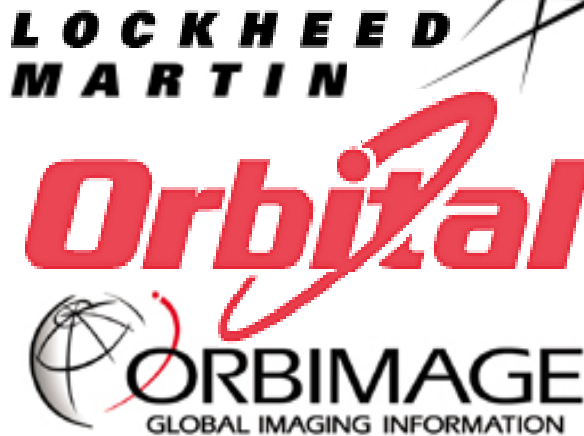Before the end of 1999, ORBIMAGE acquired even more control over the sales of RADARSAT images. In September, the two Orbital "affiliates" issued a joint media release to say that ORBIMAGE had been "appointed" by MDA to be

"the principal distributor for the sale of RADARSAT-1 synthetic aperture radar (SAR) imagery in the U.S."[12] The companies' joint statement said

"ORBIMAGE will offer RADARSAT-1 imagery to other U.S. distributors and directly to customers through its Internet web site."[13]

In February 1999, MDA made a strategic purchase to gain control of Radarsat International, a company created in 1989 "to market, process and distribute data worldwide from Canada's RADARSAT-1."[14] RSI began as a "consortium of shareholders" comprised of four big Canadian military-related companies that built RADARSAT-1: Spar Aerospace, Com Dev, Lockheed Martin Astronautics and MDA.[15]

When the government's privatisation deal gave MDA the "contract from the Canadian Space Agency to

The Canadian government privatised the marketing of RADARSAT-1 data and the ownership of RADARSAT-2, handing them over to MDA, which was then owned by US "missile defense" firm, Orbital Sciences. RADARSAT-1's global marketing rights were sold off first to Lockheed Martin, the world's largest weapons maker and then to ORBIMAGE, another subsidiary of Orbital Sciences.

Foreign Marketing Rights for RADARSAT Data

RADARSAT-1 (U.S. Sales)
 1995---*Lockheed Martin*--> **1999**-----------*ORBIMAGE*------------> Present

RADARSAT-2 (All sales outside Canada)
 1998---*ORBIMAGE*-> **2001**-------*MDA*----------> Present

RADARSAT-2 (U.S. Sales)
 1998----------*ORBIMAGE*--------> **2003**--*MDA*--> Present

- RADARSAT-1 orbits at an altitude of 798 kms.
- Since a $100 bill is 15.2 cms in length, it would require 5.25 million $100 bills to reach as high as RADARSAT-1.
- The cost of RADARSAT-1 and -2 is about $1.145 billion.

If placed end-to-end, the number of $100 bills spent on RADARSAT-1 and -2, would stretch from the earth's surface all the way up to RADARSAT-1 **and back down to earth again!**

In fact, there would even be $95 million left over, which is more than Orbital Sciences paid for MDA in 1995.

This $100 bill, issued in 2004, celebrates RADARSAT-1.

build, operate and own the RADARSAT-2 satellite," it was a "was a natural step forward for MDA," said its Vice-President Bernie Clark, to buy a controlling interest in RSI.[16]

"We are confident that teaming the new capabilities of RADARSAT-2 with the marketing experience of RSI, MDA and ORBIMAGE will ensure the highest level of market penetration from RADARSAT-2."[17]

With the "Canadian" subsidiary of Orbital Sciences now firmly in the helm of RSI—which had overseen the marketing of data from RADARSAT-1 for ten years—it was just another "natural step forward" for even more data from this Canadian satellite to be handed over to the other subsidiary of Orbital Sciences, namely ORBIMAGE.

By the fall of 1999, ORBIMAGE was appending a blurb at the end of its media releases, saying:

"ORBIMAGE also holds the exclusive, worldwide imagery distribution rights for the Canadian RADARSAT-2 satellite and non-exclusive distribution rights for the RADARSAT-1 satellite."[18]

This whole arrangement of sweet-heart deals went along unchanged for another year and a half until February 2001. At that point, ORBIMAGE and MDA renegotiated their contract regarding the rights to sell RADARSAT-2 data outside of Canada.

ORBIMAGE transferred back to MDA the licence, purchased in 1998, to market and sell RADARSAT-2 data to foreign clients, other than those in the U.S.. In other words, ORBIMAGE still retained all of its rights to sell RADARSAT-1 and -2 data to U.S. customers.

It was important for ORBIMAGE to maintain this control over sales of all RADARSAT data to U.S. clients, particularly the lucrative government contracts. The prime U.S. purchasers of RADARSAT data are, of course, U.S. military and intelligence-related departments and agencies (See pp.33-35.)

2001: Valentine's Day

ORBIMAGE's February 14, 2001, media release stated that it would:

"retain the exclusive distribution rights for RADARSAT-2 imagery to customers in the U.S., the largest market in the world, and the worldwide satellite capacity necessary to service this market. ORBIMAGE will return license rights to customers in other parts of the world to MDA."[19]

In a simultaneous Valentine's Day announcement, MDA said that through its wholly-owned subsidiary, RSI, it would now control the "worldwide rights to RADARSAT-2 distribution, except for the U.S."[20]

What led to these Valentine's Day business announcements?

"In 1999, ORBIMAGE agreed to pay

MacDonald, Dettwiler [US]$60 million in exchange for global marketing rights to data from RADARSAT-2.... After ORBIMAGE paid about half of that sum, the two companies agreed to restructure the deal [in February 2001], cutting ORBIMAGE's total payment to [US]$40 million and limiting its marketing rights to U.S. customers."[21]

On the surface, things seemed to be going smoothly for these two subsidiaries of Orbital Sciences. In May 2002, RSI recognized the great job that ORBIMAGE was doing in selling off RADARSAT-1 data to the U.S. government, by announced that it had given ORBIMAGE the "Outstanding Distributor Award" for "excellence in sales in Eastern North America."[22]

For its part, ORBIMAGE's Senior Vice President of Worldwide Marketing and Sales, Timothy J. Puckorius, said his company was

"honored to receive this recognition... for our achievement in selling RADARSAT-1 data to the U.S. user community.... We continue to work hard to provide our U.S. based customers with the best image products and services our industry has to offer. RADARSAT-1 data...complements our optical capabilities which we hope to further expand with the enhanced capabilities of RADARSAT-2."[23]

2003: The Break Up

Behind this facade, ORBIMAGE was going broke. They claimed that many of their financial woes were due to delays in RADARSAT-2's launch. In early 2003, ORBIMAGE sued MDA

> "alleging that it had been misled by the Canadian firm about the progress on RADARSAT-2."[24]

However, by September 2003, Orbital's two subsidiaries resolved their spat and announced a settlement which

> "essentially washes ORBIMAGE's hands of the RADARSAT-2 program. MacDonald, Dettwiler will pay ORBIMAGE [US]$10 million immediately and another [US]$2 million over the next two years."[25]

In exchange for this US$12 million from MDA, ORBIMAGE agreed to "return its limited licenses in RADARSAT-2 [re: sales to U.S. clients] back to MDA."[26]

The September-2003 settlement ended five years of RADARSAT-2 image sales by ORBIMAGE. ORBIMAGE, however, still serves as the sole marketer of RADARSAT-1 images to customers in the U.S., just as it has done now for seven years. As it says on the company's "Radar Imagery" products webpage: "In the U.S., ORBIMAGE is pleased to offer the satellite imagery products of RADARSAT-1."[27]

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UK Military Agency "Top" RADARSAT Distributor in Europe, Africa and Middle East

In 1997, a branch of the UK Ministry of Defense (MoD), the Defence Evaluation and Research Agency (DERA), received the "Top Regional RADARSAT Distributor" award for "achievements in...sales and marketing of RADARSAT satellite imagery" in "Europe, Africa and the Middle East."[1]

DERA, and a consortium it established called RadarSolutions, won the RADARSAT International award again in 1998,[2] 1999[3] and 2000.[4]

DERA, which began selling RADARSAT data in 1995,[5] does most of the MoD's "non-nuclear research, technology and test and evaluation" work. With 12,000 staff, it is "one of Europe's largest...research organisations." Its facilities include "ranges for air, land and sea launched weapon effectiveness trials [as well as] underwater target ranges."[6]

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U.S. Warfighters get Hands on RADARSAT Data

*A*mong the top clients of RA-DARSAT-1 and -2 data are U.S. military and intelligence agencies. The fact that Canada's satellite images are highly coveted by U.S. warfighters is evident in the corporate timeline of RADARSAT contracts which is juxtaposed below with major U.S.-led wars in which Canada was/is a leading member.

