

# Meet Eagle Vision: US Military Bridgehead to RADARSAT

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

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.”<sup>3</sup>

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

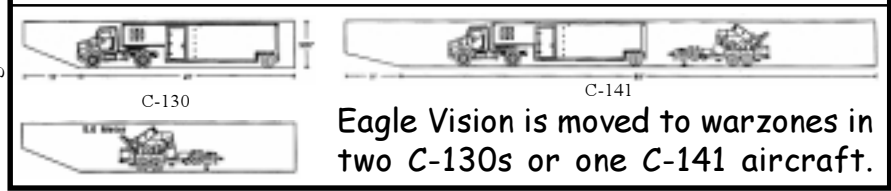
- EV I: U.S. Air Forces Europe (Germany).
- EV II: U.S. Army Space and Missile Defense Command (Colorado).
- EV III: Air National Guard (Nevada).
- EV IV: Air National Guard (S. Carolina).
- EV V: Air National Guard and Pacific Air Forces (Hawaii).<sup>4</sup>

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,<sup>5</sup> but also



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.



to control where and when the satellite directs its gaze, as well as to adjust all of its settings, parameters 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.”<sup>6</sup>

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”<sup>7</sup> 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.”<sup>8</sup>

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.”<sup>9</sup>

www.gt-ais.com  
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US Space & Missile Defense Command

## 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.”<sup>10</sup>
- “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.”<sup>11</sup>
- Eagle Vision “evolved from a Desert Storm need for a timely and responsive method to acquire broad-area imagery for Air Force applications dur-

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.”<sup>14</sup>

## 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 [dur-

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.”<sup>17</sup>

“Soldiers also deployed...to support Special Operations Forces during Operation Iraqi Freedom by providing commercial imagery from the Air Force Eagle Vision I system.”<sup>18</sup>

“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.”<sup>19</sup>

(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.<sup>20</sup>)

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”<sup>21</sup> 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.’”<sup>22</sup>

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.”<sup>23</sup> (These flier’s were among the over three million leaflets dropped on March 18 and 19 alone.<sup>24</sup>) The reverse side of this



## “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.”<sup>12</sup>

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”<sup>13</sup> like RADARSAT.

In March 1996, just four months

ing] Operation Allied Force,”<sup>15</sup> 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.”<sup>16</sup>

Numerous military and industry publications include mention of Eagle

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."<sup>25</sup>

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."<sup>26</sup>

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