The Higher Management of Pine Gap

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The full report is available here.

I. Introduction

The higher management of Pine Gap is and has always been an entirely American affair. To understand Pine Gap today, it is necessary to understand the organisations of the US intelligence community and military concerned with the acquisition of technical intelligence, and their politics over the past five decades. For the first two decades, responsibility for operation of the ground control station at Pine Gap resided with the Ground Systems Division of the Office of ELINT within the CIA's Directorate for Science and Technology. However, by the early 1990s control passed to the Systems Acquisition and Operations Directorate of the National Reconnaissance Office (NRO). In the mid-2000s the NRO itself underwent a profound change towards new organisational structures for integrating the imagery and SIGINT operations and making the whole system more responsive to users. The latest phase of these changes in the NRO stresses the role of ground systems, including Pine Gap, in creating 'a single networked information collection and distribution system' worldwide. The fundamental transformation of the higher management structure is more than an organisational matter. Along with the militarisation of the facility, it has important implications for Australia's involvement in the project. It warrants serious public discussion, which requires, in turn, greater transparency by the Australian authorities. As a 'joint' facility, its management structures are just as much of interest to Australians as to the US contractors to whom the NRO largely speaks.

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II. Special Report by Desmond Ball, Bill Robinson and Richard Tanter

The Higher Management of Pine Gap

Preface

The Joint Defence Facility Pine Gap outside Alice Springs in Australia's Northern Territory is one of the two or three largest and most important US technical intelligence facilities anywhere in the world. In recent years Pine Gap has expanded dramatically in terms of size, number of satellite ground terminals and roles in United States intelligence and military operations. Its original and principal role as the ground control station for geosynchronous signals intelligence (SIGINT) satellites has been critical to the United States for almost half a century, and remains so. Two new roles, acquired since the late 1990s, as a relay ground station for US missile launch detection early warning satellites and a FORNSAT/COMSAT (foreign satellite/communications satellite) interception

facility have made it even more important, especially to US global military operations.

Australian debates about Pine Gap have tended to centre on the costs to the country of hosting the base, in terms of potential loss of independent foreign policy autonomy, potential inescapable entanglement in US military operations, and the security costs of 'drawing fire' as a lucrative and likely priority target for nuclear missile attack in the event of major conflict between the US and either China or Russia. Three important political counters to these concerns, developed principally by the Hawke and Keating Labor governments between 1983 and 1996, was the establishing of a position of deputy chief of facility to be held by an Australian defence official; the opening of almost all parts of the facility to the employment of Australians, in roughly equal numbers with US citizens; and the promulgation of a claim that the base is operated with 'full knowledge and concurrence' of the Australian government.[1]

Whatever the achievements of these 'Australianisation' policies, they must be set in the wider context within which the Pine Gap base was established and has been developed, which is an essentially US-centred story of the development of US space-based technical means of intelligence collection and their increasing application to ongoing military operations. Consequently, very little of what follows takes place in Australia, other than the locating of the base as 'a suitable piece of real estate' and the facts of its subsequent development.

The management of Pine Gap, or more precisely, what we term the higher management of Pine Gap, is and has always been an entirely American affair. To understand Pine Gap today, it is necessary to understand the organisations of the US intelligence community and military concerned with the acquisition of technical intelligence, and their politics over the past five decades.

Introduction

There have been innumerable changes in the management structure since the geosynchronous SIGINT satellite program and the Pine Gap ground station became operational in 1970, reflecting both changes in the global geostrategic environment and bureaucratic developments in Washington. Overall, however, it is possible to divide the management history into two distinct and roughly equal periods, the first from the beginning of the program to the mid-1990s, when it was effectively managed by the Central Intelligence Agency (CIA), but with interminable bureaucratic struggles with the National Reconnaissance Office (NRO), and the second from the mid-1990s onwards, following the collapse of the Soviet Union and end of the Cold War, with the NRO completely ascendant.

Dennis Fitzgerald, who served through the transition as the Director of the Office of Development and Engineering (OD&E) in the CIA and Director of the NRO's SIGINT Systems Acquisition and Operations Directorate (1996-2001) has characterised the first period as the 'Technology Driven era', in which CIA/NRO satellite reconnaissance systems 'were based primarily on what technology would permit', and the second period as the 'Peace Dividend era', in which budget cuts forced program delays, cancellations and rationalisations, while from around 1990-91 (Operations *Desert Shield* and *Desert Storm*), and almost continuously since September 2001, both the NRO and CIA have been involved in direct support of US military operations.[2] Further, a major reorganisation was implemented within NRO in 2007-08 which reformed key areas of the management structure.

In addition to the CIA and NRO, the National Security Agency (NSA) has also been involved in the management structure since the program became operational. In December 1965, the CIA and NSA reached an agreement on 'joint planning' for NSA participation in the CIA's RAINFALL/*Rhyolite* program, under which the NSA was given 'the job of collecting what COMINT [Communications Intelligence] they could from a bird whose job was TELINT [Telemetry Intelligence], not COMINT'.