Mar. 1, 1996: "The Defense Mapping Agency requires procurement of RADARSAT imagery of the earth's surface... in digital and photographic form. Data shall be...in Fine Image Mode and 10 meter ground resolution."[1]

Mar. 18, 1999: The Electronic Systems Center at Hanscom AFB, announced it was seeking "to improve the Eagle Vision I synthetic aperture radar imagery processing time [to] reduce processing time for radar imagery [including] RADARSAT ... from the current 40 minutes to less than two minutes for a 50x50km scene."[2]
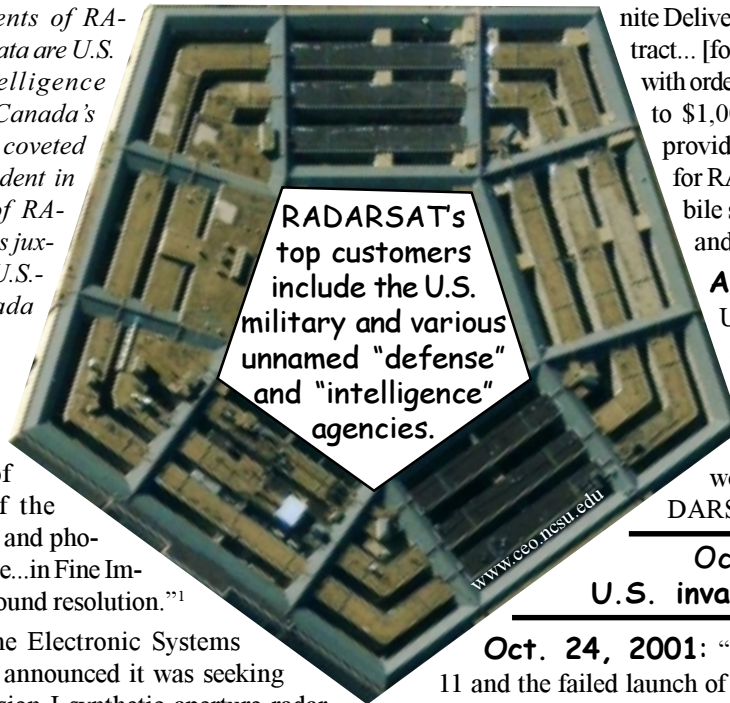

March 24, 1999
NATO begins aerial bombing of Yugoslavia.

May 15, 2000: The ISR Integration Program Office, Hanscom AFB "wishes to identify potential sources...to process...satellite imagery. The system must be capable of ingesting ...RADARSAT sources."[3]

Dec. 11, 2000: "The USAF Research Laboratory announced ...it awarded Northrop Grumman...[US]$688,888 for RADARSAT data collection."[4]

Mar. 15, 2001: The USAF's Information Exploitation Systems Program Office issued a "request for information" for a contract to "upgrade Eagle Vision through the addition of...RADARSAT 2 capabilities."[5]

April 9, 2001: NIMA began competition for an "Indefi-

RADARSAT's top customers include the U.S. military and various unnamed "defense" and "intelligence" agencies.

www.ceo.ncsu.edu

nite Delivery, Indefinite Quantity contract... [for] RADARSAT-1 imagery" with orders to range from [US]$1,500 to $1,000,000. "Direct downlink providers shall provide services for RADARSAT-1 data to all mobile systems (...Eagle Vision...) and all fixed systems."[6]

Aug. 23, 2001: The USAF Research Lab. announced it had given Northrop Grumman, Electronic Sensors and Systems Div., "a contract worth [US]$389,888 for RADARSAT data collection."[7]

October 7, 2001
U.S. invades Afghanistan.

Oct. 24, 2001: "The tragic events of Sept. 11 and the failed launch of OrbView-4 ... are causing longer-term changes in the marketplace, including...in the priorities of some of our customers.... The long-term also presents opportunities for our [i.e., MacDonald, Dettwiler and Assoc., MDA's] various intelligence, defence, surveillance, policing capabilities and information products."[8]

Nov. 1, 2001: "MDA announced... the completion of a 3-D terrain map covering Colombia, South America. The detailed country-wide Digital Elevation Model (DEM) is derived from images acquired by Canada's RADARSAT-1. Terrain heights are accurate to...30 metres. The Colombia DEM was initiated by...NIMA, an agency of the U.S. DoD.... NIMA's mission is to support America's national security."[9]

July 24, 2002: NIMA gave MDA a 3-year contract of about $8 million for "RADARSAT-1 data for 3-D mapping."[10]

Nov. 5, 2002: MDA reports a one-year, $1.2 million contract that "enables the USAF to routinely receive RADARSAT-1 imagery" at three Eagle Vision stations."[11]

Oct. 23, 2002: MDA reported a "big win in Geographic Information Products,... over $9.3 million in contracts" to provide "satellite imagery for defense and defense-related agencies in the U.S. and Europe."[12]

Feb. 20, 2003: MDA's "business with defence and defence-related agencies continued at a steady pace as we secured over $10 million in contracts [for] geospatial information products from satellite imagery."[13]

March 19, 2003
U.S. declares war on Iraq.

Mar. 20, 2003: The USAF Information Exploitation Systems Program Office issued a "solicitation notice" "to upgrade Eagle Vision through the addition of RADARSAT 2 satellite capabilities....for use in the combat commander's mission planning/rehearsal and intelligence gathering sys-

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Abbreviations:

AFB	Air Force Base
DoD	Department of Defense
ISR	Intelligence, Surveillance, Reconnaissance
MDA	MacDonald, Dettwiler & Assoc.
NIMA	National Imagery & Mapping Agency
RSI	RADARSAT International
USAF	United States Air Force

"Defense"?

As usual, when reading documents from government, corporate or military sources, the term "defense" does not necessarily have anything to do with "defense." Rather, it means military or war-related.

DMA→NIMA→NGIA: U.S. "military intelligence" is a major user of RADARSAT. Initially called the Defense Mapping Agency, then NIMA and now NGIA, this self-described "major intelligence and combat support agency of the U.S. DoD" provides "timely, relevant and accurate geospatial intelligence in support of national security."

tems. The added RADARSAT 2 capability will allow Eagle Vision to program the satellite, receive and archive the telemetry, and process the data.... Total contract value is anticipated to be under [US]$2 million."[14]

April 23, 2003: "We [MDA] continued to book defence intelligence work worth $3.8 million. We also completed an important order to provide the U.S. NIMA with a multi-level landcover database for more than 50% of the Earth. NIMA will use the new landcover information for a variety of logistical and planning purposes."[15]

July 24, 2003: "MDA was awarded $6.4 million in land information orders from Defense Intelligence customers."[16]

Sept. 23, 2003: "MDA...has been awarded a contract worth several million dollars by the European Aeronautic Defence and Space [EADS] Co. to participate in the delivery of an additional mobile ground station to the U.S. government. The new EADS ground station will enable Eagle Vision to obtain information from Canada's RADARSAT-1 satellite.... MDA President and CEO ...said [MDA]: 'is continuing to make inroads into operational strategic U.S. defence projects, as we provide mission-critical systems to this growing market.'"[17]

Within weeks of the Iraq war's onset, in March 2003, a U.S. military spy agency ordered RADARSAT data covering "***more than 50% of the Earth.***" MDA said the data, would fulfil "a variety of logistical and planning purposes." MDA later divulged that 2003 was a "record year" for the "defence intelligence" aspect of their business, which received $70 million in orders.

Oct. 9, 2003: Through the ISR Integration Program Office at Hanscom AFB, the USAF posted a "Solicitation Notice" to "upgrade the Eagle Vision Systems through the addition of a capability to directly receive... imagery from commercial satellite vendors [including] RADARSAT.... [One stipulation was] the ordering agency (Eagle Vision) cannot be disclosed to the public or associated with the imagery in the satellite vendor's database or imagery catalogue."[18]

Oct. 24, 2003: The USAF announced a sole source contract to MDA "to provide for the RADARSAT 2 upgrade to Eagle Vision.... The added RADARSAT 2 capability will allow Eagle Vision to program the satellite, receive and archive the telemetry, and process the data."[19]

3rd Quarter, 2003: "The MDA Geographic Information Products Group made major breakthroughs in the Defence and Enforcement markets. MDA was awarded up to $58 million in land information business by various defence intelligence customers."[20]

Feb. 17, 2004: "In defence intelligence, we [MDA] had a record year [2003] with total orders of about $70 million."[21]

June 2004: The USAF gave a US$2.1 contract to MDA to evaluate "the ability of the Canadian RADARSAT II...to provide all-weather imaging capability at 3-meter resolution for support of target detection..., homeland defense [and] moving target indicators...as an upgrade when integrated with the...Eagle Vision Deployable Satellite Imagery Receiving and Processing Station."[22]

June 23, 2004: "MDA...has been awarded a competitive contract ...under the USAF Foreign Comparative Test program to evaluate RADARSAT-2 information reception and processing capabilities to one of its Eagle Vision (EV) mobile ground stations. The first delivery will enable the USAF to test the use of RADARSAT-2 information to provide in-theatre support for the warfighter....

EV is the U.S. DoD's only deployable commercial ground station capable of directly receiving and processing critical imagery information from commercial remote sensing satellites directly for the warfighter inside the battlefield rhythm. This dynamic system has been deployed in the theatre of operations in support of Operations Enduring Freedom, Iraqi Freedom and Global War on Terror missions. RADARSAT-2 will provide unclassified information...to support... mission planning and rehearsal, and time-critical targeting. RADARSAT-2...can aid in identifying a wide variety of surface features and targets....

