

Report of the Outline of the Japanese Antarctic Research Expedition I, 1956-57.

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1 The administrative constitution of the expedition

The Japanese Antarctic Research Expedition was planned by the Science Council of Japan which took charge of research projects of the International Geophysical Year. In autumn, 1955, the Antarctic Committee, whose chairman was Prof. Seiji KAYA, University of Tokyo, was organized in the Science Council of Japan and investigated methods and systems of scientific research relating to the IGY programme in the Antarctic region. As a result of the investigation, the Committee concluded that it would be possible for Japan to take part in research in the Antarctic region and set up a scientific station on Prince Harald Coast, and, through the Science Council of Japan, asked the Japanese government to send a scientific expedition to Antarctica. In response to this request, in October, 1955, the Japanese government decided to perform the Antarctic expedition and give it financial support.

According to the original plan authorized by the government, the Japanese Antarctic Research Expedition was scheduled as follows;

(1) The first preliminary expedition would be sent to Antarctica in 1956-57 to find a place suitable for a scientific station on Prince Harald Coast.

(2) The second main expedition would be carried out in 1957-58 to perform various kinds of scientific observation at the station for a year.

(3) Members of the expedition would be transported by M. S. Soya, the inspection ship of the Maritime Safety Agency, reconstructed into an ice-breaker.

In April, 1956, the Antarctic Office was organized in the Higher Education and Science Bureau, Ministry of Education, to take charge of communications among the responsible ministries for and administrative business of the expedition, as there were many matters connected with the expedition of concern to several ministries of the Japanese government. At the same time the Special Committee on Logistic Support was organized in the Antarctic Committee, Science Council of Japan. As a result of a conference of the Antarctic Office, it was decided that the preparation of the expedition ship, the Soya, would be executed by the Maritime Safety Agency and the preparation for scientific observation and logistics would be taken charge of by the Antarctic Office. The candidates to be members of the expedition were selected in July, 1956, and the office of the expedition party was

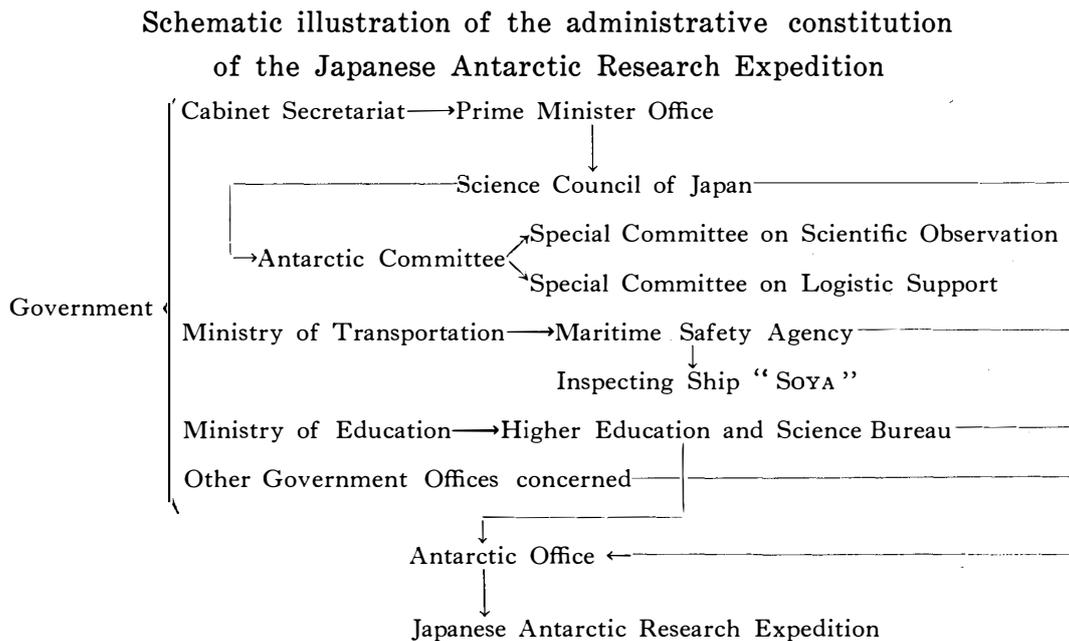
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established in the Antarctic Office to plan and execute preparation for the expedition and training of the members.

