

10. Airborne Ocean Surveillance

The Imperial Japanese Navy (IJN) recognised the utility of aircraft for naval reconnaissance during the First World War, using seaplanes for search missions and, in the 1930s, emphasised the importance of aerial scouting in connection with its emerging doctrine of a first strike against enemy carriers.¹ Naval aviation was revived in the 1950s under US direction and, in the late 1950s, the United States agreed to the Japanese Maritime Self-Defense Force's (JMSDF) acquisition of Lockheed P2V-R Neptune anti-submarine warfare (ASW)/ocean patrol aircraft. Kawasaki assembled 48 P2V-Rs at its Gifu plant from 1959 through the early 1960s.²

In 1963, Kawasaki initiated a program to convert the P2V-Rs into P-2Js, a radically new Neptune variant that was produced with turboprop engines, an extended fuselage to accommodate 'improved electronic equipment', and an APS-80 search radar, then being installed on the US Navy's new P-3C *Orion* long-range maritime patrol (LRMP) aircraft, to replace the APS-20. The first P-2J was delivered to the JMSDF in November 1966. A total of 83 were built by Kawasaki, the last of which was delivered to the Japanese Maritime Self-Defense Force (JMSDF) in March 1979.³ The main P-2J operating base was at Hachinohe, in the north-east part of Honshu, with patrol squadrons at Kanoya, in Kagoshima Prefecture, in the southern part of Kyushu, and at Naha in Okinawa. Four squadrons with 40 P-2Js were operational in 1988, three with 30 in 1989–91, and one squadron with only six aircraft in 1993. They had all been phased out by 1994.⁴

The P-2Js were complemented by HSS-2A/B Sea King shore-based ASW patrol helicopters, 185 of which were manufactured by Mitsubishi Heavy Industries, under licence to Sikorsky, in 1989–90.⁵ Sixty Sea Kings were deployed with six squadrons (including one for training), with 10 helicopters per squadron, and another 45 kept in store.⁶ They were all taken out of service in the late 1990s, although some are still maintained at the JMSDF's air base at Tateyama, at the southern tip of Chiba Prefecture, on the south-eastern side of the entrance to Tokyo Bay, where they are brought out for display during the base's annual air show.

1 Evans & Peattie, *Kaigun*, p. 329.

2 Auer, *Postwar Rearmament*, pp. 240–41; 'P2V-7/P-2H', at p2vneptune.com/v07.shtml

3 'Kawasaki P-2J', at p2vneptune.com/v08.shtml

4 IISS, *The Military Balance*.

5 Mark Lambert (ed.), *Jane's All the World's Aircraft 1990–91* (Jane's Information Group, Coulsdon, Surrey, 81st edn, 1990), p. 181.

6 IISS, *The Military Balance 1989–1990* (London, 1989), p. 163.

The P-2Js were replaced through the 1980s and 1990s by P-3C Orions. Acquisition of the P-3Cs was approved by the Cabinet in December 1978. The first three of these were produced by Lockheed in the United States and handed over to the JMSDF in April 1981. The next four were assembled by Kawasaki at Gifu, using parts manufactured by Lockheed, in 1982. Another 100 were produced by Kawasaki, including about a dozen variants for ‘special missions’, such as the EP-3s and UP-3s. By March 1990, 60 had been delivered, and all of them by 1995. The P-3C is still recognised as the best ASW and maritime surveillance system in the world. It is a four-engined aircraft capable of flying 2,500 kilometres with full weapons load, patrolling for four hours, and returning to base. It is equipped with a variety of submarine detection systems, including sonobuoys, an infra-red detection system, an AN/ASQ-81 magnetic anomaly detection (MAD) system, two AN/ARR-78 sonar receivers, and two AN/AQA-7(V)8 DIFAR (directional acoustic frequency analysis and recording) sonobuoy sets, as well as an AN/APS-115 search radar (with 360° coverage), and advanced navigation and communications (including satellite communication (Satcom)) systems. It also carries an AN/ALQ-78 electronic countermeasures (ECM) set and an AN/ALR-66(V)3 electronic support measures (ESM) system for self-defence.⁷

The JMSDF currently has more than 80 P-3C Orions in service. They are deployed with eight squadrons, each with 10 aircraft, plus a small number with the 51st Training and Development Squadron at Atsugi, south of Tokyo. Two squadrons, the 31st and 32nd Air Patrol Squadrons, are based under the 3rd Fleet Air Wing at Atsugi. The 21st and 22nd, part of the 2nd Fleet Air Wing, are based at Hachinohe; the 11th and 12th, part of the 1st Fleet Air Wing, are based at Kanoya; and the 51st and 52nd Squadrons are part of the 5th Fleet Air Wing based at Naha. Fleet Squadron 81 of the 31st Fleet Air Wing, based at Iwakuni, operates five EP-3C SIGINT aircraft (Nos. 9171–9175), which are used for both national and JMSDF SIGINT collection activities (see Table 2).