This is [MDA's] sixth EV contract. MDA's EV ground station technology and...Flight Path Safety System are...deployed by the USAF at locations around the world."[23]

July 16, 2004: An "existing [USAF-MDA] Eagle Vision/RADARSAT 2 contract...to modify the RADARSAT 2 satellite" was changed "in support of the RADARSAT Tandem Topographic Mission... [to] design, build and test two... antennas on RADARSAT 2 for frequency synchronization between RADARSAT 2 and the Tandem satellite."[24]

Oct. 6, 2004: RADARSAT International (RSI) "has signed four contracts, worth a total of US$2.35 million, with three longstanding defense clients....

The defense clients include two unnamed RADARSAT-1 network stations and a U.S. agency. The network station clients have signed downlink renewal agreements, and the U.S. agency has signed one contract for a mobile network station downlink renewal and another for a substantial volume of RADARSAT-1 data.

'RADARSAT-1 data supports... geospatial intelligence needs such as mapping, 3-D terrain modeling, target detection and change in activity monitoring,' said RSI president."[25]

Jan. 9, 2005: The NGIA posted a "solicitation notice"

U.S. Army Space and Missile Defense Command

for a "one-year [contract] extension... for the purchase of... RADARSAT-1 data, products and services to DoD and the Intelligence Community" for "Geophysical Surveying and Mapping Services."[26]

Feb. 22, 2005: "In the Defence market, MDA signed its second agreement to provide information solutions [to] allow image products to be distributed to commercial, defence and intelligence customers primarily in the U.S."[27]

April 14, 2005: The U.S. Army Space and Missile Defense Command, and Army Strategic Command, posted a "request for information" saying they required a "Multi-Sensor Virtual Ground Terminal... [that] enables rapid access to commercial...satellite imagery data. This would include... sensors such as...Canadian RADARSAT [1] satellite. System needs...a small footprint to allow for flexible positioning for tactical forces around the world. System needs to be expandable to allow...new satellite sensors such as...Canadian SAR satellite RADARSAT 2. The system will allow the unit to request specific data or automatically receive compressed...imagery..., process the data within the area of operations,....[and] enable global coverage and imaging under all environmental and lighting conditions. Delivery of data must occur within 90 minutes of collect, preferably via direct downlink to an existing military mobile ground station."[28]

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Meet Eagle Vision: US Military Bridgehead to RADARSAT

In exchange for launching RADAR-SAT-1 in 1995, the U.S. government has been controlling 15% of this Canadian satellite's observing time ever since.[1] This guaranteed access is managed by the Alaska Synthetic Aperture Radar Facility in Fairbanks.[2]

However, this was not enough. The U.S. Army and Air Force wanted to use transportable ground stations to control RADARSAT operations and directly downlink the satellite's data.

Eagle Vision was their solution. Basically, it is a satellite dish and a box-like shelter chock full of electronic equipment. It can be flown around the world aboard one C-141 or two C-130 military transport planes. A tractor-trailer truck emerges from the war plane and—with satellite dish in tow—drives to the receiving station's temporary home near the battlezone. Once there, the system takes about four hours to set up and can begin programming RADARSAT-1 operations and capturing its images.

Its purpose is to receive, process and relay data to warfighters while they are engaged in battle. The idea is to get useful satellite imagery straight into the hands of U.S. soldiers as quickly, efficiently, securely and cheaply as possible. Eagle Vision is "a cornerstone of the [U.S.] military's commercial imagery exploitation."[3]

There are now five operating ground stations in the U.S. military's growing Eagle Vision (EV) "family":

EV I: U.S. Air Forces Europe (Germany).
EV II: U.S. Army Space and Missile Defense Command (Colorado).
EV III: Air National Guard (Nevada).
EV IV: Air National Guard (S. Carolina).
EV V: Air National Guard and Pacific Air Forces (Hawaii).[4]

Once Eagle Vision operators have programmed RADARSAT-1 to gather the images that they want, they downlink that data directly to their station. Eagle Vision stations have been upgraded so that they will also be able to manipulate, and receive data from, RADARSAT-2, after its launch in December 2006.

Each Eagle Vision system is able not only access RADARSAT,[5] but also

Eagle Vision

This U.S. military ground station operates and controls Canada's RADARSAT-1 and directly "downlinks" satellite images to warfighters engaged in the battle. It has been used in the Yugoslav, Afghan and Iraq wars.

C-130

C-141

Eagle Vision is moved to warzones in two C-130s or one C-141 aircraft.
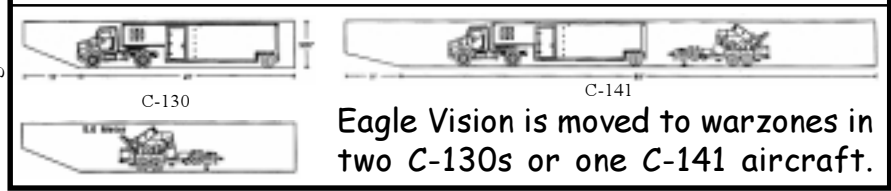
to control where and when the satellite directs its gaze, as well as to adjust all of its settings, parametres and modes of operation.

This direct access and control of RADARSAT is very much appreciated by the U.S. military because it

"provides in-theater, real-time acquisition and processing of commercial satellite imagery into formats required by users.... The Data Acquisition Segment...performs satellite sensor programming, satellite telemetry reception and processing."[6]

Eagle Vision II (EV II) operators from 1st Space Battalion of the Army Space and Missile Defense Command can "schedule, track and receive commercial imagery data from SPOT 2, SPOT 4, [and] RADARSAT"[7] satellites. This Commercial Exploitation Team (CET)

"provides the warfighter access to directly downlinked commercial imagery.... The advantage a deployed CET brings to warfighters is access to commercial imagery in a timely manner, rather than waiting for it to be processed and disseminated from the U.S.. While the National Geospatial Intelligence Agency currently provides warfighters access to commercial imagery,...this process often doesn't meet tactical or operational

timelines....The integration of the CET and EV II into the Army's space inventory will greatly improve the timely delivery of space support to the warfighter."[8]

The importance that the U.S. places on putting space-sensor data into the hands of warfighters, has not gone unnoticed in Canada's military. Although our government paid about one billion for the RADARSAT system, before handing over its management and control to MacDonald, Dettwiler and Assoc., Canada does not (yet) have its own US$10-million Eagle Vision station. The advantages of the system were however discussed at a 2002 symposium on space power, sponsored by Canada's Chief of Air Staff:

"Military uses of commercially supplied imagery have increased dramatically over the past decade, but one of the biggest advances has been to provide this information directly to deployed forces. For example...Eagle Vision II, is...designed to provide military commanders direct access to multiple imaging satellites ....to directly provide the warfighter with unclassified imagery...that will help...visualize the battlespace and develop precise terrain and geographic data."[9]

Iraq War 1991

As the following quotations explain, the U.S. military developed Eagle Vision as a result of lessons learned during the 1991 war against Iraq:

- "The genesis of the Eagle Vision program was a result of lessons learned during the Gulf War. Tactical ground commanders lacked sufficient imagery, and national imagery was classified too high for it to be easily processed by tactical air commanders' air planning software."[10]

- "The Eagle Vision family emerged from the Desert Storm combat commander's operational demand for digital imagery to support air and carrier-based mission planning/rehearsal and intelligence gathering systems, as well as Army and Marine Corps topographic units."[11]

- Eagle Vision "evolved from a Desert Storm need for a timely and responsive method to acquire broad-area imagery for Air Force applications dur-

www.psywar.org

"We can see everything"

This was among 17 million leaflets dropped on Iraq in 2003 before the war began in March. This flier said the U.S. "coalition," with its "superior satellite technology," could detect the "transportation of nuclear, biological or chemical weapons." Despite access to RADARSAT data, U.S. warfighters didn't find any such Iraqi weapons, which had provided the convenient pretext for war. Eagle Vision did however provide data for targeting U.S. weapons.

ing contingency operations."[12]

Since it began receiving funding in 1992, Eagle Vision has undergone a series of modifications to keep up with developments in "emerging technologies" such as "higher resolution/all weather satellites"[13] like RADARSAT.

In March 1996, just four months after the launch of RADARSAT-1—the world's first Synthetic Aperture Radar satellite—the U.S. military began a study to have Eagle Vision exploit

"higher resolution electro-optical and all weather synthetic aperture radar imagery collected by multiple foreign satellites: Canadian RADARSAT, Indian Remote Sensing (IRS) and European Radar System (ERS).... Under this effort, a RADARSAT satellite capability was added to the [Eagle Vision] system, but IRS and ERS were not due to funding constraints."[14]

Eagle Vision at War

Since its appearance on the scene just 10 years ago, Eagle Vision has been used in numerous U.S.-led wars and military operations. It stands to reason that once the military has access to useful technology they will basically use it whenever and wherever they can.