The details of NSA's participation in the program were negotiated by Charles Tevis, who headed the NSA's Director's Advisory Group for ELINT and Reconnaissance (DAGER). As the program developed, the CIA also agreed to the use of the satellites for electronic intelligence (ELINT) collection by the NSA. It was given a COMINT processing subsystem and an ELINT subsystem at the RAINFALL ground station, for which it covered the entire funding. As at the early 1990s, according to an official NSA history, 'NSA provided all the COMINT staff and about half of the TELINT crew'.[3] It also provided nearly all of the ELINT personnel.[4]

NRO Program B / CIA Deputy Director for Science and Technology

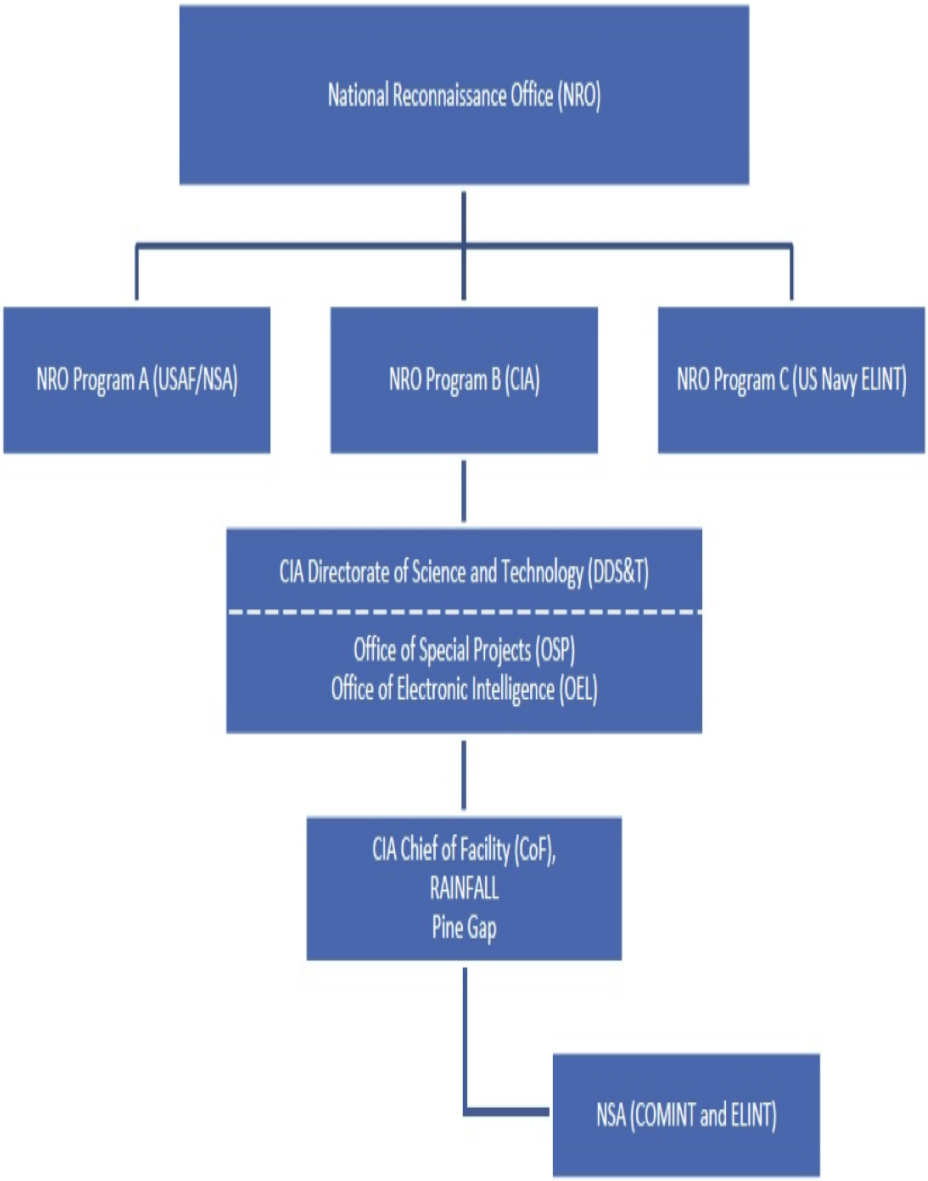
The NRO was established on 6 September 1961 to oversee and coordinate the satellite reconnaissance activities of the Air Force and the CIA, including both their photographic or imaging (IMINT) satellites and their SIGINT satellites. In practice, it functioned for the next three decades as little more than 'an umbrella organization for the ongoing reconnaissance efforts of the Air Force, the CIA, and the Navy', which remained essentially independent, with fierce bureaucratic fights between the CIA and the NRO/Air Force about successive imaging and SIGINT satellite programs. The Air Force's activities were designated Program A, the CIA's were Program B, and the US Navy's ELINT/ocean surveillance satellite system was Program C.[5]

Program B, which was managed by the CIA's Deputy Director for Science and Technology (DDS&T), included the CIA's *Corona* 'search' film-return satellites, the high-resolution film-return *Hexagon* (KH-9) system, and the electro-optical digital imaging KH-11 system (initially code-named *Kennan* and later *Crystal*), as well as its geosynchronous SIGINT satellites from the first *Rhyolite* satellite through the first two *Magnum* (*Orion*) satellites in the 1980s. The DDS&T served as the official head of Program B. (Table 1) Albert ('Bud') Wheelon was the first to occupy the position following the initiation of the *Rhyolite* project in 1965. Wheelon was succeeded by Carl E. Duckett in September 1966, who had become Associate DDS&T four months previously. Duckett managed DDS&T through the decade during which

Figure 1

Pine Gap Management

1966 – 1992



the original *Rhyolite* satellites were developed and the first operational constellation placed into orbit. Duckett was succeeded as DDS&T by Leslie C. Dirks in June 1976.[6] Dirks had been a member of Wheelon's original team tasked with examining the concept of a geosynchronous SIGINT satellite for TELINT collection in 1963-64, and had been Director of OD&E since April 1973.[7]

Table 1
NRO Program B Directors, 1967–1992

Dates	Name
September 1966 – June 1976	Carl E. Duckett
6 June 1976 – 2 July 1982	Leslie C. Dirks
3 July 1982 – 28 August 1989	R. Evans Hineman
28 August 1989 – 31 December 1992	Julian Caballero

