

12. The US Ocean Surveillance Information System (OSIS)

Both the US Navy's 7th Fleet Command and the Japanese Maritime Self-Defense Force's (JMSDF) Fleet HQ at Yokosuka receive all intelligence of interest from the US Navy's Ocean Surveillance Information System (OSIS), its global network of sound surveillance system (SOSUS) facilities, HF DF stations (called *Classic Bullseye*), ocean surveillance satellites, and ship-based and airborne sensor systems. The OSIS was developed in the 1970s, and focussed on the Soviet navy. It consisted of a Naval Ocean Surveillance Information Center (NOSIC) at Suitland in Maryland; three Fleet Ocean Surveillance Information Centers (FOSIC), located in London, Honolulu, and Norfolk, Virginia; and two Fleet Ocean Surveillance Information Facilities (FOSIF), located at Rota in Spain and at the Naval Support Facility at Kamiseya, some 25 kilometres north-west of Yokosuka. The system was described by one of its progenitors in 1982 as follows:

The Ocean Surveillance Information System (OSIS) consists of a network of personnel, facilities, computers, communications, and procedures designed to receive, process, correlate, and disseminate evaluated ocean surveillance information. The system provides near real-time, all-source indications and warning, threat assessment, positional and movement information, and over-the-horizon targeting (OTH-T) support to national, theatre and fleet users. Of particular importance is the support provided to fleet users via the Navy Communications System. This support includes daily summaries, spot reporting, event-by-event reporting on selected high-interest targets, and estimates of intentions. It is this ongoing requirement for near real-time evaluated intelligence information on air, surface, and sub-surface platforms that led to OSIS.¹

The FOSIF in the Western Pacific was the last element to be constructed. Its location was a major issue. According to a former US Navy intelligence officer who was involved in the site selection process in 1971, three areas were initially proposed — California, Guam and Japan: 'Both the San Francisco and San Diego regions of California were investigated, but considered too far from principal areas of surveillance', while 'Guam had the advantage of being US territory, but its communications facilities and available operating spaces were considered secondary to Japan'. Kamiseya was finally selected because of the presence of

¹ Samuel L. Gravely, Jr., 'OSIS Extends Intelligence Coverage Beyond Radar Horizon', *Defense Electronics*, April 1982, p. 70.

the Naval Security Group's (NSG) large signals intelligence (SIGINT) station and its proximity to Yokosuka. The Kamiseya FOSIF was activated on 15 February 1972.²

The NSG SIGINT station at Kamiseya was established in 1952 and, by the 1960s, was its largest station in the world, with more than 1,000 personnel. It had vast antenna fields, with several HF DF systems, including AN/FLR-11 and AN/GRD-6 circularly disposed antenna arrays (CDAA) and two arrays of loop antennas, and it served for two decades as the Pacific HF DF Net Control Station, controlling the network of HF DF stations that stretched across the Pacific from Okinawa to California.³

The current OSIS architecture is different from that of the 1970s and the 1980s. Collection systems have changed to reflect changing communications technologies, and especially the move from HF radio to satellite communications. The US Navy's intelligence organisation was drastically reformed after the end of the Cold War; together with new data management and secure dissemination technologies, and this has produced a more streamlined, but also more networked, structure for dissemination of ocean surveillance information.

The original OSIS organisation was reformed in the early 1990s. The FOSICs and FOSIFs were disestablished, and their functions transferred to joint-Service intelligence centres and joint commands, such as the Joint Intelligence Center – Pacific (JICPAC) at US Pacific Command (USPACOM) HQ at Honolulu. The FOSIF WestPac at Kamiseya became JICPAC J-DET on 1 October 1993. J-DET was transferred to Yokosuka, together with other NSG elements, and the NSG station at Kamiseya was closed, with effect from 1 June 1995.⁴ The NSG was itself disestablished and replaced by the Information Operations Directorate (IOD) of the Naval Network Warfare Command (NETWARCOM) in September 2005. The NSG's units became Navy Information Operations Commands (NIOCs) or Navy Information Operations Detachments (NIODs). NIOCs were initially located at Misawa and Yokosuka, but the unit at Misawa was disestablished on 30 September 2014.⁵

2 Gus Hancock, 'OSIS: Forging the Links', *Naval Intelligence Professionals Quarterly*, Summer 1991, pp. 9–10.

3 Jay R. Browne, 'Early Development', *Cryptolog: U.S. Naval Cryptologic Veterans Association* (Vol. 18, No. 4), Fall 1997, pp. 26–28.