Eagle Vision was, for instance, "used extensively in the Balkans [during] Operation Allied Force,"[15] i.e., the NATO bombardment of Yugoslavia in 1999. A U.S. Air Force magazine confirms this, saying "during the Kosovo conflict... Eagle Vision incorporated... nine RADARSAT scenes."[16]

Numerous military and industry publications include mention of Eagle Vision's deployment in the ongoing wars in Iraq and Afghanistan:

"This dynamic system has been deployed in the theatre of operations in support of Operations Enduring Freedom, Iraqi Freedom and Global War on Terror missions."[17]

"Soldiers also deployed...to support Special Operations Forces during Operation Iraqi Freedom by providing commercial imagery from the Air Force Eagle Vision I system."[18]

"Eagle Vision 1, which we [USAF] deployed to Al-Dhafra Air Base in the United Arab Emirates during both Enduring Freedom and Iraqi Freedom for three months at a time.... has been in the U.S. Central Command theater of operations almost constantly since 9/11."[19]

(Note: U.S. Central Command, or CENTCOM, is centred on the Middle East and covers 25 countries from the Horn of Africa to Central Asia.[20])

U.S. military budget estimates published in 2004 reveal that not only was Eagle Vision used in the previous year "to provide imagery to forces engaged in combat in both Iraq and Afghanistan" during operations "Enduring Freedom and Iraqi Freedom"[21] it was also used in Operation Southern Watch, during which the U.S. attacked Iraqi warplanes flying in southern Iraq.

The *Space News Business Report* of March 31, 2003 (less than two weeks after the U.S. declared war on Iraq), included what is perhaps the most telling description of Eagle Vision's importance in the Iraq "theater" of war:

"The U.S. Air Force's Eagle Vision 1 mobile satellite-imagery ground station, based at Ramstein Air Force Base, Germany, has been deployed to the Iraqi theater of operations and is working well, according to a Pentagon source. The ground station is capable of receiving imagery from... Canada's RADARSAT.... 'It's doing great things,' the source said. 'It's working like gangbusters.'"[22]

That same issue also reported that on March 18, 2003, the U.S. Air Force dropped Arabic fliers on Iraqis warning them that with surveillance spacecraft "We can see everything."[23] (These flier's were among the over three million leaflets dropped on March 18 and 19 alone.[24]) The reverse side of this

leaflet told Iraqi citizens that:

"The coalition has superior satellite technology which allows coalition forces to see the preparation and transportation of nuclear, biological or chemical weapons."[25]

However, despite quick access to imagery from satellites like RADARSAT—plus all of the other high-tech Intelligence, Surveillance and Reconnaissance (ISR) advantages of a rogue superpower spending half the world's total military budget—the U.S. was not able to find any of the supposed Iraqi weapons of mass destruction that had so conveniently provided the phoney pretext for launching this illegal war.

However, the use of Eagle Vision did give U.S. warfighters valuable access to space assets, like Canada's RADARSAT-1, which provide useful data for pinpointing Iraqi targets.

It is appropriate to conclude this look at Eagle Vision with excerpts from a U.S. Space and Missile Defense Command document on "contributions and lessons from Operation Iraqi Freedom":

"*Eagle Vision System:* A key element in establishing and maintaining information and decision superiority is timely access to theater imagery. Accurate and timely imagery is the cornerstone of successful operational planning and execution and Operation Iraqi Freedom confirmed the importance of having an in-theater commercial imagery direct downlink capability to move commercial imagery more effectively to meet operational deadlines. The process of obtaining imagery from commercial vendors through the National Imagery and Mapping Agency (NIMA)..., however, can involve a lengthy process that degrades imagery timeliness and utility.

The new Eagle Vision system, deployed to the United Arab Emirates in support of Operation Iraqi Freedom, is an in-theater direct downlink of commercial satellite imagery. Using Eagle Vision proved appreciably faster than getting im-

"The Eagle Vision system, deployed to the United Arab Emirates in support of Operation Iraqi Freedom, is an in-theater direct downlink of commercial satellite imagery."

agery from commercial vendors through the NIMA."

"*Conclusion:* The success of Operation Iraqi Freedom depended heavily on improved support and force enhancement capabilities provided by Space-based assets. The Army that fought in Operation Iraqi Freedom was truly a Space-enabled Force.... ISR capabilities are significantly enhanced and multiplied by using satellite-derived data."[26]

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Some Canadian Military Uses of RADARSAT

MARCOT (June '97)

MacDonald, Dettwiler and Assoc. (MDA) provided Fast TRACS, a "transportable satellite receiving station" to downlink RADARSAT data, for Canada's Maritime Coordinated Operational Training (MARCOT) exercise. FAST Tracs played "an integral part" in this war game, which involves U.S., British, German, Dutch, Portuguese and Japanese forces. Fast TRACS supplied

"real time tactical imagery to exercise participants.... [It] was configured to obtain data from Canada's RADARSAT."[1]

In 1998, MARCOT combined with NATO's Unified Spirit wargame with mostly U.S. forces simulating an

"amphibious assault onto the beaches at Stephenville, Newfoundland [with]...a simultaneous heliborne and surface assault.... Upon seizure of the landing force objectives, the amphibious task force assaulted Green Beach to seize the port and airfield and to allow introduction of follow-on forces."[2]

Terrorists vs Greens (Aug. '04)

For 15 days in August 2004, Canada's Army, Navy, Air Force, "Coast Guard,...RCMP, Environment Canada and Transport Canada,"[1] engaged in a round-the-clock Intelligence, Surveillance and Reconnaissance (ISR) war game against terrorists in "control of a cargo ship"[2] heading toward Canada.

The fanciful enemy in this "domestic security and defence of Canada operation"[3] was an imaginary

"terrorist organization suspected of targeting [an] Int'l Environmental Congress in St John's Nfld."

The list of "Forces" used in this Atlantic Littoral ISR Experiment included RADARSAT[4] and an Uninhabited Aerial Vehicle that conducted a maritime ISR "targeting mission."[5]

A Department of National Defence agency, Defence R&D Canada, said this training/testing exercise

"examined ways to integrate and exploit...sensors within an Integrated ISR Architecture to support more rapid and informed decision making.... [and was] an opportunity to understand the potential [of]...oper-

ations that linked tactical sensors and weapons systems to decision makers across three levels of command within the Canadian Forces."[6]

Phoenix Ram (Sept.-Oct. '05)

During the Phoenix Ram combat training war game at CFB Wainwright in Alberta, the military used a "satellite surveillance and intelligence information solution" provided by MDA. The company says this exercise "successfully demonstrated that commercial satellite imagery received directly in the field, as the satellite passes over...can enhance...military operations.... Canada's current surveillance and reconnaissance capability does not include...this type of real-time satellite imagery....

MDA's satellite information solution is...successfully deployed by the U.S. Army and U.S. Air Force."[3] A main function of the war game was to prepare troops for duty in Afghanistan.

"There were approximately 7,000 personnel...over six weeks and the exercise utilized...task forces slated for deployment to Afghanistan [including]...infantry, armour, artillery ...intelligence [and]...Tactical Psyops [psychological operations]."[4]

Decision Making (Oct. '05)

MDA has won a $1.3-million government contract to help Defence R&D Canada (DRDC)-Ottawa to develop a means to get military

"information from RADARSAT-1 imagery.... This [contract] advances MDA's expertise in providing robust information solutions that transform volumes of data to information used for critical decision-making."[5]

Moving Targets (Jan. 26, '06)

MDA has been contracted to work with DRDC-Ottawa on efforts related to RADARSAT-2's Ground Moving Target Indicator technology. (See pp.14-18.) MDA is to

"deliver an information solution that extracts information about moving objects on the ground from radar satellite imagery. Canadian Forces [want]...data from the new...RADARSAT-2 surveillance satellite to derive actionable information on objects

moving on the ground. The...contract...[will] allow DRDC-Ottawa to assess MDA's information solution and demonstrate its...utility to Canadian Forces once RADARSAT-2...[is] launched in late 2006....

This [contract] will advance MDA's expertise in providing robust defence information solutions which may have *export potential to military customers worldwide*."[6] (Emphasis added.)

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Meet the Staff at ORBIMAGE:
A Friendly Crew of "Missile Defense" Advocates who sell Canada's RADARSAT Images to U.S. Warriors and Spies

In 1998, ORBIMAGE began hiring a coterie of retired U.S. military officers including some champions of the "missile defense" weapons program. Among their responsibilities was selling data from RADARSAT-1 and-2.

ORBIMAGE has been selling RADARSAT-1 images to U.S. clients since buying those rights from MacDonald, Dettwiler and Assoc. in 1999. Between 1998 and 2003, ORBIMAGE was the

only firm allowed to sell RADARSAT-2 data to U.S. buyers. In fact, between 1998 and 2001, their exclusive license covered all RADARSAT-2 sales outside Canada. Both firms were then owned by Orbital Sciences, a U.S. "missile defense" contractor. (See p.29.)

In Jan. 2006, ORBIMAGE acquired another firm, rebranded itself GeoEye and became "the world's largest commercial satellite imagery company."