Source: Clayton D. Laurie, 'Leaders of the National Reconnaissance Office, 1961-2001: Directors, Deputy Directors, Staff Directors, Program Directors, Chiefs of Staff, Directorate and Office Managers', (Office of the Historian, National Reconnaissance Office, Washington, D.C., 1 May 2002), pp. 45-46, 82-83, 84-86, 135-136, at http://www.nro.gov/foia/docs/foia-leaders.pdf

Dirks was succeeded as DDS&T by Richard Evans Hineman in July 1982. Hineman had headed the Office of Weapons Intelligence in DDS&T in the 1970s, and had served as Associate Deputy Director of the CIA's Intelligence Directorate in 1980-82. James V. Hirsch succeeded Hineman as DDS&T in September 1989; he remained DDS&T until September 1995.[8]

In practice, the DDS&T was unable to devote sufficient time and attention to his Program B activities, which effectively devolved to the director of the Office of Special Projects (OSP), reorganised into the Office of Development and Engineering (OD&E) in April 1973. As Jeffrey Richelson has noted, OSP/OD&E 'owned' the *Rhyolite* satellites. The Directors of OSP/OD&E, who effectively served as the executive or operational directors of Program B, are listed in Table 2. They included John J. Crowley (1965-70), who established a good working relationship between the CIA on the one hand and the NRO, the Department of Defense and the Air Force on the other hand; Leslie Dirks (1973-76); Donald L. Haas (1976-78), who had previously headed the Office of Research and Development (OR&D); Bernard Lubarsky (1979-82), who headed OD&E during the *Magnum* development period; Robert J. Kohler (March 1982 to August 1985), whose tenure was marked by a bitter fight with the NRO and its Program A over the follow-on to the *Magnum* satellites (i.e., *Orion*-3 and its successors); and Julian Caballero Jr (1985-93), who managed both the *Aquacade* and *Magnum* programs.[9]

Table 2
NRO Program B Executive Directors, 1965-1995

Dates	Name
15 September 1965–16 November 1970	John J. Crowley
16 November 1970–17 March 1973	Harold L. Brownman
23 April 1973–23 May 1976	Leslie C. Dirks
23 May 1976–28 August 1978	Donald L. Haas
22 January 1979–8 March 1982	Bernard Lubarsky
8 March 1982–17 August 1985	Robert J. Kohler
17 August 1985–3 October 1993	Julian Caballero
3 October 1993–16 October 1995	Edmund Nowinski

Source: Jeffrey T. Richelson, *The Wizards of Langley: Inside the CIA's Directorate of Science and Technology*, (Westview Press, Boulder, Colorado, 2001), p. 297.

Responsibility for operation of the ground control station at Pine Gap resided with the Ground Systems Division of the Office of ELINT (OEL) within DDS&T, on behalf of the OSP/OD&E. (OEL's Ground Systems Division, which was formed in 1962, also maintained the CIA's SIGINT stations in Norway, West Germany and Iran.) The OEL was reorganised into the Office of SIGINT Operations in February 1977. The directors of the OEL/OSO from 1962 to 1993 are listed in Table 3. The OEL directors included George C. Miller (1962-1971), its founding chief, who was also a member of Wheelon's original team; John N. McMahon (1971-73), who had served as Deputy Director of OEL in 1970-71 and Deputy Director of OSP in 1965-70, and who has said that 'I built Pine Gap'; and James V. Hirsch (1975-77), who later became DDS&T.[10]

Roy ('Archie') Burks was Director of the Office of SIGINT Operations (OSO) from September 1981 to July 1984. He had joined the CIA in 1956, and had served as Technical Director of the *Corona* project in the 1960s. He also served as the first head of the Special Collection Service (SCS), a joint CIA-NSA organisation set up in 1977 to conduct SIGINT operations from US Embassies.[11] In April 2007, to mark its 50th anniversary, the CIA honoured a select group of 'Trailblazers', which included Burks, who 'created technical programs which gave the nation new capabilities in signals and imagery intelligence'. According to the citation, as Director of the OSO, 'he developed technical intelligence programs which are still producing quality intelligence'.[12]

Table 3
Directors, CIA Office of ELINT (OEL)/Office of SIGINT Operations (OSO), 1962-1993

Dates	Name
30 July 1962–14 June 1971	George C. Miller
14 June 1971–21 May 1973	John N. McMahon
21 May 1973–14 June 1974	James V. Hirsch (Acting)
14 June 1974–22 September 1975	Robert D. Singel
22 September 1975–14 February 1977	James V. Hirsch
14 February 1977–30 May 1978	Edward Ryan
30 May 1978–28 September 1981	D. Barry Kelly
28 September 1981–15 July 1984	A. Roy Burks
15 July 1984–21 March 1989	Milton Corley Wonus
21 March 1989–23 August 1993	Joseph B. Castillo

Source: Jeffrey T. Richelson, *The Wizards of Langley: Inside the CIA's Directorate of Science and Technology*, (Westview Press, Boulder, Colorado, 2001).

Milton Corley Wonus was Director of OSO from July 1984 to March 1989. He had been the CIA Station Chief in Canberra in 1975-80, and had then served as Director of the Office of Technical Service (OTS) in DDS&T from June 1980 to July 1984. He had begun his career as a young USAF Security Service SIGINT analyst at Misawa in Japan in January 1955.[13] After his Misawa tour, he transferred to the NSA. He was recruited into the new Foreign Missile and Space Analysis Center (FMSAC) in DDS&T by Carl Duckett in 1963.[14]

Joseph B. Castillo was Director of OSO from March 1989 to August 1993. He had joined the CIA in February 1971, and was a specialist in 'analysing foreign weapons systems' based on intercepted telemetry and associated electronic emissions. He provided technical support to senior US policy-makers during the Strategic Arms Limitation Talks (SALT) between Washington and Moscow in the 1970s and 1980s.[15]

NRO ascendance and the demise of Program B

The first period of Pine Gap's higher management structure ended in the early 1990s with the abolition of Programs A, B and C, and the transition from an organisational to a functional structure within a much more powerful NRO. As essentially a coordinating body, the NRO HQ had hitherto been located in a relatively small compartmented area in the Pentagon (around 4C-956), but in 1994 it moved to a large new complex at 14825 Lee Road in the Westfields area of Chantilly, in northern Virginia, about five km south of Dulles International Airport or about 20 km west of Washington, D.C.