4 Jay R. Browne, 'Kami Seya – The Last Years', *Cryptolog: U.S. Naval Cryptologic Veterans Association* (Vol. 18, No. 4), Fall 1997, pp. 43–47.

5 Jeffrey T. Richelson, *The US Intelligence Community* (Westview, Boulder, Colorado, 5th edn, 2008), pp. 98–99; 'United States Navy Information Operations Command Misawa: Command History', at www.niocmisawa.navy.mil/history.html; 'Naval Security Group Station History Dates', at www.navycthistory.com/NSGStationsHistoryDates.txt; Memorandum from the Chief of Naval Operations, 'Disestablishment of Navy Information Operations Command, Misawa, Japan and Realignment of Navy Information Operations Command Detachment, Seoul, Korea' (OPNAV Notice 5400, 5 September 2014).

On the technical side, the OSIS system was upgraded in the early 1990s through the OSIS Baseline Upgrade (OBU) program. Powerful new computers were installed to serve the workstations at the new joint-Service centres, and the timeliness of the ocean surveillance intelligence was significantly enhanced, with the OSIS database updated 'with each satellite pass and each new sensor reading'.⁶ OBU hardware and software was sold to Japan and installed at the JMSDF Fleet HQ at Yokosuka at the same time, together with equipment produced by Mitsubishi and Hitachi.⁷ Around 1999, the OBU Evolutionary Development (OED) program was implemented, involving more advanced hardware and software for receiving, processing and disseminating all-source surveillance information in near-real-time. OED systems were installed at JICPAC in Honolulu, J-DET at Yokosuka, and the JMSDF's JOED at Yokosuka.⁸

The character and composition of the ocean surveillance information collection networks has also changed materially since the early 1990s. Many of the *Classic Bullseye* HF DF stations in the Pacific were dismantled, though fewer than were dismantled in Europe, reflecting both the disappearance of the threat of the Soviet Pacific fleet and the US Navy's increasing reliance on electronic surveillance satellites to detect, track and identify vessels by intercepting their VHF and UHF emissions. However, the United States continued to maintain two large HF DF CDAA's in Japan. One, with an AN/FLR-9 CDAA, was at Misawa; the United States announced in November 2012 that it would cease operations 'early' in 2013 and would be dismantled sometime later in 2013.⁹ The other, code-named Project *Camelus*, is at Camp Hansen in Okinawa, which replaced the controversial AN/FRD-10 CDAA at Hanza, 20 kilometres away, in 2007.¹⁰

With respect to satellite surveillance, the US Navy maintained for many years a Naval Ocean Surveillance System (NOSS) which consisted of constellations of small satellites deployed in circular low earth orbits (LEOs) with an altitude of about 450 kilometres to detect and record the electronic emissions from vessels at sea, especially Soviet ships and submarines. These satellites were initially called *White Cloud*, *Parcae* and *Advanced Parcae*, with the associated ground stations called *Classic Wizard*. The current generation of US Navy LEO ELINT satellites, the first of which was launched on 8 September 2001, is code-named *Intruder*, with *Ranger* being the unclassified designation. The *Intruder* satellites

6 Friedman, *Naval Institute Guide*, p. 7.

7 'OSIS Ocean Surveillance Information System', *Global Security*, at www.globalsecurity.org/intell/systems/obu.htm

8 *ibid*; 'CV: Senior Systems Security Engineer', at space-careers.com/agency/cvview_7971.html

9 Armando R. Limon, 'Misawa to Tear Down Massive "Elephant Cage" Antennae', *Stars and Stripes*, 19 November 2012; 'U.S. Military's "Elephant Cage" Antenna to be Razed', *Japan Times*, 22 November 2012, at www.japantimes.co.jp/news/2012/11/22/national/u-s-militarys-elephant-cage-antenna-to-be-razed/#.Uj_kUX-Kq9J