First Director, Strategic Defense Initiative Organization (now called the Missile Defense Agency)

James Alan Abrahamson, Air Force Lieutenant General (retired)

For decades, the now-retired U.S. Air Force (USAF) Lt. General James Abrahamson, led the charge for "missile defense." He joined ORBIMAGE's board of directors in 1998, the same year that it acquired control of RADARSAT-2 data sales to U.S. customers. By November 2001, he was Chairman of ORBIMAGE.[1]

Before that, Abrahamson had a long and "distinguished military career"[2] with such accomplishments as flying "49 combat missions over Southeast Asia."[3] He eventually became the "Project Manager for Maverick guided missiles, Director of the multinational F-16 program, [and] Associate Administrator of Space Flight for NASA where he ran the Space Shuttle program for three years."[4]

Abrahamson also had an early and pre-eminent role in boosting the "missile defense" weapons program. According to Dr. Donald Baucom, the official historian of the Ballistic Missile Defense Organization, Abrahamson was instrumental in several milestones in the history of "missile defense":

- Abrahamson became the first Director of the Strategic Defense Initiative Organization (SDIO) on March 27, 1984, when appointed by President Ronald Reagan's Secretary of Defense, Caspar Weinberger.
- In December of 1985, "a study of the SDIO organization and manpower situation" that "was commissioned by General Abrahamson" "found that SDIO was 'critically short of the

people and skills required to carry out the responsibilities'.... To overcome these difficulties, [this study recommended that the] SDIO should reorganize and establish a Federally Funded Research Center."

- In July 1986, Abrahamson "directed that SDIO be reorganized based upon the...Study of SDIO's organizational requirements [that was commissioned by Abrahamson]."[5]

As might be expected, following his January-1989 retirement from the job of SDIO director,[6] Abrahamson began juggling several "missile defense"-related postings to corporations. For instance, he "served as a senior executive at Hughes Aircraft Corporation"[7] which is a well-known, U.S. war-related, aerospace firm that has—like so many others—done well feeding from the "missile defense" trough.

When Abrahamson became chair of ORBIMAGE in 1998, he continued serving as Chair of Stratcom International, which he founded in 1998. This company has long partnered with the world's top war industry, Lockheed Martin. In 2003, Team Lockheed Martin, including StratCom, won a US$40 million, Missile Defense Agency contract to develop High Altitude Airships for "missile defense" applications.[8]

Abrahamson is also a senior investor and partner in a private-equity fund called Crescent Investment Management (CIM). It is described as a "hedge fund...which focuses on national security technologies"[9] and a

"global investment advisor and bank."[10] One of CIM's top directors is James Woolsey, former Director of the Central Intelligence Agency (1993-1995).[11]

The founder and chairman of CIM is Mansoor Ijaz, a "member of the Council on Foreign Relations" and self-professed expert on many financial and political issues, who claims to have "negotiated Sudan's counterterrorism offer to the Clinton administration."[12]

"Ijaz says he attempted to broker a hand-over of Osama bin Laden from the government of the Sudan to the U.S. in 1996, since then he has criticized the Clinton National Security team of having failed to get their man.... This [led] right wing press to lay blame on Clinton *et al* for having failed to fight terrorism."[13]

Clinton's National Security Advisor, Samuel Berger, had a different story saying "Ijaz was unreliable because of his oil investment interests in Sudan."[14]

Regardless of this and other controversies, Ijaz is highly regarded by many corporate media outlets that provide him a platform, such as:

"CNN, CNNI, Fox News,...Germany's

ARD TV, Japan's NHK, ABC and NBC....[and] the editorial pages of London's *Financial Times*, the *Wall Street Journal*, *New York Times*, *Los Angeles Times*, *Washington Post*, *International Herald Tribune*, *Newsweek International*, *Christian Science Monitor*,...*National Review* [and] *USA Today*."[15]

Ijaz's CIM is one of the "key partners" in an Israeli investment company called the Alliance Stars Group (ASG). Other "key partners" of ASG have included

- Kissinger McLarty Associates
- Kissinger Associates
- Project for the New American Century
- The Rockefeller Foundation[16]

In May 2004, the ASG website described CIM as being involved in a "multi-year program to improve U.S. Homeland and Global security through...projects [including]...satellite imaging and dirigible-based telecommunications platforms."[17]

This reference to dirigibles and "Homeland and Global security... projects" probably refers to Abrahamson's company, StratCom International, and its partnership with Lockheed Martin to build High Altitude Airships for the Missile Defense Agency.

Gary Payton, Air Force Colonel (retired)

Another "missile defense"-promoting USAF veteran, who landed a top executive position at ORBIMAGE, was Gary Payton. This retired Air Force Colonel became ORBIMAGE's Vice President for Engineering and Operations in July 2000. His main responsibility was the

"management and direction of ORBIMAGE's satellite operations and engineering departments."[18]

During his two year stint at ORBIMAGE, the company had exclusive rights to sell RADARSAT-1 and -2 data to the U.S. government. What qualified Payton for this work? Payton had a life-long career in the U.S. military. In 1967, he entered the Air Force academy and received his master of science degree in astronautical and aeronautical engineering five years later.[19]

Payton's official Air Force biography says he was awarded a Vietnam Service Medal. This means he served in Vietnam, Thailand, Laos, Cambodia "or contiguous waters and airspace" sometime between 1965 and 1973.[20]

In 1973, he graduated from pilot training at Craig Air Force Base (AFB) in Alabama and became an instructor pilot there. Between 1976 and 1980, he was a spacecraft test controller at Florida's Cape Canaveral. In 1980, he was selected for the USAF Manned Space Flight Engineer Program and five years later he was the "payload specialist" aboard the STS-51C *Discovery*. This space flight "was the first dedicated Space Shuttle Department of Defense [DoD] mission."[21] This made Payton "the first DoD astronaut to fly on the U.S. Space Shuttle Discovery."[22]

Between 1986 and 1995, Payton served in a variety of postings that directly served the cause of "missile defense." For instance, between 1986 and 1990, he was the Assistant Deputy for Technology and executive officer to the Director of the Strategic Defense Initiative Organization (SDIO). It is the "missile defense" organization set up to fulfil what became known as President Reagan's "Star Wars" initiative.[23]

Payton was the Director of Theater Missile Defense Sensors[24] and, between 1992 and 1994, he was Deputy for Technology at the Ballistic Missile Defense Organization (BMDO).[25]

Between 1995 and 2000, Payton entered a new phase in his career, working directly for NASA. Based at their headquarters in Washington, D.C., he was their Deputy Associate Administrator for Space Launch Technology.[26]

All of this experience was apparently excellent training for Payton's job at ORBIMAGE, which he held between 2000 and 2002. When hired, the company's President and CEO at the time, Gil Rye, was quoted as saying:

"We are excited to have Gary Payton join us.... He has significant experience with NASA and the Department of Defense, who are key customers for our imagery products and services. Gary's technical management expertise and leadership skills will benefit our satellite and production operations as we prepare for the next phase of our business."[27]

After two years with ORBIMAGE, Payton returned to the U.S. military establishment. He went straight into the Missile Defense Agency and became their Deputy for Advanced Systems (2002-2005). He then led the

"technology program to enhance ballistic missile defense sensor, weapon and battle management capabilities."[28]

Then, in 2005, he became the Deputy Undersecretary of the Air Force

- **Assistant Deputy for Technology, Strategic Defense Initiative Organization**
- **Deputy for Technology, Ballistic Missile Defense Organization**
- **Deputy for Advanced Systems, Missile Defense Agency**
- **Deputy Undersecretary, Air Force for Space Programs**

for Space Programs. Here's what this current job involves:

"He provides guidance, direction and oversight for the formulation, review and execution of military space programs. This includes oversight of all space and space-related acquisition plans, strategies and assessments for research, development, test, evaluation and space-related industrial base issues."[29]

During Payton's entire 33-year work history, his two years at ORBIMAGE was the only period that he spent outside the military—if that is, you can consider working at ORBIMAGE to be outside the military's sphere.

Gilbert Rye, Air Force Colonel (retired)

After welcoming Gary Payton onboard in 2000, Gil Rye was moved up to become ORBIMAGE's Vice Chairman in November 2001.[30] Like Payton and Abrahamson, Rye also had a previous life in the U.S Air Force. And, like them, he was also involved in promoting the U.S. "missile defense" weapons development program. In fact, Colonel Rye was a key figure in the struggle to push "missile defense" when the effort was called the Strategic Defense Initiative (SDI).