Planning and preparation of the scientific observations in and on the way to the Antarctic were thereafter taken charge of by the Special Committee on Scientific Observation of the Antarctic Committee. On the other hand, subcommittees on architecture, food supplies, aviation, medical treatment, expedition instruments, equipment and telecommunication were also organized in the Special Committee on Logistic Support of the Antarctic Committee, to take charge of examination and selection of materials, design of huts, instruments and equipment, and tests of all supplies to construct an Antarctic base.

Prof. Takesi NAGATA, and fifty-two other scientists and logistic supporters were appointed in October, 1956, to be leader and members of the expedition, and thus, the first Japanese Antarctic Research Expedition was organized. All members of the expedition were treated as government officials.

The administrative constitution of the expedition in the Japanese government is schematically shown as follows:



2. Outline of organization of the Expedition Party

The Japanese Antarctic Research Expedition I, 1956-57, was under the leadership of Prof. Takesi NAGATA, University of Tokyo. The subleader of the expedition, Prof. Eizaburo NISHIBORI, University of Kyoto, took charge of logistic support and was appointed as leader of the first wintering party at the Syowa Base.

Members of the expedition consisted of 23 scientists and 28 logistic supporters, as shown in Table 1.

The mission of the first Japanese Antarctic Research Expedition was to carry out various kinds of scientific observations on board ship and in Antarctica, to

Table 1. Functional division of the Japanese Antarctic Research Expedition, I.

A. Scientific research corps (Numbers of scientists in each subject).

subject	ship	landing	base
Aurora and airglow	1	—	(1)
Cosmic rays	1	—	(1)
Geomagnetism	—	2	—
Ionospheric physics	3	—	—
Meteorology	6	3	1
Glaciology	—	(1)	(1)
Seismology	—	3	—
Oceanography	1	—	—
Geomorphology	—	2	—
Geology	—	2	2
Mapping	—	2	—
Biology	(1)	—	(1)

B. Logistic support corps (Numbers of each function).

function	landing	base
Planner	5	(1)
Doctor	3	1
Radio operator	1	1
Constructor	1	(1)
Engineer	2	1
Dog keeper	2	(2)
Carpenter	4	—
Stock keeper	3	(1)
Aviator and engineer	4	—
Reporter	2	(1)
Photographer	1	(1)

Note: () is an additional post.

find a suitable place for a base on Prince Harald Coast, and to leave about ten members of the first wintering party at the base, if it should have been sufficiently equipped to live in for over a year.

According to the mission of the expedition, observations in meteorology, ionosphere, cosmic-rays, aurora and night-airglow, and oceanography were carried out on board throughout the voyage to and from the Antarctic. In Antarctica, surveys in geomagnetism, geomorphology, geology, glaciology and oceanography were carried out in the Ongul Islands and the east coast of Lützow-Holm Bay during the period from February 7 to 11, and aerial photographs were taken with the Cessna for aerial photogrammetry in the western part of Prince Olav Coast and the eastern part of Prince Harald Coast.

The expedition ship, M. S. "Soya", belongs to the Maritime Safety Agency

as an inspecting ship. The Soya had been reconstructed as an ice-breaker for the expedition in 1956. The details of the Soya are given in Table 2.

