

### 3. The JMSDF's Ocean Surveillance Architecture

The Japanese Maritime Self-Defense Force (JMSDF) has a comprehensive architecture of ocean surveillance systems for monitoring the disparate challenges it faces in supporting its defensive activities, including SOSUS (sound surveillance system)-type submarine detection and tracking systems, high frequency direction finding (HF DF) facilities, ocean surveillance ships, and maritime surveillance aircraft. Information from all of these systems is integrated into the JMSDF's Ocean Surveillance Information System (JOSIS), the current version of which is officially called the JMSDF OSIS Evolutionary Development (JOED) system, at the JMSDF's Fleet HQ at Yokosuka, in Kanagawa Prefecture, on the western side of Tokyo Bay.

Japan's undersea surveillance network, as a report in May 2003 noted, provides a '24-hour non-stop undersea surveillance and listening' capability.<sup>1</sup> It consists of about 30 passive hydrophone arrays, connected to some 14 or more shore stations. The underwater surveillance systems were designed initially for harbour defence, and then to monitor movements through Japan's internal and adjacent straits; several of them involve long-range, deep-water systems (connected to shore stations at Matsumae, in south-western Hokkaido; Higashidori on the Shimokita Peninsula, in the north-east of Honshu; and White Beach in Okinawa). Magnetic measurement systems have also been deployed on the sea floor across the Tsugaru and Tsushima straits, while magnetic measurement stations have been established at Osaka Bay and Sasebo Bay. The latter are avowedly for measuring the magnetic signatures and degaussing of minehunters, but they are also able to detect submarines entering these two key areas.

Japan now has eight signals intelligence (SIGINT) stations equipped with circularly disposed antenna arrays (CDAA) for both signals interception and HF DF activities. Three large and sensitive CDAAs provide bearings on intercepted signals with reasonable accuracy. The first, which became operational in 1977, is located at Miho, on Honshu's west coast in Tottori Prefecture; it is Japan's main SIGINT station for monitoring signals in North Korea. The second, constructed in 1987, is at Chitose, in Hokkaido, which is the main station for intercepting signals in the Russian Far East. The third, which was constructed in 2004–05 and became operational in 2006, is located on Kikai-jima, near Amami-Oshima Island, about midway between Kyushu and Okinawa; it is primarily concerned with intercepting Chinese signals. Five 7-element CDAAs are located

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<sup>1</sup> 'After Taking Office, Koizumi Quietly Expands Japan's Self-Defence Force, Improves Weaponry', 20 May 2003, at [japan.people.com.cn/2003/5/21/200352192116.htm](http://japan.people.com.cn/2003/5/21/200352192116.htm)

at Wakkanai, at the north-western tip of Hokkaido; Nemuro, in the north-east corner of Hokkaido; Kobunato, in Niigata Prefecture, on the shore of the Sea of Japan; Tachiarai, in the northern part of Kyushu; and Ishigaki, at the southern end of the Ryukyu archipelago.

The JMSDF operates several ocean surveillance and SIGINT collection ships, including the *Nichinan* AGS/AGI, the *Shonan* AGS and two SURTASS (Surveillance Towed Array Sensor System) acoustic measurement (or underwater listening) ships. It has the second-largest fleet of maritime surveillance aircraft in the world (after the US Navy), comprising P-3C Orion long-range maritime patrol (LRMP) aircraft and SH-60J Sea Hawk patrol helicopters. It also has five EP-3 SIGINT aircraft, based at Iwakuni, together with an associated Electronic Data Analysis Department.

In addition, the Maritime Security Agency (MSA), now officially called the Japan Coast Guard, has also greatly expanded since 1948 in terms of both its capabilities and its roles and missions. It possesses a large fleet of patrol vessels, provides hydrographic and navigation aids services, maintains HF DF stations and more modern digital communications facilities for monitoring maritime distress signals, and has expanded its responsibilities to include 'securing the safety of the sea-lanes' and 'maintaining order on the seas'.<sup>2</sup>

The 5th Research Center (also called the Naval Systems Research Center) of the Ministry of Defense's (MoD) Technical Research and Development Institute (TRDI), based at Nagase in Yokosuka, also has expertise and capabilities with respect to undersea detection activities. Its 1st Division specialises in the development of sonar and underwater acoustics systems, and its Kawasaki Branch develops magnetic sensors.<sup>3</sup> The TRDI has a specially built experimental ship, the *Kurihama* ASE 6101, and an Experimental Center at Higashidori on Shimokita Peninsula, adjacent to the JMSDF's Shimokita-hanto Ocean Observation Station.

The JMSDF's ocean surveillance capabilities are greatly augmented by cooperation and exchange arrangements with the US Navy. Unlike the Japanese Air Self-Defense Force (JASDF) and the US Air Force (USAF) with respect to air defence, where the JASDF resolutely resisted cooperation until as recently as 2005, the JMSDF has, since its establishment, cooperated extensively with the US Navy. This has included operational cooperation with respect to undersea

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2 Richard J. Samuels, "'New Fighting Power': Japan's Growing Maritime Capabilities and East Asian Security', *International Security* (Vol. 32, No. 3), Winter 2007/08, pp. 84–112.