Rye was a staff member of the National Security Council (NSC) during President Ronald Reagan's first and second terms. Rye was on the NSC's Intelligence committee in 1982 and 1983, and was its Director of Space Programs in 1984 and 1985.[31] He used his influential position there to play

> "a leading role in initiating the 'Star Wars' missile defense program…. [But], to Rye's dismay, the United States still has no workable shield against missiles."[32]

It was, in fact, during Rye's time on the NSC that the phrase "Star Wars" was first hitched to what people now refer to as "missile defense." Rye certainly knows a thing or two about Reagan and, particularly, his infamous "Star Wars" speech of March 23, 1983.[33] That's when Reagan dramatically addressed the U.S. television public and stirred their imagination with the fanciful idea that the U.S. could build a space shield to stop Soviet missiles. Gil Rye's little-known claim to fame is that "he was a drafter of the President's 'Star Wars' speech."[34]

Rye is much better known however as having been

> "instrumental in President Reagan's approval of the U.S. Space Station Program and various space-related intelligence programs."[35]

An official NASA-history document records the following about Rye's role at the NSC:

> "Responsible for space policy matters within the National Security Council staff at this time was Gil Rye, an Air Force colonel who had worked on space issues within the Pentagon before being detailed to the White House…. Having Rye as an

ally in the White House proved invaluable to NASA."[36]

Rye's contributions to Reagan's heady "Space and Intelligence" efforts were the culmination of his 25-year military career. From about 1960, when he joined up, until his retirement from direct military service in 1985,

> "Rye was an officer in the U.S. Air Force serving in various planning, project management and policy positions related to systems procurement and space and intelligence policy/planning. His last assignment before retirement in 1985 was as Director of Space and Intelligence Programs on the National Security Council in President Reagan's White House. In this position, Mr. Rye oversaw the civil, commercial and national security sectors of the U.S. space program, as well as providing support to the President on various technical intelligence matters."[37]

Clearly, Rye's contributions to the military and intelligence communities, did not end in 1985. He went on to serve these previous masters during a no-less-illustrious career in the corporate world. Before joining ORBIMAGE in 1992, Rye worked for two private companies largely devoted to facilitating access to satellite data for U.S. military and intelligence agencies.

For instance, between 1985 and 1988, Rye was the president of COMSAT Government Systems, a "systems integration contractor" selling "turn-key, satellite-based communications systems to the U.S. and foreign governments."[38]

From there, he went over to BDM International, Inc., and was their Senior Vice President for Space Systems and Technology (1988-1990).

> "Here he supervised over 300 people and four regional offices that provided technical consulting services to the intelligence community, other government agencies and the private sector."[39]

BDM was later caught in the centre of a legal battle over "missile defense" contracts. In 1998, the U.S. government's Federal Trade Commission (FTC) laid charges against BDM's parent company, one of America's largest

- **Director of the National Security Council's Space and Intelligence programs for President Reagan**
- **Played "a leading role in initiating the 'Star Wars'" weapons program**
- **Drafted President Reagan's infamous "Star Wars" speech of March 23, 1983.**

military corporations, TRW. In order to settle the charges against it,

> "TRW Inc. agreed to divest a portion of the systems engineering and technical assistance (SETA) operations of McLean, Virginia-based BDM International prior to completing the [US]$942 million acquisition of the company. In its complaint, the FTC stated that TRW's acquisition of BDM would substantially lessen competition in the market for research, development, manufacture and sale of a Ballistic Missile Defense System.
>
> BDM…serves the [U.S.] Department of Defense [DoD], international defense agencies…and commercial clients. [In] 1996, the company acquired CW Systems, IG Systems, Melco Systems, Advanced Systems Design, RGTI Systems and Software Engineering.
>
> TRW…and BDM were each involved in the DoD's Ballistic Missile Defense program. The United Missile Defense Corp., a joint venture including TRW, was one of two competitors for the Ballistic Missile Defense Organization [BMDO] Lead Systems Integrator contract. BDM is the BMDO's sole supplier of SETA services for the LSI program."[40]

Gary Adkins, Air Force (retired)

Air Force cartographer with a 20-year military career.

Yet another former military man employed at ORBIMAGE is Gary Adkins, a retired "Air Force cartographer who heads ORBIMAGE's government sales."[41] He became the company's vice president of Federal Sales and National Security Programs in February 2003.[42]

After 20 years in the Air Force, where he "held several technical and management positions related to the use of remote sensing,"[43] Adkins worked for Space Imaging Corp., Laser-Scan and the Geodynamics Corp.[44] While at these firms, he was in charge of "program management, business development, marketing and sales, and corporate management."[45]

When Adkin's joined ORBIMAGE's "senior marketing staff," he was praised as "an experienced veteran in the remote sensing industry with a proven track record in federal sales." ORBIMAGE expected him to help lead

"marketing pursuits for the sale of its satellite imagery products…to the Federal and National Security government sectors."[46]

These are, of course, ORBIMAGE's most important sales sectors. War is good for the satellite business. The Iraq war in particular has even made it difficult for ORBIMAGE to meet demands:

"Commercial satellite imagery operators...are benefiting from the U.S. military operations in the [Mid East] under their Nextview contract with the U.S. National Geospatial-Intelligence Agency. Military operations in Iraq, as well as political situations in Iran and Syria, are driving a good percentage of the business for ORBIMAGE, says Gary Adkins."[47]

Adkins was on the planning committee of a conference in Washington, D.C. (May 13-15, 2003) that included discussions about the importance of commercial satellites in providing data for military, including "missile defense" functions. One of the speakers at that conference was a fellow U.S. Air Force officer, Lt.Col. Max Clayton, Chief of Space Policy, Space and Missile Defense Policy Division, Deputy Directorate for Strategy and Policy, U.S. Joint Chiefs of Staff (JCS).[48]

It was something of a coup to get a speaker of Clayton's rank at this "Commercial Satellite Remote Sensing Symposium," because the JCS is America's highest-ranked military organisation, composed of the Chiefs of the Army, Navy, Air Force and Marine Corps.[49] The JCS's chairman is the top

"military advisor to the President, the Secretary of Defense and the National Security Council."[50]

Bill Schuster, CIA officer (retired)

In November of 2004, ORBIMAGE hired William Schuster as its Chief Operating Officer to "manage their operations." The company's media release proudly highlighted that he

"began his professional career with the Central Intelligence Agency [CIA] where he spent nearly twenty-two years. Upon his departure from the CIA, he was recognized by Secretary of Defense, William Perry, for the pivotal role that he played in the conceptualization, development and operation of several National Reconnaissance Systems."[61]

While embedded in the CIA, Schuster was kept busy in many

"engineering and management positions, designing in-house, quick-reaction operational support and surveillance systems. Later, he became the project manager and contracting officers' technical representative for more complex projects. During the last 14 years of his CIA career, he worked with national systems and received the Intelligence Medal of Merit."[62]

This 22-year veteran of the CIA worked on National Reconnaissance Systems and received the Intelligence Medal of Merit.

Although it is said that no one ever leaves the CIA, Schuster left "The Company" in 1995 and went to work for several large, war industries, including Lockheed Martin, BAE Systems, Harris and Loral Space and Range Systems.[62] Each of these weapons makers have their fingers deep in the rich, "missile defense" pie.

When Schuster joined ORBIMAGE, Matt O'Connell, the company's CEO, commented: "These are exciting times for ORBIMAGE."[64]

No doubt part of the excitement about having people like Schuster—and other former military and intelligence officials—working within the ORBIMAGE family, is that they have the contacts, knowledge and skills that are needed to get lucrative contracts with the DoD, CIA and other U.S. institutions of war.

As Schuster himself has conceded, after ORBIMAGE landed a half-billion-dollar deal with the National Geospatial-Intelligence Agency (NGA) in 2004, the usefulness of contract wranglers, like Schuster, also has to do with the common "language" that these men share with their customers.

"'By speaking the same language as the NGA and intelligence personnel, we can facilitate their requests so that they get precisely what they need to fulfil their mission requirements,' Schuster said."[65]

John G. Zierdt, Jr., Army Brigadier General (retired)

In 2002, when Orbital Sciences (the parent company of ORBIMAGE and the former parent of MacDonald, Dettwiler and Assoc.) won a four-year, US$400-million "missile defense" contract from Boeing, it proudly announced it was hiring a former U.S. Army Brigadier General named John Zierdt, Jr.

Orbital brought the retired general on board as vice president in charge of their operations in Huntsville, Alabama. That's where the work on their "missile defense" weapons contract was being performed. Zierdt then began supervising Orbital's work on

> "the deployment, training and sustainment elements of the Ground-based Midcourse Defense [GMD] System boost vehicle program."[51]

According to Boeing, the prime contractor for the GMD, this system is the

> "key component of the Missile Defense Agency's overall layered ballistic missile defense architecture."[52]

Zierdt came to this "missile defense" job along a circuitous and controversial route. In 1995, after retiring from the military, he shifted gears and become president and CEO of TransCor America Inc., "the largest privately run prison transport company" in the U.S..[53] It controls 85% of the American convict-moving market; transporting about 75,000 prisoners annually.[54]

In 1997, three prisoners being bussed by Transcor escaped during a Burger King break in Owatonna, Minnesota. One of them, Homer Land, held a local couple hostage for 15 hours. Then, in 1999, when a "convicted child killer" escaped from a TransCor bus "hours before guards even noticed he was missing," Zierdt Jr. reluctantly said

> "several procedural violations have occurred involving security policies.... We are embarrassed by this incident."[55]

Transcor is a symbol of what privatisation can do, besides pouring money into private corporations:

> "All told, at least 25 convicts have escaped from TransCor vehicles.... Nearly a dozen more have escaped from other for-profit firms. Reported escapes over the same period during transit by the U.S. Marshals Service, which moves more than

J.G.Zierdt, Jr.

twice as many prisoners as private firms every year: zero."[56]

In 2000, Zierdt, Jr, finally resigned from TransCor. There were just too many scandals arising from the company's repeated inability to keep prisoners inside their buses.[57]

John Zierdt, Sr.