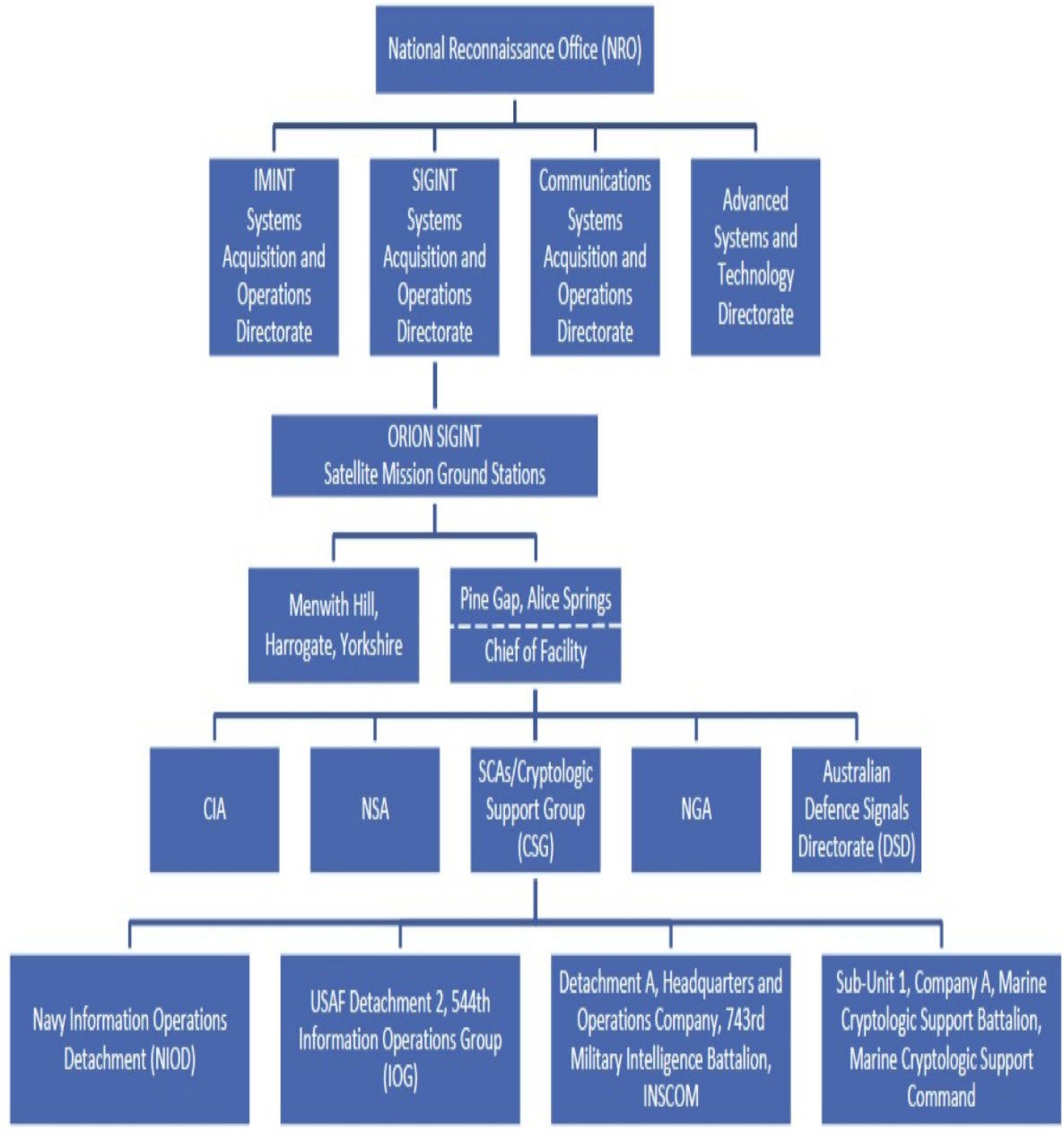
Three factors shaped this transition. First, as Dennis Fitzgerald has described, the end of the Cold War brought the 'Peace Dividend era', in which NRO funding was 'severely constrained', 'everything… has been directed toward cutting costs', programs were cancelled and ground stations were consolidated. Second, since around 1990-91, with Operations *Desert Shield* and *Desert Storm*, and almost continuously since September 2001, both the NRO and CIA have been involved in direct support of US military operations.[16] As Fitzgerald noted in 2002,

> During the Technology Driven era, the Intelligence Community and the primarily civilian National Command Authorities were the major consumers of NRO systems products. The major consumers today are the US military services. Today's reality is that most of the intelligence that the NRO collects on a daily basis is in direct support of combat operations. The performance of NRO systems has been spectacular in terms of preventing the loss of lives, directing the fire of weapons systems with unprecedented accuracy, and locating enemy positions, all the while providing a synoptic understanding of the battle-space.[17]

Figure 2

Pine Gap Management

1992 – 2007



Third, the CIA and DDS&T eventually succumbed in the vicious bureaucratic/political struggles over control of its Program B satellites. As Robert Kohler, the former director of OD&E and of Program B, has recounted, a bitter fight was initiated by the Air Force's Program A in 1985 over the follow-on to the CIA's *Magnum* satellites (*Orion*-1 and *Orion*-2). The head of Program A, Major General Ralph H. Jacobsen, proposed 'a far bigger system', whereas Program B favoured more evolutionary developments and was deeply suspicious of Program A's intentions. According to Kohler,

> In the mid 1980s, Program A/B competition came to a head in a serious confrontation over the future of large-aperture SIGINT systems. The budget crunch was just getting underway and

> D/NRO wanted one last big start. Since every major program decision on his watch had gone in favor of Program B (with his support), he was inclined this time to let Program A win one. He made his position clear to Program B. The new program, however, was not needed—the requirements foundation was weak and Program B thought it would cost considerably more than necessary. Program B concluded that enhancing one of its existing programs would be more cost effective and could be done in an incremental way allowing a flexible response to requirements over time. DCI William Casey bought Program B's arguments and overruled D/NRO's recommendation for a Program A start. This triggered a series of events that resulted in the NRO that exists today.