10 Richelson, *US Intelligence Community*, p. 228; 'Construction of New "Elephant Cage" at Camp Hansen, Okinawa', *Asahi Shimbun*, 13 February 2005, at www.asahi.com/politics/update/0213/002.htm

detect and record land-based radars and other electronic emissions as well as sea-based emissions; the *Advanced Parcae* satellites also had this dual capability, but the detection systems aboard the *Intruders* are evidently considerably more advanced. Since the mid-1980s, there has been increasing participation of Army and Air Force SIGINT personnel in the program.¹¹ The *Ranger/Intruder* satellites also have a COMINT Mapping capability for systematically mapping the locations of communications transmitters in designated areas around the globe.¹²

The ground segment of the *Intruder* system consists of four ground stations code-named *ICEBox* (with 'ICE' being an acronym for improved collection equipment) that are located at Vandenberg Air Force Base, California; in Germany; at Diego Garcia in the Indian Ocean; and about 16 kilometres north of Misawa.¹³ The *ICEBox* station at Misawa was established in 1997. It had two 10.5-metre diameter radomes in September 1998.¹⁴ (For a brief period there was a sign at the entrance to the station which identified the facility as 'NSGA Misawa ICEBox Compound').¹⁵ Foundations for a third radome were completed in December 2004.¹⁶ By around 2006 it had five radomes, four of which were for *ICEBox* data reception and one of which housed a satellite communications dish. These had all been removed by 2007–08. Google Earth imagery dated 12 September 2012 shows, however, that two new *ICEBox* radomes had been restored on the foundations that were built for the third and fourth *ICEBox* radomes. The 2010 edition of the Misawa Air Base Telephone Directory lists *ICEBox* Operations at the *ICEBox* ground station (0176–59–3458) and the *ICEBox* Operations Chief at the Misawa Air Base (226–2607).¹⁷

In the case of the US Navy's SOSUS systems, most of those in the north Pacific were closed in the early 1990s. Greater reliance was placed on SURTASS vessels, with towed arrays, which can be moved from ocean to ocean according to operational requirements and are even able to support deployed forces in tactical roles. Four SURTASS ships were commissioned in 1991–93 and a fifth,

11 Jeffrey T. Richelson, *The US Intelligence Community* (Westview Press, Boulder, Colorado, sixth edition, 2012) pp. 209–11.

12 Michael K. Buckingham, 'Resume', at <http://www.mikesbaux.org/resume.doc>.

13 'ECHELON Station Griesheim with Darmstadt', at hp.kairaven.de/miniwahr/darmstadt-griesheim.html; Richelson, *The US Intelligence Community*, pp. 215–17; 'K-Engineering Services and Technical Support of the Single Consolidated Baseline (SCB) Equipment Suite', *Federal Business Opportunities*, 29 October 2004, at www.fbo.gov/index?s=opportunity&mode=form&id=34708387d7cfe2178d03f78917479e38&tab=core&cvview=0

14 'The Truth About Misawa: The Ping-pong Balls Which Multiply', 2 May 2000, at www.toonippo.co.jp/rensai/ren2000/misawa/msw0502.html

15 Young Spiegel, 'U.S. Listening Stations at Misawa Designed to Uncover Russian and DPRK Military Secrets', at www.globalview.cn/ReadNews.asp?NewsID=30553

16 Grant Sattler, "'Icebox' Project Receives a "Warm" Navy Welcome', *Pacific Engineer*, April 2005, pp. 16–17, at www.pod.usace.army.mil/News/Pacific_Engineer_1_.pdf

17 '2010 Telephone Directory, Misawa Air Base, Japan', p. 31.

the *Impeccable* (T-AGOS 23), in 1998. In any case, by the end of the Cold War the US Navy had transferred all its SOSUS systems in Japanese waters to the JMSDF, and instituted arrangements for US Navy teams to be stationed at some of the JMSDF facilities and for some of the systems to be managed by a joint US Navy/JMSDF office at Yokosuka. And as already noted, the US Navy evidently laid a new SOSUS array in 2006 in the area between Kyushu and Okinawa, dividing the East China Sea from the Pacific Ocean, and presumably connected to the JMSDF's Ocean Observation Station at White Beach in Okinawa.¹⁸

18 「ケーブル敷設艦・測量艦の佐世保入港増加の意味は?」[‘What is the Significance of an Increased Number of Sasebo Port Visits by Cable-laying Ships?’], at www.rimpeace.or.jp/jrp/sasebo/sasebobase/0608ssbzeusags.html

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