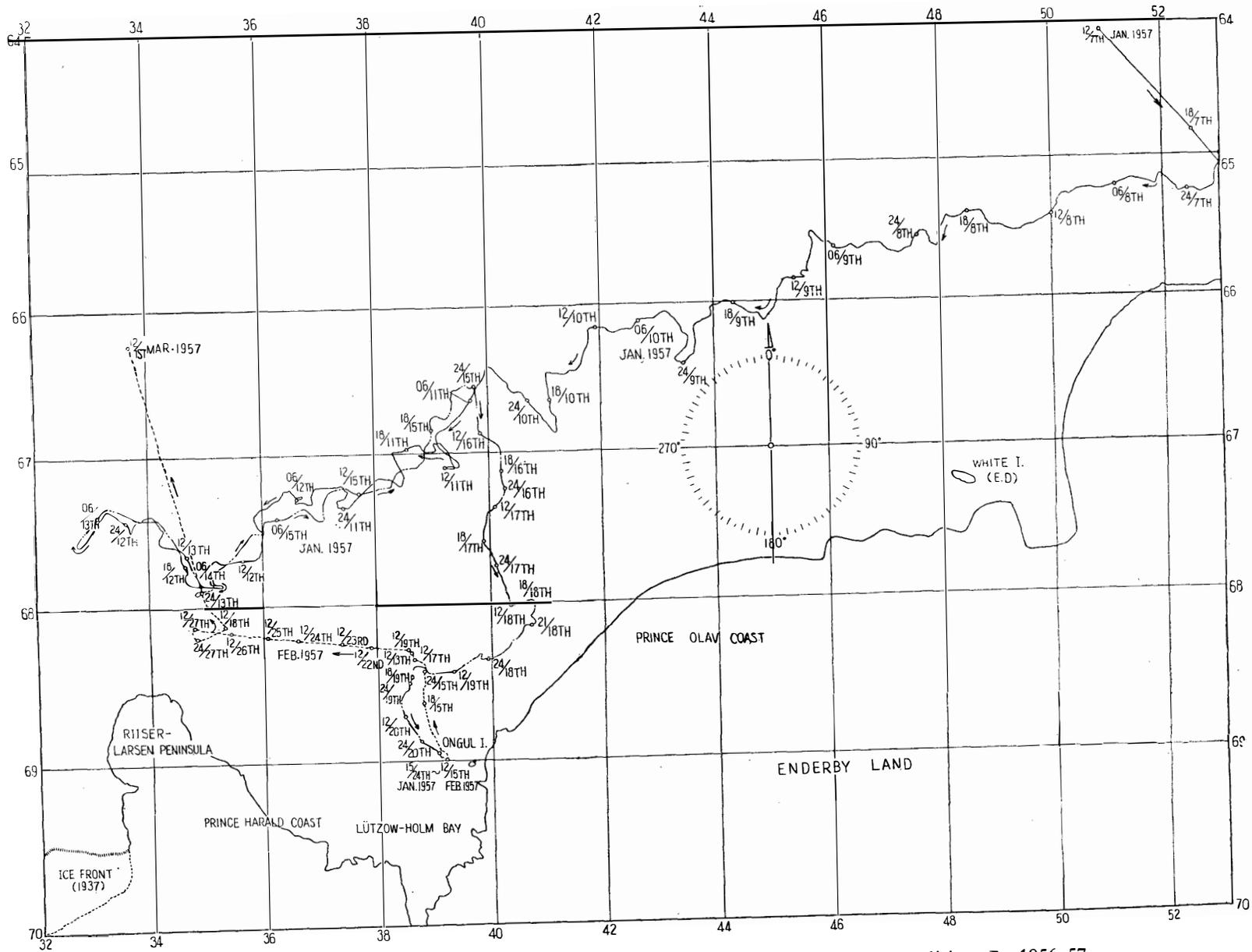
Table 2. The details of M. S. Soya.