D/NRO decided that Program A/B competition and Program B's ability to influence the DCI had to stop. Collocation of the NRO's three main programs became one part of a solution.

Meanwhile, DCI Casey had passed away and Robert Gates was Acting DCI. Gates had always had reservations about the NRO—he considered it too expensive (gold-plated, in his view) and thought that Program B had undue influence. Setting out to remedy these 'faults', he established the 'Fuhrman Panel', chaired by Robert Fuhrman, the former CEO of Lockheed, to recommend changes to the NRO structure. The Fuhrman Panel recommended realigning responsibilities to consolidate imagery programs in one directorate and SIGINT programs in another, in effect breaking up Programs A and B and eliminating competition.[18]

To replace Programs A, B and C, the NRO established three functional directorates: the IMINT Systems Acquisition and Operations Directorate, the SIGINT Systems Acquisition and Operations Directorate, and the Communications Systems Acquisition and Operations Directorate. These directorates 'were purely NRO entities (that fully integrated Air Force and CIA personnel, along with personnel from the Navy, NSA, DIA, and other organizations)'. The mission of the CIA's OD&E, which had developed the *Rhyolite*, *Aquacade* and *Magnum* satellites, became to provide personnel to the NRO rather than conduct its own research and development of satellite systems.[19]

Each of the functional directorates was given responsibility 'for selection and supervision of contractor research and development as well as procuring and operating the relevant spacecraft and ground stations'.[20] Hence, the SIGINT Systems Acquisition and Operations Directorate was responsible for the development and operation of all SIGINT satellites, including the US Navy's Low Earth Orbit (LEO) ELINT system, the NRO's Highly Elliptical Orbit (HEO) SIGINT satellites, and the geosynchronous SIGINT satellite programs previously managed by Programs A and B, regardless of whether they primarily collected COMINT, ELINT or foreign instrumentation signals intelligence (FISINT), as well as the associated ground stations. These systems were managed respectively by the Directorate's LEO Systems Project Office (LSPO), HEO Systems Project Office (HSPO), and Geostationary Systems Project Office (GEOSPO).

Command and control of the NRO satellites was consolidated into five Mission Ground Stations (MGSs): Menwith Hill and Pine Gap, the control stations for the geosynchronous SIGINT satellites; Aerospace Data Facility (ADF)-Colorado, at Buckley Air Force Base in Denver, which controls the HEO SIGINT satellites; Aerospace Data Facility (ADF)-Southwest at White Sands in New Mexico, which controls NRO's *Onyx*/*Lacrosse* radar imaging satellite reconnaissance system; and ADF-East, at Fort Belvoir in Virginia, which controls the electro-optical digital imaging satellite reconnaissance systems.[21]

Robert Kohler, the former executive director of Program B (1982-85), has been extremely critical of the decisions to abolish the Program A/B/C structure and transfer all acquisition, operation and management authority to the NRO. He argued in 2002 that 'the NRO today is a shadow of its former self', notwithstanding an enormous increase in its personnel; that 'its once outstanding expertise in

system engineering has drastically eroded'; that the 'relationship between the NRO and the CIA, which traditionally supplied a major portion of the organization's technical expertise', was 'dissolving'; and that 'the fundamental cause of the decline of the NRO… was the abolition of Programs A, B, and C in 1992 and the consolidation of the Office's components in the new Westfields building' in Chantilly.[22] He argued that the new structure was 'pushing the organization on a downward slide toward mediocrity that the country cannot afford', and that

> Mediocrity in the NRO will result in less innovation and risk taking, more reliance on contractors who are less accountable than government staff, and more cost overruns and schedule delays. Acquisition cycles will be longer. It will become harder and harder to attract the high caliber people needed to keep this a "first in class" organization. Evidence of these problems is already surfacing.[23]

Kohler was especially concerned that, 'among NRO components, the slide toward mediocrity is having the most damaging effect on the CIA's mission and people, and opined that, 'at this juncture, it is likely that the CIA will withdraw from the organization.[24]

In 2005, Kohler stated that 'CIA doesn't care anymore', but that it needed 'to make a conscious decision on its continued participation in the NRO'. He noted that, 'currently, only 25% of the total CIA contingent in the NRO are engineer/scientist/program management personnel', with the rest being 'administrative types', and said that 'the CIA should not be the administrative arm of what is increasingly becoming a DoD organization'.[25]

NRO SIGINT Systems Acquisition and Operations Directorate, 1992-2007

The first Director of the NRO SIGINT Systems Acquisition and Operations Directorate was Brigadier General Donald R. Walker, USAF (4 December 1992 to 16 July 1995), who served simultaneously as the last Director of Program A. In the 1980s he had been program director in charge of the acquisition and operation of the Defense Satellite Communications System (DSCS), NATO III, Fleet Satellite Communications (FLTSATCOM) and Air Force Satellite Communications (AFSATCOM) satellite programs, and was Director of Operations at Program A in 1985-86. After retiring from the USAF, he worked at the Aerospace Corporation in El Segundo, Los Angeles, from September 2002 to June 2008, supporting the USAF Space and Missiles Systems Center (SMC) and the NRO.[26]