Long before joining Orbital, or catching media flack for prisoner escapes, the name John Zierdt was well known within the "missile defense" community. That's because his father was a famous Major-General whose name and personality is closely entwined with U.S. "missile" history and folklore.

Zierdt Sr. had the dubious honour of being "inducted into the U.S. Army Ordnance Hall of Fame" in 1981. Between 1958 and 1967, he held several top positions within the Army Ballistic Missile Agency, the Army Ordnance Missile Command and the Army Rocket and Guided Missile Agency.[58]

Zierdt Sr. even had occasion to work with such legendary "Americans" as Dr. Wernher Von Braun. He was Nazi Germany's top weapons scientist. Like many others of his ilk, he carried on his war efforts at NASA in the U.S.. On January 1, 1964, when John Zierdt, Sr., was promoted to Major General, he was congratulated by Von Braun.[59] (See photo, below.) Zierdt's illustrious career culminated as Commanding General of U.S. Army Missile Command.[60]

Zierdt Sr. died in 2000, a few months before his son's embarrassing resignation from TransCor. That was also before junior joined Orbital's "missile defense" efforts. No doubt the senior Zierdt would have been proud. One wonders however whether Zierdt Jr's role at Orbital will ever be associated with the kind of privatisation-related debacle that was endured by TansCor.

Of course a single, major U.S. weapons system using data from a privatised Canadian satellite, like RADARSAT, could easily cause more destruction than the 25 prisoners who escaped from Zierdt's buses. However, the corporate media will not likely ever attribute any share of the blame to RADARSAT just because thousands of Iraqi or Afghan civilians are killed by weapons systems which—through ORBIMAGE—use data collected by Canada's privatised satellites.

www.redstone.army.mil

(Jan. 1, 1964) NASA's top rocket scientist, Dr. Wernher Von Braun (left), a "retired" Nazi weapons crusader, congratulates John Zierdt, Sr., when he became a Major General (as Mrs. Zierdt and Mrs. Von Braun look away.).

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Meet MDA's David Emerson

Many Canadians were not terribly surprised when new Conservative Prime Minister Stephen Harper, said that his cabinet included former Liberal MP David Emerson. As Minister of Industry, Emerson was responsible for the Canadian Space Agency, which oversaw the Canada-U.S. RADARSAT project.

Many Canadians are used to the cynical way that self-serving politicians switch allegiances between the Liberal and Conservative parties, since both represent the same corporate interests.

Few realize however that Emerson had been on the board of MacDonald, Dettwiler and Assoc. (MDA)[1], the US-owned company that benefited from the Liberal government's $1.15-billion RADARSAT-privatisation scheme.

When Emerson joined MDA in August 2000, he was CEO of Canfor, which describes itself as "the largest producer of SPF [Spruce, Pine, Balsam Fir] lumber in the world."[2] (Presumably the firm that cuts down more SPF trees than any other, needs satellite images to locate the world's remaining forests.)

When appointed to MDA, he was also the Canadian Pulp and Paper Association's chair.[3] His other positions in the deforestation field have included being chair of the Forest Products Association of Canada.[4]

But Emerson was no mere lumber baron. He had been Deputy Minister of Finance (1984) under BC's right-wing Social Credit government. He then rose through the ranks to become deputy minister to the Social Credit Premier, Bill Vander Zalm in 1990.[5] Emerson has held many top-flight corporate posts, including directorships in B.C. Gas and the Telus Corporation,[6] CEO of the Western and Pacific Bank of Canada (1986) and president of the B.C. Trade Development Corp. (1990).[7]

Topping off his corporate credentials, Emerson has also been vice chairman of the infamous, big-business lobby group, the Canadian Council of Chief Executive Officers.[8]

Emerson joined the MDA board on the same day as Garrett Pierce, who had just been appointed Executive Vice President of MDA's U.S. parent company, Orbital Sciences.[9]

Missile Defense

As an MDA director, Emerson must have been rubbing shoulders with at least two other top executives from Orbital Sciences, namely David Thompson, Orbital's Chair and CEO, and James Thompson, Jr., Orbital's President and Chief Operating Officer.[10] Both were on MDA's board in 2000 to keep their Canadian subsidiary on track.

At some point, Emerson, the corporate lumberman-banker-politician, must have realised that MDA's rocket-making parent company was a major contractor for the "missile defense" weapons program. However, such links would not likely have phased Emerson in the least. If he *was* turned off by working with "missile defense" contractors, he would surely never have been appointed Canada's Industry Minister.

On November 22, 2004, soon after assuming that cabinet post, Ottawa's *Hill Times* reported on Emerson's efforts to launch a new Canadian "aerospace industry strategy." The paper noted that "Emerson says he supports talks with U.S. on missile defence."[11] When asked: "Do you think Canada should sign on to the U.S. Missile Defence Shield?" Emerson responded that the Liberal's had already:

> "announced that Canada would enter into discussions with the U.S. about possible participation. I support this process.... *As Minister of Industry, I am aware of the potential industrial cooperation opportunities for Canada associated with BMD [Ballistic Missile Defense]. We have an active and diverse aerospace and defence industry in Canada, and we are currently assessing the extent and type of potential opportunities for Canadian companies.*"[12] (Emphasis added.)

Note that Emerson did not say the government was 'assessing' *whether* or not there would be *any* Canadian corporate role in "missile defense," but the "*extent and type of potential opportunities*" for Canadian corporations.

Conflict of Interest?

In the same *Hill Times* interview, Emerson used his platform as Minister of Industry to unashamedly plug his former company, MDA, by saying:

> "there are some critical companies, with truly leading-edge technology.... In my home province of BC, for example, MacDonald, Dettwiler and Associates is a world-class space company, making a significant contribution in the Lower Mainland, as well as to the provincial and national economies."[13]

Minister Emerson has appeared to be in a conflict of interest over other matters relating to his former links with RADARSAT. When Prof. Michael Byers of UBC's Liu Institute for Global Issues, testified before a Parliamentary Committee regarding Bill C-25 (the "Act governing the operation of remote sensing space systems," aka the "RADARSAT Bill"), he said that Emerson:

> "is one of the four cabinet sponsors of Bill C-25. Committee members should be aware that in 2000, Emerson served as a member of the board of directors of MacDonald, Dettwiler Associates, the owner and operator of RADARSAT-2 and the parent company of RADARSAT International.... Emerson thus served on [MDA's] board of directors during the same year that the company secured $167 million in federal gov-

This former high-ranking BC-Social Credit bureaucrat, then Liberal Minister of Industry, is now the Conservative Minister of International Trade.

In 2000, he was a Director of MDA, the firm benefiting from the Liberal government's $1.145-billion RADARSAT privatisation scheme.

Seen here being confronted by Haiti Solidarity activists, July 10, 2005.

ernment funding for RADARSAT-2. This was additional funding."[14] At that point in his testimony, a Liberal MP (Dan McTeague) interrupted Byers to say that his comments "should be stricken [from the record]. This is ridiculous."[15] Byers, however, continued:

"As a professor of law and...political science, I'm identifying that there is an appearance of bias.... Mr. Emerson would serve the purposes of this committee if he were to withdraw as one of the four cabinet sponsors of this bill.... Opposition members of this committee might wish to recommend to Mr. Emerson that he avoid the slightest possibility of an appearance of bias here."[16]

Other conflict of interest allegations have also been made against Emerson by the National Union of Public and General Employees[17] and Duff Conacher of Democracy Watch.[18]

Some might even say it smacks of conflict of interest to run a high-profile election campaign under the Liberal banner and then, once elected, change parties in order to get a cabinet post in the Conservative government.

"As Minister of Industry, I am aware of the potential industrial cooperation opportunities for Canada associated with BMD [Ballistic Missile Defense].

We have an active and diverse aerospace and defence industry in Canada, and we are currently assessing the extent and type of potential opportunities for Canadian companies."

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Meet Mark Garneau: Expert on Space, PR and Weapons

Canadian hero, Mark Garneau, who headed the Canadian Space Agency (CSA) from 2001 until late 2005, was probably RADARSAT's greatest cheerleader calling it the CSA's "greatest achievement." Garneau is known as Canada's first astronaut. Less well-known are his qualifications as a weapons specialist in Canada's armed forces:

1974-1976: Combat systems engineer aboard "an area air defence destroyer," Canada's HMCS Algonquin.

1976-1977: Instructor in naval weapon systems at Canadian Forces Fleet School in Halifax. He designed a simulator for training weapons officers to fire missile systems aboard Tribal-class warships.

1977-1980: Project engineer in naval weapon systems.

1981: Helped develop an aircraft-towed target system for scoring the accuracy of naval weapons.

1983: Design authority for naval communications and electronic warfare equipment and systems.

1984: First Canadian in space, as a payload specialist on U.S. Space Shuttle Mission 41-G..

1989: Retired from the Navy.

1996, 2000: Joined two other Space Shuttle missions.

Source: Biographical Data, NASA www.jsc.nasa.gov/Bios/htmlbios/garneau.html

2006: Lost his bid to become a Liberal MP for the Montreal-west riding of Vaudreuil-Soulanges.

www.space.gc.ca

"Canadians can be proud. RADARSAT is more than just a satellite—it is a humanitarian service that Canada provides to its communities... and to the world. It is Canada's 'eye in the sky' that monitors our land and seas, helps us manage our natural resources and assists those in need when disasters strike."