Construction : 1938	Economic speed : 12.5 knot
Reconstruction : 1956	Maximum distance of voyage :
Length : 83.28m	1,500 sea miles
Width : 15.80m	Maximum period of voyage : 60 days
Depth : 7.00m	Oil : 63.85 ton
Draught : 5.35m	Water : 407.6 ton
Gross-tonnage : 4,235.10 ton	Cargo : 400.0 ton
Net-tonnage : 843.40 ton	Aircraft :
Main engine : two stroke diesel engine	helicopter Bell 47 G × 2
2,400 HP × 2	sea-plane Cessna 180 × 1
Generator : 120 KW × 3	Crew : 77
Speed : 13.9 knot	Passengers : 53

3. Diary of the operation of the Japanese Antarctic Research Expedition I, 1956-57

- Nov. 8, 1956 Left Tokyo for the Antarctic.
- Nov. 11 Began routine observation of ionosphere at about 30°N.
- Nov. 16 Suffered by a heavy storm under the influence of Typhoon Lucy on the sea northwest of the Philippines, at about 19°31'N. and 120°E. A part of packing of the expedition seaplane, "Cessna", was damaged on the foredeck.
- Nov. 23 Put into Singapore Harbour for seven days' anchorage. The Cessna was repaired, and fuel, water and other materials were supplied.
- Nov. 27 Left Singapore for Cape Town.
- Dec. 1 At 13:40 GMT crossed the equator at 86°44'E. into the southern hemisphere. A continuous ionospheric sounding was carried out for a whole day, crossing the equator.
- Dec. 19 Put into Cape Town Port for 10 days' anchorage. The engine of "Soya" was repaired and the engine of the Cessna was investigated and tested. Some cargo was transhipped from the accompanying ship, "Umitaka-maru", and fuel, water and other materials were supplied.
- Dec. 25 Exchanged goodwill with members of the USSR Antarctic Expedition and crew of the transport ship, "Kooperazia".
- Dec. 29 Left Cape Town for Antarctica.
- Jan. 3, 1957 Crossed 50°S. parallel at about 33°E.
- Jan. 4 Encountered an iceberg at about 54°S. for the first time.
- Jan. 7 At 19:23 (local time at 45°E.) arrived at the outer margin of pack ice at 65°09'S. and 53°10' E., about 50 miles off the coast of Enderby Land.

- Jan. 8 Manoeuvred westwards along the outer margin of pack ice to survey the condition of sea ice.
- Jan. 10 In the morning transshipped fuel from the accompanying ship, "Umitaka-maru", the training ship of the Tokyo University of Fisheries, at 66°S. and 40°E. In the afternoon unpacked the Cessna. In the evening began the first navigation into pack ice to test the ice-breaking power of "Soya".
- Jan. 11 In the morning crossed the Antarctic Circle at about 39°21'E.
- Jan. 13 After crossing 33°E. meridian, turned to the south.
- Jan. 14 Stopped at 67°55'S. about 50 miles northeast of Riiser-Larsen Peninsula and reconnoitred the coast of the peninsula with the seaplane, Cessna.
- Jan. 16 In the afternoon began to penetrate pack ice into Lützow-Holm Bay from 66°52' S. and 39°51'E. At midnight reconnoitred the coast of Prince Olav Coast with the Cessna.
- Jan. 18 Stopped at about 68°S. and 40°20'E. and reconnoitred the east coast of Lützow-Holm Bay with the Cessna. The open lead into Lützow-Holm Bay was found.
- Jan. 20 Arrived at the point of 68°30'S. and 38°33'E., about 25 miles north of the western part of Prince Olav Coast. Starting from this point, searched with the seaplane the east coast of Lützow-Holm Bay for a place suitable for a base.
- Jan. 24 In the afternoon arrived and anchored at the western margin of fast ice at the point of 68°58'S. and 39°02'E., about 7 miles west of the Ongul Islands. At 5:30 p. m. a field party of eight members with two teams of dog-sleds left the ship to find a transportation route to the Ongul Islands.
- Jan. 25 Succeeded in the test flight of the Cessna with skis and the test-working of snow-cars on fast ice. A part of the field party landed on an unnamed island north of Ongul Island.
- Jan. 26 Began to discharge a part of cargo. The first party landed on the northeast coast of East Ongul Island and the second field party with snow-cars left the ship for the Ongul Islands in the evening.
- Jan. 27 The second field party landed on the unnamed island.
- Jan. 28 Reconnoitred a transportation route to the Ongul Islands with helicopters. In the evening it was decided to build a base on the Ongul Islands.
- Jan. 29 The third field party with snow-cars left the ship for the Ongul Islands and another party was sent to a small island about 5 kilometers southeast of the ship to search for a base site. At 8:57 p.m. the third field party succeeded in landing on the east coast of West