Brigadier General Thomas J. Scanlan, USAF, was Director for SIGINT Systems Acquisition and Operations from July 1995 to August 1996. He also served as Director of the NRO's Space Launch Office (SLO) from April 1993 to August 1996. In these roles, he 'led 1,500 people and industry partners in development, and launched and operated numerous classified national space programs', and was also responsible for the planning and execution of a $3.5B annual budget for acquisition and operational locations around the world, as well as the acquisition, operations and launch decision for all classified DoD boosters'. Before heading the SIGINT Directorate, Scanlan served as Director of the NRO's Communications Acquisition and Operations Directorate, where 'he created a 600-person organization responsible for the development, acquisition and operations of a worldwide communications and computer network'. He became director of operations at US Space Command at Peterson AFB in August 1996.[27]

Brigadier General Robert E. Larned, USAF, served briefly as Director of the SIGINT Acquisition and Operations Directorate, from 15 August to 31 October 1996, before becoming Director of Imagery Systems Acquisition and Operations from November 1996 to November 1998.[28]

Dennis Fitzgerald headed the SIGINT Directorate from 1 November 1996 to 11 June 2001. He had joined the CIA's DDS&T in January 1974, and served concurrently as director of OD&E, to which

position he had been appointed in October 1995, while he headed the SIGINT Directorate. He became deputy director of the NRO in August 2001.[29] He noted in 2005 that the SIGINT Directorate had inherited a legacy of stellar but aged satellites supported by powerful constituencies in either the intelligence community (IC) or the DoD which constrained NRO's ability to embark on new enterprises. He said that 'even 22-year-old crippled satellites are almost impossible to turn off', presumably referring to the *Chalet*/*Vortex*-4 satellite launched in January 1984. This was not only 'a testimony to the power of space-borne collection', said Fitzgerald, but 'also demonstrates the continuous intelligence demand on NRO systems'.[30]

Table 4
Directors of NRO SIGINT Systems Acquisition and Operations Directorate, 1993-2008

Dates	Name
1 January 1993–16 July 1995	Brig. Gen. Donald R. Walker, USAF
17 July 1995–26 August 1996	Brig. Gen. Thomas J. Scanlan, USAF
15 August 1996–31 October 1996	Brig. Gen. Robert E. Larned, USAF
1 November 1996–11 June 2001	Dennis D. Fitzgerald
11 June 2001–April 2005	Brig. Gen. James B. Armor, USAF
July 2005–May 2007	Brig. Gen. Larry D. James, USAF
May 2007–April 2008	Brig. Gen. Katherine E. Roberts, USAF

A major reorganisation of the SIGINT Directorate's three ground stations, at Menwith Hill, Pine Gap and Buckley, was instituted in 1997-2000. It was planned and implemented by Carol Staubach, who was Director of the Ground Systems Program Office in the SIGINT Directorate from October 1997 to May 2000, and involved a Ground Merged Architecture for the ground stations. Staubach had joined the CIA in 1970. She had served as director of the GEOSPO in the SIGINT Directorate from November 1996 to October 1997. She later served as Director of the Advanced Science and Technology (AS&T) Directorate from May 2000 to August 2001, and then Director of the IMINT Systems Acquisition and Operations Directorate.[31]

Brigadier General James B. Armor, USAF, was Director of the NRO SIGINT Systems Acquisition and Operations Directorate from 11 June 2001 to April 2005, in which capacity he 'directed [an] office of over 630 personnel with $3 billion annual budget in developing, launching and operating the U.S. Signals Intelligence satellite constellation, [the] US Government's second largest satellite constellation [after the GPS system], and related global ground systems, in support of intelligence and military operations worldwide', and 'planned [the] next generation constellation with users and intelligence partners'.[32] He served as director of the National Security Space Office (NSSO) in the Pentagon from April 2005 to January 2008, before moving to the corporate sector. In August 2006, while director of the NSSO, he publicly expressed his frustration at the poor cooperation between the NRO and the Air Force.[33] He said in September 2008 that the NRO had engaged 'in outright warfare' with the Air Force, that 'the Air Force and NRO fought so fiercely over budget, acquisition,

and operational authority that program[s] failed to crystallize', and argued that the US national security space mission was 'faltering' because of poor NRO management.[34]

Brigadier General Larry D. James, USAF, headed the directorate from July 2005 to May 2007. He had previously held several assignments with US Space Command at Peterson and Schriever Air Force Bases in Colorado, and had served as Vice Commander of the Space and Missile Systems Center at Los Angeles AFB in 2004-05. In May 2007, he became Deputy Commander of the 5th Air Force at Yokota Air Base in Japan. From January 2011 to August 2013, he was Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance (ISR) at HQ USAF in the Pentagon. He was appointed Deputy Director of NASA's Jet Propulsion Laboratory (JPL) at Pasadena, California in August 2013.[35]

Brigadier General Katherine E. Roberts served as the Director of the SIGINT Acquisition and Operations Directorate from May 2007 to April 2008, when it was replaced by the SIGINT Systems Acquisitions Directorate. Before joining the NRO in 2006, she had held appointments at USAF Space Command (AFSPC) and US Strategic Command (STRATCOM) at Peterson AFB, and in 1997-2000 had been Program Manager of the Space Based Infrared System (SBIRS)-Low Component at the Space Based Infrared System Program Office, Space and Missile Systems Center, Los Angeles AFB.[36]