Table 2. JMSDF maritime patrol aircraft bases

Base	Squadron	Aircraft
Atsugi (Fleet Air Wing 4)	Fleet Squadron 3	P-3C
	Fleet Squadron 6	P-3C
	Fleet Squadron 51 (Air Development Squadron)	P-3C, UP-3C, UP-3D, SH-60J
Kanoya (Fleet Air Wing 1)	Fleet Squadron 1	P-3C
	Fleet Squadron 7	P-3C

⁷ Paul Jackson (ed.), *Jane's All the World's Aircraft 1997–98*, (Jane's Information Group, Coulsdon, Surrey, 88th edn, 1997), pp. 289–90.

Hachinohe (Fleet Air Wing 2)	Fleet Squadron 2	P-3C
	Fleet Squadron 4	P-3C
Naha (Fleet Air Wing 5)	Fleet Squadron 5	P-3C
	Fleet Squadron 9	P-3C
Iwakuni (Fleet Air Wing 31)	Fleet Squadron 81	EP-3C
Tateyama (Fleet Air Wing 21)	Fleet Squadron 101	SH-60J
	Fleet Squadron 121	SH-60J
	Fleet Squadron 123	SH-60J
Omura (Fleet Air Wing 22)	Fleet Squadron 122	SH-60J
	Fleet Squadron 124	SH-60J

The Naha squadrons with their 20 P-3Cs are commonly reckoned to be the busiest of the JMSDF's P-3C squadrons, as well as operating in the tensest area. They make daily flights over the Senkaku Islands and surrounding waters.⁸ Mission data is transmitted directly from P-3Cs in-flight to the JMSDF's Kunigami Receiving Station located in dense forest about 3 kilometres east of Iji village in Kunigami District in northern Okinawa. The requirement for an 'aviation anti-submarine warfare centre and communications facility' for the 5th Fleet Air Wing was announced by the JMSDF in August 1988. Construction began at the Kunigami site in November 1990, and was completed in September 1991. The station occupies 560 square metres, and consists of a large operations building, a 7-element circular HF array (with one of the masts in the centre, the outer masts forming a 63-metre diameter array on a circular 85-metre diameter pad), a 6-element circular HF array (with the masts forming a 43-metre diameter array on an 80-metre diameter circular pad), a microwave tower with two microwave dishes, pointing to Naha, a HF wire antenna string between two steel masts, and a large log-periodic array (LPA) on a steel tower about 300 metres west-north-west of the 7-element array.⁹ The antennas are clearly shown in high-resolution Google Earth imagery dated 18 January 2013. An optical fibre cable runs along the roadside between the station and Iji village.

In November 2001, Kawasaki was contracted to design and produce an indigenous replacement for the aging P-3Cs. Initially called the P-X, it was redesignated the XP-1 when the first prototype aircraft was rolled out from Kawasaki's Gifu factory in July 2007. It completed its maiden flight in September 2007. The first

8 Kyle Mizokami, 'The Mainichi Rides Along with Japan's Senkaku Patrol', *Japan Security Watch*, 17 October 2011, at jsw.newpacificinstitute.org/?p=8524

9 『沖縄県の基地の現状』、沖縄県、沖縄県総務部知事公室, 平成15年3月 [‘State of the Bases in Okinawa Prefecture’, Public Affairs Office, Governor of Okinawa Prefecture, March 2003], at www.pref.okinawa.jp/kititaisaku/D-mokuji.htm

test aircraft was delivered to the Ministry of Defense (MoD) in August 2008 and another four in March 2010. The first two production models, now called P-1s, were delivered to the JMSDF on 26 March 2013. They were deployed to the Atsugi base to undergo flight tests for two years before beginning maritime patrol missions.¹⁰ The Mid-Term Defense Build-up Plan, which was adopted by the government in December 2010, included the purchase of 10 P-1s within five years 'to monitor submarines and suspicious boats', at a cost of approximately 200 billion yen, or about US\$200 million per aircraft.¹¹

The P-1 has a length of 38 metres, a wing span of 35 metres, and a maximum weight of about 80,000 kilograms. It is powered by four F7-10 turbofan engines produced by Ishikawajima-Harima Heavy Industries, which provide a cruise speed of 830 kilometres per hour and a maximum speed of 996 kilometres per hour. It travels at about 1.3 times faster than the P-3C, can operate at higher altitudes, and 'can conduct surveillance flights for more than 10 hours'. Because each aircraft can monitor a greater area than a P-3C, the JMSDF expects that it can replace its 80 P-3Cs with 70 P-1s.¹²

It has a flight crew of two and can carry a mission crew of 11 (compared to seven in the P-3C). It is fitted with a MAD boom for submarine detection, and can carry 30 preloaded sonar buoys and another 70 reloads within the aircraft. Its avionics equipment includes a Toshiba HPS-106 active electronically scanned array (AESA) radar, a Fujitsu HAQ-2 forward-looking infra-red (FLIR) system, a HQA-7(NEC)/HAS-107/HRQ-1(JRC)/HQH-106 advanced acoustics suite, a Mitsubishi Electric HLR-109B ESM system, a HYQ-3 Combat Direction System, and a Kawasaki HAS-108 data-link system.¹³