3 US Congress, Office of Technology Assessment (OTA), *Holding the Edge: Maintaining the Defense Technology Base, Volume 2 – Appendices* (OTA-ISC-432, January 1990), Appendix H, 'Strategic Technology Management in Japan: Commercial-Military Comparisons', p. 180.

surveillance and anti-submarine warfare (ASW) activities. In the late 1950s, the US Navy expedited equipment for the JMSDF's coastal defence stations guarding the entrances to Tokyo and Sasebo bays.

In the early 1980s, the JMSDF and the US Navy agreed on an effective division of labour, whereby the former would focus on ASW and the ability to block Soviet naval access to the Soya, Tsugaru and Tsushima straits, while the US Navy concentrated on offensive operations.<sup>4</sup> A review in 1996 noted that 'the two navies share information, technology, equipment, supplies and resources; they work, operate, and train together; and they trust, respect and depend on each other'.<sup>5</sup>

US Navy and contractor personnel participate directly in some of the JMSDF's surveillance activities. For example, US technical crews operate the sensor equipment aboard the JMSDF's two SURTASS ships, and data collected by these ships are shared with the US Navy.<sup>6</sup> A small team of about six to seven US Navy personnel were stationed at the JMSDF's Matsumae SOSUS station in the 1980s and 1990s.<sup>7</sup> At Yokosuka, a joint JMSDF-US Navy Project 6100 office, assisted by personnel from E-Systems in Dallas, Texas, manages three SOSUS-type systems.<sup>8</sup>

Management and coordination of cooperative activities has been greatly facilitated by the co-location of the US Navy's 7th Fleet HQ with the HQ of the JMSDF Fleet at Yokosuka. The US base is a nodal point in the navy's Ocean Surveillance Information System (OSIS), which provides intelligence from its worldwide networks of SOSUS facilities, HF DF stations, airborne systems, and ocean surveillance satellites (formerly called *Classic Wizard* and now *Intruder*, and for which a down-link station code-named *ICEBox* is located near Misawa, in north-east Honshu). The JMSDF's JOED centre exchanges data directly with the US system. The JOED computer networks are managed by Litton PRC, now a subsidiary of Northrop Grumman Corporation.<sup>9</sup>

4 Graham, *Japan's Sea Lane Security, 1940–2004*, chapter 5.

5 Naoyuki Agawa & James E. Auer, 'Pacific Friendship', *U.S. Naval Institute Proceedings*, October 1996, p. 56.

6 Norman Friedman, *The Naval Institute Guide to World Naval Weapons Systems, 1997–1998* (Naval Institute Press, Annapolis, Maryland, 1997), pp. 21, 24; 'Japan–U.S. Security Treaty After 50 Years – Phantom Alliance: U.S. Servicemen in the Shadows; Watching Behind Weapons Guidance', *Tokyo Shimbun*, 24 August 2001, in American Embassy, Tokyo, 'Daily Summary of Japanese Press', 28 August 2001.

7 『北海道のC3I基地に見る新たな福強と変化』、松井愈（著者）、1993年日本平和会国際会議、C3I分科会・18th 全道基地闘争活動者会議（93・10）[Matsui Masaru, 'Looking at New Developments and Changes in Hokkaido C<sup>3</sup>I Bases, Japan Peace Committee International Conference, C3I Subcommittee; and 18th National Base Struggle Activists Conference (October 1993)', Hokkaido Peace Committee Study Document No. 26, 8–1994], pp. 4–5.

8 'Sea-bottom Cable-laying Ship Operating Offshore: Fishermen Witnessed in About 1972', in 'Report: The Unsinkable Aircraft Carrier Archipelago – Behind the Tomahawk Deployment', *Asahi Shimbun*, 17 June 1984.

9 'CV: Senior Systems Security Engineer', 11 August 2007, at [space-careers.com/agency/cvview\\_7971.html](http://space-careers.com/agency/cvview_7971.html)

The JMSDF's *Kongo*-class air warfare destroyers, equipped with the US Navy's *Aegis* combat system and AN/SPY-1D search radar, exchange air and missile tracking data directly with US Navy *Aegis* ships stationed in the western Pacific. Four *Kongo*-class destroyers were commissioned in the 1990s; a fifth was commissioned in 2007, and a sixth joined the fleet in 2009. On 18 December 2007, the *Kongo* (DDG 173) detected, tracked and successfully engaged a ballistic missile target launched from the US Navy's Pacific Missile Range Facility on Kauai in Hawaii.<sup>10</sup>

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<sup>10</sup> William Cole, 'In Test, Japan Warship Blasts Missile Launched from Kauai', *Honolulu Advertiser*, 18 December 2007, at [the.honoluluadvertiser.com/article/2007/Dec/18/In/hawaii712180346.html](http://the.honoluluadvertiser.com/article/2007/Dec/18/In/hawaii712180346.html)

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