An important figure in the SIGINT Systems Acquisition and Operations Directorate under both James and Roberts was Dominic F. Pohl, who served from October 2006 to May 2008 as Director of the Systems Engineering and Technology Office (SETO) within the Directorate. (He had previously served as the Deputy Director of SETO from June 2005 to October 2006.) Before joining the NRO in June 2005, he had served as a SIGINT officer in the USAF and held senior appointments in both the CIA and the NSA. As Director of SETO, Pohl was the Chief Systems Engineer for the SIGINT Directorate, in which capacity he 'provided the architectural systems engineering and integration to define and verify the implementation of the end-to-end SIGINT program'. He left Chantilly in June 2010 to become Deputy Director of Air, Space, and Cyberspace Operations at HQ Air Force Space Command at Peterson Air Force Base, Colorado, where he also served as the Senior NRO Advisor to the Commander, AFSPC. He moved to the HQ, 25th Air Force at Joint Base San Antonio-Lackland in Texas in June 2012, where he has been involved in 'multisource intelligence, surveillance and reconnaissance products, applications, capabilities and resources; electronic warfare; strategic command and control; and integrating cyber ISR forces and expertise.'[37]

The transformation of the NRO, 2006-08

A major reorganisation of the NRO was implemented in 2007-08. It was initiated by Donald Kerr, who became Director of NRO in July 2005, and who was directly motivated by the terrorist attacks on the US homeland on 11 September 2001. The organisational changes were directed by Scott Large, who succeeded Kerr as Director of the NRO on 19 October 2007, and who had served as Director of the Imagery Systems Acquisition and Operations Directorate from July 2003 to November 2006. He told Congress in March 2008 that the changes amounted to 'perhaps the most fundamental transformation ever undertaken by the NRO'. It involved the complete integration of operational activities, specifically including the operations and products of both IMINT and SIGINT satellites; expanding the roles of the NRO's Mission Ground Stations; and radically improving the responsiveness of the collection and processing activities to the demands of the 'users' or 'customers' within the IC, the DoD, or other government agencies.[38]

The process began in April 2006 with a document entitled 'NRO's Strategic Framework'. It articulated two goals, that the NRO be 'the Foundation for Global Situational Awareness', and that it 'Deliver Information to Users on Timelines Important to Their Needs'; and it stated that, in order to achieve these, the NRO needed 'better integration with our mission partners and customers' and 'to

better emphasize the role of our ground systems'.[39] A Steering Commission was formed, co-chaired by Brigadier General Ed Bolton, the NRO deputy director for systems integration and engineering, and Ralph Haller, Director of the Imagery Directorate, to develop new organisational structures for integrating the imagery and SIGINT operations and making the whole system more responsive to users. Some of the new arrangements were implemented in late 2007, with the entire reorganisation scheduled for completion 'no later than September [2008]'.[40]

In organisational terms, the 2006-08 transformation involved severe truncations of the three functional directorates and the creation of three new directorates. The functional directorates lost their responsibilities for operating both the spacecraft and the ground stations, reducing them essentially to system acquisition agencies. This was reflected in their new names, the IMINT Systems Acquisition and Operations Directorate becoming the IMINT Systems Acquisition Directorate and the SIGINT Systems Acquisition and Operations Directorate becoming the SIGINT Systems Acquisition Directorate. The three new directorates were called the Mission Operations Directorate (MOD), the Ground Enterprise Directorate (GED), and the Mission Support Directorate (MSD).

The Mission Operations Directorate (MOD) was given responsibility for the operational control of all NRO satellites, including the radar and electro-optical IMINT systems, the LEO, HEO and GEO SIGINT systems, and the NRO's own communications and data-relay satellite systems. The Ground Enterprise Directorate (GED) was responsible not merely for management of NRO's five MGSs but for transforming these into multi-source intelligence centres, at which all of the IMINT and SIGINT is integrated or 'fused' and made accessible to all NRO users world-wide. The Mission Support Directorate (MSD) was established to engage 'with users of NRO systems to understand their operational and intelligence problems and provide solutions in collaboration with NRO's mission partners'.[41]

The importance of revitalising and integrating NRO's ground systems was stressed by NRO Director Scott Large in his statement to a Congressional Subcommittee on 5 March 2008. He stated that

> The NRO builds complete satellite systems, but an often under-appreciated aspect of this is the importance of the ground portion of these systems. Many of our newest capabilities are ground-based. Through ongoing algorithm development and processing improvements, we are providing quick-turnaround solutions to urgent user needs. This makes it clear that our most flexible 'system' is not in space, but on the ground. Therefore, the key is to build a functional flexibility on our satellites which enables us to be operationally responsive on the ground. Responsive ground-based solutions are critical to the continued success of NRO systems against our Nation's most daunting adversaries.
>
> Recognizing the importance of the ground element to the entire NRO system architecture, one significant and foundational step in response to the strategic framework has been the stand-up of the Ground Enterprise Directorate (GED). The GED is responsible for delivering a ground architecture integrated across the organization based on a multi-intelligence, ground system-o--systems that can provide near real-time responsiveness to pressing intelligence problems. By standing up the GED, we are taking the first vital step to ensure effective, flexible, seamless solutions to our customers needs across the IC, and to ensure that we have processes and systems that enable common tasking, timely cross-cueing, and a synergy that allows for immediate response.[42]

A detailed account of the transformation of the NRO, derived from its '2009 National Reconnaissance Strategic Plan', was provided to Congress in May 2009 in the NRO's Congressional Budget Statement for FY 2010. It stated at the outset that the NRO acquired and operated 'the most

capable set of satellite intelligence collection platforms ever built', and that it provided a variety of special ground processing applications and tools to support the IC and DoD'. It then stated that