The HSS-2B Sea King helicopters have been succeeded by SH-60J Sea Hawks. Manufactured by Mitsubishi Heavy Industries under licence to Sikorsky, 101 SH-60Js have been delivered to the JMSDF since 1991. The SH-60J is extensively modified compared to the standard Sikorsky/US Navy version, especially with respect to its avionics. The SH-60J retains the US-built Texas Instruments AN/ASQ-81D2 MAD, General Instruments AN/ALR-66 (VE) radar warning receiver (RWR), Ednac AN/ARR-75 sonobuoy receiver and the Raytheon AN/AAS-44 FLIR/laser detection, ranging and tracking system. The indigenous Japanese

10 'Kawasaki XP-1 Maritime Patrol Aircraft, Japan', *Naval Technology*, at www.naval-technology.com/projects/kawasaki-xp-1-maritime-patrol-aircraft/; 'KHI Gives MSDF First P-1 Anti-Sub Aircraft', *Japan Times*, 27 March 2013.

11 'Japan Will Buy 10 P1 Planes', *House of Japan*, 18 November 2010, at www.houseofjapan.com/local/japan-will-buy-10-p1-patrol-planes

12 *ibid.*; 'KHI Gives MSDF First P-1 Anti-Sub Aircraft'.

13 'Kawasaki P-1', at www.heinkel.jp/yspack/ysf_p1_eng.html; 'Kawasaki P-1 Database', at harpforum.com/harpforum/index.php?topic/17948-kawasaki-p-1/

equipment includes the HPS-104 search radar, HLR-108 ESM system, HQS-103 dipping sonar, cockpit displays, tactical data processor and data links. It has an operational range of about 1,000 kilometres.¹⁴

The JMSDF currently maintains five squadrons of shore-based and four squadrons of shipboard SH-60J helicopters. The shore-based units, which each have 10 helicopters, consist of Fleet Squadrons 101, 121 and 123, based at Tateyama; and Fleet Squadrons 122 and 124, based at Omura, in the north-west part of Kyushu. The 513th unit of the 51st Training and Development Squadron at Atsugi also has a handful of SH-60Js.¹⁵

Mitsubishi is currently producing an advanced version of the SH-60J, called the SH-60K. A prototype was rolled out in September 2001, and Mitsubishi delivered an initial batch of seven to the JMSDF in 2005. A second batch of 50 is in production. The SH-60K has substantially upgraded avionics, including a data link, and enhanced defensive countermeasures systems, including a missile warning system and a chaff dispenser.¹⁶

JMSDF ELINT Processing and Correlation Centres

Electronic intelligence (ELINT) collected by the JMSDF's EP-3 SIGINT aircraft is delivered to the Electronic Data Analysis Department at their home base at Iwakuni in Yamaguchi Prefecture, for second-echelon processing and analysis. Urgent matters are transmitted directly to the Electronic Intelligence Center (EIC) at the Fleet HQ in Yokosuka, which changed its name from the Electronic Operations Support Unit (EOSU) in 1997, and which provides ELINT support to the Fleet Intelligence Center (FIC) and thence the JMSDF Fleet Command at Yokosuka.¹⁷ For example, when North Korea launched a Taepodong missile over Japan on 31 August 1998, the telemetry signals emitted by the missile were recorded by an EP-3; when the aircraft landed at Iwakuni the tapes were carried by hand to the Electronic Data Analysis Department and the data was 'instantaneously electronically transmitted' by data link to the EOSU at Yokosuka.¹⁸

14 Jackson (ed.), *Jane's All the World's Aircraft 1997-98*, p. 296.

15 'Japanese Fleet', *GlobalSecurity.org*, at www.globalsecurity.org/military/world/japan/jmsdf-orbat.htm

16 'Difference Between SH-60J and SH-60J Kai', at forum.keypublishing.co.uk/archive/index.php?t-47376.html; 'Sikorsky SH-60B "Sea Hawk" 1979', at www.aviastar.org/helicopters_eng/sik_s-70-sea.php

17 *Asagumo* report, undated (but probably 1997), photocopied excerpts.

18 'Japan: State Incapable of Waging War', *Bungei Shinju*, Tokyo, November 1998, pp. 150-57, in FBIS Translated Text, East Asia, FBIS-EAS-98-299, 26 October 1988.

The EIC at Yokosuka collects, correlates, processes and analyses the electronic signals emitted by ships and aircraft and intercepted by the JMSDF's ship-borne, airborne and shore-based ELINT systems. The mission of the FIC, which had about 200 personnel in the late 1990s, is to collect and analyse the operational intelligence required for the operations of JMSDF forward units and to provide related units with that intelligence. It receives intelligence from the Basic Intelligence Center (BIC) at the Defense Intelligence Headquarters (DIH) at Ichigaya and the Operational Intelligence Center (OIC) at Yokosuka as well as from the EIC.¹⁹

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