Marc Garneau, Pres., Canadian Space Agency

Source: CSA media release, "Ten Years and over Two Billion Kilometres for RADARSAT-1." November 4, 2005.

Meet the EMS Space and Technology Group

EMS Space and Technology/Canada Group is the Canadian subsidiary of a U.S. company called EMS Technologies. Based in Georgia and founded as Electro-Magnetic Sciences, EMS purchased this Canadian company in Ste-Anne-de-Bellevue, Quebec, in 1999. At that time, it was the Satellite Products division of Spar Aerospace.

Spar was the prime contractor for RADARSAT-1, the world's most advanced commercial Synthetic Aperture Radar (SAR) satellite. It is also the top subcontractor for RADARSAT-2.

RADARSAT 1

Although Spar was the prime contractor that designed and built RADARSAT-1,[1] it is better known for manufacturing the Canadarm. This "Remote Manipulator System" has aided many military missions of the U.S. Space Shuttle.

Spar was formally touted as Canada's "largest space company with 2,500 employees and $594 million in sales."[2] However, Spar virtually left the space business when it sold its Satellite Products division to EMS in 1999.

Spar Aerospace was also a partner in the corporate consortium called RADARSAT International (RSI). RSI won the contract to oversee the marketing and sales of data gathered by RADARSAT-1,[3] and subsequently sold off those rights to Lockheed Martin and ORBIMAGE, two large U.S. war industries.[3] (See pp.30-32.)

RADARSAT 2

Spar won the subcontract to design and build the most important aspect of RADARSAT-2, the satellite's payload, namely, "the SAR antenna and the radar electronics package."[4]

MacDonald, Dettwiler and Associates (MDA), the prime contractor for RADARSAT-2, paid Spar $90 million for this subcontract, which it called "the most advanced commercial SAR payload in history."[5]

EMS Canada Supplies the "Missile Defense" Giants

When *Forbes* magazine published an article in August 2001 noting that President Bush's sponsorship of the "missile defense" weapons program would mean a major boost to the faltering high-technology sector, it named just three companies that were most likely to cash in: DRS Technologies, L-3 Communications and EMS Technologies. The short blurb in *Forbes* about EMS, highlights only one branch of its business, its Space and Technologies group, led by the former Spar division in Quebec.[6]

Forbes described EMS Technologies by saying that the company's:

"Space and Technologies segment (45% of revenue) manufactures hardware for space and satellite communications, radar, surveillance and military countermeasures."[7]

When the influential *Forbes Magazine* predicts that a company will benefit from "missile defense" contracts, it probably means something, at least to potential investors.

In puffs that appear to flow from the pens of *Forbes'* own promoters, the magazine is described with accolades saying that it is the:

"most trusted voice in business journalism. The voice of market capitalism…for over 80 years…. packed with…stories that anticipate major trends [and] identify new opportunities…. revealing what's new and what's next."[8]

The *Forbes* article mentioning EMS was perhaps wrong to cite only three secondary military corporations, instead of "The Big Four" (Boeing, Raytheon, Lockheed Martin and Northrop Grumman), which receive some 60% of the contracts for "missile defense" weapons development.

However, it *is* likely that EMS falls near the very top of a second-tier of military *sub*contractors that have

Shanahan
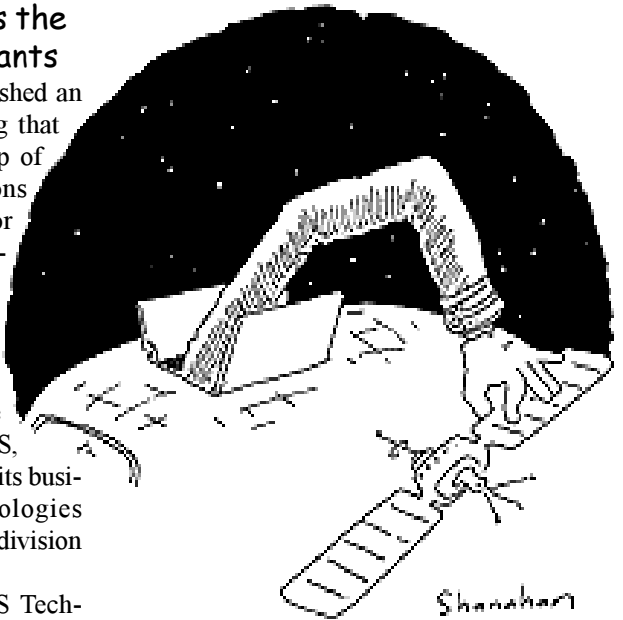
benefited most handsomely from the "missile defense" cash cow.

On the EMS website, under a typical but misleadingly euphemistic subheading, "Defense Electronics," the company lists only four clients of its "Space & Technology" products. The corporations cited are none other than "The Big Four" prime contractors for the "missile defense" weapons program. As EMS says:

"Boeing, Raytheon, Lockheed Martin and Northrop Grumman rely on EMS to provide critical components for radar, secure communications and electronic warfare systems. Our Space & Technology products are meeting the Pentagon's strengthened emphasis on defense electronics."[9]

The links between EMS Technologies, "The Big Four" and Canada are not limited to its "Space & Technology" division in Quebec. A 2004 media release from the EMS head office, mentions its Ottawa-based SATCOM Division (previously known as CAL Corporation), which it acquired in 1993.[10]

The Ottawa-based, satellite communications branch of EMS serves clients in the U.S. military as well as several top U.S. firms that profit from war. In fact, three of the five U.S. war industries listed as its customers are

again from the notorious "Big Four":

"EMS Technologies announced today [November 1, 2004] at the MILCOM 2004, Military Communications Conference, the appointment of Jim Kershaw to Account Manager, U.S. Military and Government Sales, for the Aeronautical Group of EMS's SATCOM Division [in Ottawa]. Kershaw…will serve the needs of EMS customers, including L-3 Communications, General Dynamics, *Boeing, Northrop Grumman, Lockheed Martin* and the U.S. military."[11] (Emphasis added.)

It certainly helps military industries in their efforts to gain lucrative war-related contracts when their personnel have good connections within government. It is likewise true that when personnel from military industries venture through the revolving door from the world of business into the world of government, that they can still serve their previous, corporate masters. They can do this in a number of ways including influencing public policies to benefit their former friends in business, or advising their corporate buddies about government contract opportunities.

Meet Phillip Baines

One former EMS executive who now wanders Canada's halls of government is Phillip Baines. After receiving a University of Toronto degree in aerospace engineering, Baines gravitated into Canada's biggest space-related military industry, Spar (now EMS). He worked there for nearly 20 years in

"various mechanical engineering, systems engineering and project management assignments of increasing responsibility."[12]

His skills and knowledge may even have assisted EMS work on RADARSAT-1.

Since 2000, Baines has worked as Senior Advisor on Science and Technology in the "Non-Proliferation, Arms Control and Disarmament" (NPACD) division[13] of Canada's Department of Foreign Affairs and International Trade (DFAIT). (See below.) Nowadays, Baines is cited as the Senior Policy Advisor on Science and Technology with NPACD's "Chemical, Biological and Conventional Weapons Division."[14]

It is unknown whether Baines has ever criticised the U.S. for its flagrant abuses of these weapons systems or, more pointedly, his Depart-

ment's role in helping Canadian companies to supply the U.S. with hundreds of major components for the delivery systems of these weapons.

In putting forward its "disarmament" face to the world, DFAIT has done well by hiring a seasoned veteran of the military-related company responsible for this country's most famous space technology, the Canadarm. Few however realise that the EMS Space and Technology Group is also one of Canada's major participants in the militarisation of space.

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Meet DFAIT's Dr. Jekyll and Mr. Hyde

Ironically, alongside its noble role in promoting dialogue on disarmament and arms control, the Department of Foreign Affairs and International Trade (DFAIT) is also responsible for helping increase Canada's military exports.

DFAIT uses many methods to push Canadian arms exports, many of which end up in the hands of military forces in dozens of far-flung regimes every year. Many of the governments receiving Canadian war technologies, as past issues of this magazine have amply shown, are engaged in wars against other states, and—sometimes even more brutally—against their own civilian populations.

Despite the fact that some of its employees facilitate Canadian military exports to a motley crew of violent goernments, DFAIT is still widely perceived as a leader in promoting global 'arms control.' Oddly enough, although

Canada is America's biggest military supplier, and although U.S. military forces are inarguably involved in more wars, invasions, coups and violent regime changes than any other government on earth, DFAIT's reputation as a promoted of peace is still secure.

This is not to say that some officials at DFAIT aren't well meaning, or that DFAIT doesn't do some positive work. Rather, the point is merely to expose the Dr.-Jekyll-and-Mr.-Hyde qualities of DFAIT's good cop-bad cop contributions to promoting both war and peace.

There is certainly a duplicitous and contradictory agenda in the works, and DFAIT does its best to bridge the chasm between a delicate facade of diplomatic words about 'disarmament,' on one hand, and the harsh reality of pushing military exports to warmongers and human rights violators, on the other.