> The 2009 National Reconnaissance Strategic Plan defines a new value model for the NRO: the NRO is now focused as much on what it does with the data it collects as it is on collecting it; and programs must make good business sense as well as good technical sense. In addition to continuing to design and build state-of-the-art satellites that provide unparalleled information advantage for the Nation and our users, the emphasis is on accelerating the delivery of innovative ground capabilities that amplify overhead capabilities and that are more responsive to dynamic and rapidly changing user needs. The NRO is working to implement fully integrated space and ground architectures characterized by synergistic, cross-domain mission management, multi-INT data fusion at the source, common processing, and closer linkages with other IC and DoD technical architectures and functions. The NRO is also leveraging its extensive ability to move data, both on the ground and in space, to enable its mission partners to more effectively execute their missions.
>
> The NRO Transformation is arguably the most ambitious organizational, business process, and management realignment in the history of the NRO. The INT-based organizational and management approach that had been the foundation of the NRO's structure for the past 40 years has been replaced with a functionally-based structure that, for the first time, enables us to manage ourselves and our systems as single integrated entity.[43]

It reported that the 'new Ground Enterprise Directorate focused on synergistic ground development, the development of integrated tasking capabilities, and the production of fused products'. It also described a 'GEOINT and SIGINT Station Integration and Support project', which evidently involved the integration of geospatial intelligence and SIGINT at each of the NRO satellite ground stations, and a 'Unified Ground Architecture (UGA) Ground Development project', which 'develops and maintains capabilities that enable planning, scheduling, and resource control of GEOINT and SIGINT collection, processing, and information sharing systems'. It noted that 'these systems provide a key interface with the mission partners (NGA [National Geospatial-Intelligence Agency] and NSA) to receive their overhead col1ection requirements, build joint collection strategies, and assess mission performance'.[44]

It noted that in 2008 the GED had formed a collaborative partnership with the NSA and NGA in order to 'transform the NRO ground architecture', the 'vision' for which was as follows

> A fully integrated ground architecture where information is virtual, assured, available on demand, and globally accessible to authorized users empowered with the tools and services necessary to generate tailored, timely, trusted, and actionable intelligence products.[45]

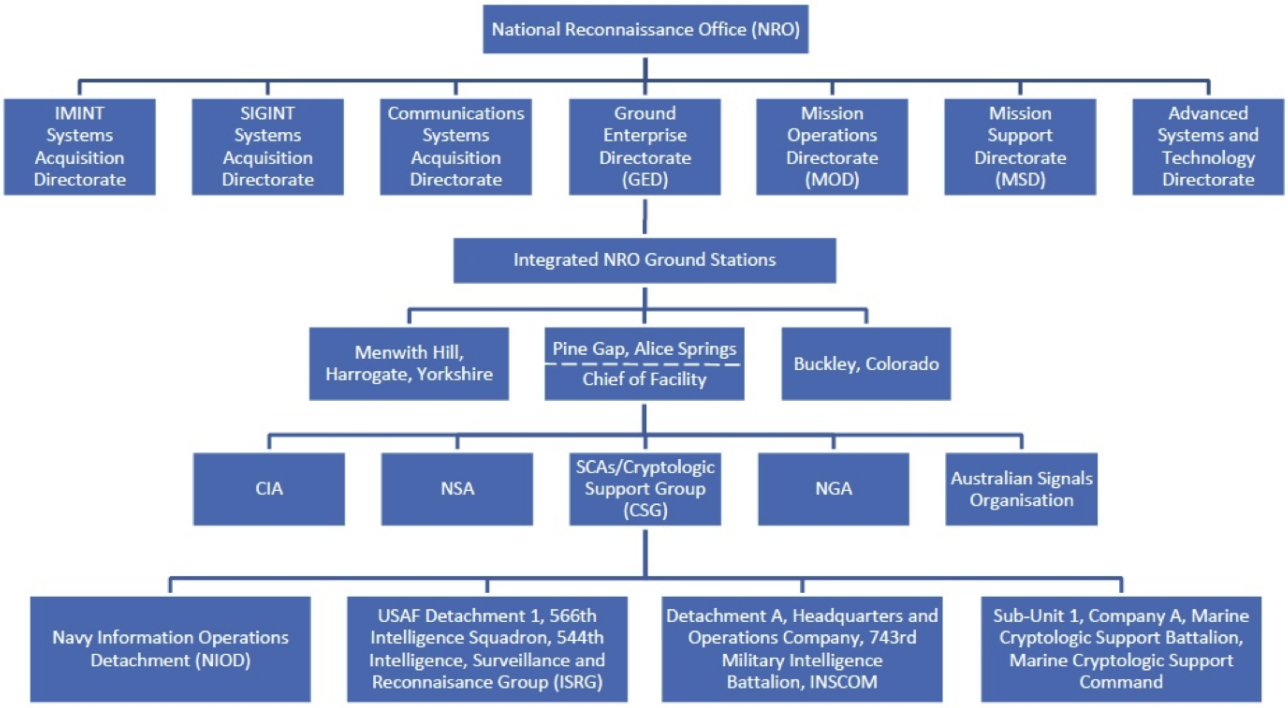
A central feature of the new ground architecture, involving the integration of all NRO ground-related GEOINT and SIGINT activities, was a realignment of all current equipment and future Major Systems Acquisitions (MSAs) at both the GED and the ground stations into four 'functional lines of business': Command and Control; Mission Management; Mission Processing; and Mission Frameworks, concerned with data services and distribution.[46]

The statement also described an NRO Mission Support (NMS) project, which 'directly supports the Director, NRO and the NRO Senior Leadership in making decisions on the acquisition of satellite and ground system capabilities in response to IC and DoD information needs'. Its responsibilities included 'leveraging NRO-wide enterprise solutions to operational and intelligence challenges'. In addition, 'the NMS project directly supports war-fighters and operators in harm's way with capabilities and tools that enable real-time access to overhead collected data, tailored data

processing, and information fusion tools to enable mission planning and execution'. It noted that 'these capabilities are being used to prosecute high-value targets'.[47]

Figure 3

Pine Gap Management
2007 - present



The remainder of this Special Report is available in the full PDF version here.

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