Map showing the field of the operation of the Japanese Antarctic Research Expedition I, 1956-57.

- Ongul Island and the leader announced officially that the Ongul Islands and their vicinity would be named "Syowa Base". It was decided that the Japanese Antarctic Research Expedition landed officially on the Antarctic coast on this day.
- Jan. 30 A field party left the ship for the Ongul Islands to make a transportation route with snow-cars better. Began to prepare for transportation of materials to the Ongul Islands.
- Jan. 31 As a result of the conference on the operation held in the afternoon, it was decided to build the Japanese Antarctic Base on the northeast coast of East Ongul Island. Syowa Base is located at $69^{\circ}00'22''\text{S}$. and $39^{\circ}35'24''\text{E}$.
- Feb. 1 Transportation of materials to Syowa Base was begun in the afternoon.
- Feb. 2 The base site was determined and transportation to the base was continued.
- Feb. 5 The antenna tower and radio hut were completed.
- Feb. 6 The main hut was completed, and thus the first step of construction of the base was finished.
- Feb. 7 Field surveys in seismic sounding, oceanography, geomorphology, geology and mapping were begun.
- Feb. 9 Installation of generators was finished and the test work of the generators was successful.
- Feb. 11 The communication between the Syowa Base Radio Station and the Choshi Wireless Station was successful. Thus the second step of construction of the base was finished.
- Feb. 12 The living hut was completed. It was decided that all endeavour would henceforth be devoted to transportation of materials to the base.
- Feb. 14 The main part of construction of the base was finished. About 150 tons of materials were transported by snow-cars. Members constructing the base came back to the ship at night. The leader decided to leave eleven members of the wintering party at the base.
- Feb. 15 At 7:40 a. m. all members of the expedition met on the ship to hold a farewell meeting with the wintering party. "Soya" started on her home voyage at 00:30 p. m.
- Feb. 16 At $68^{\circ}25'\text{S}$. and $38^{\circ}58'\text{E}$. "Soya" was surrounded by closed pack ice and became ice-locked. After this "Soya" drifted westwards with pack ice for ten days.
- Feb. 27 The accompanying ship, "Umitaka-maru", came in sight. As pack ice became loose, at 4:00 p. m. "Soya" was able to escape from pack ice into open water, breaking sea ice.

- Feb. 28 In the morning "Soya" again penetrated pack ice northwards, but at about noon it became impossible to advance further north. At 2:00 p. m. the USSR's ice-breaker "Ob" came in sight. "Ob" turned its course towards "Soya" at 6:30 p. m. and led her northwards, breaking pack ice. "Soya" was able to reach the open ocean at 11:45 p. m. at 68°10'S. and 36°E.
- Mar. 1 Made a rendezvous with "Umitaka-maru" and then manoeuvred northwards. Left the Antarctic Circle at about 36°30'E.
- Mar. 10 Put into Cape Town Port.
- Mar. 13 "Ob" put into Cape Town Port. Exchanged goodwill with members of the USSR Oceanographic Expedition and crew of "Ob".
- Mar. 15 Left Cape Town for Singapore. The leader, Prof. T. NAGATA, and the Chief Navigator, Mr. J. YAMAMOTO, left Cape Town for Tokyo by airline.
- Apr. 1 Crossed the equator into the northern hemisphere at about 86°51'E.
- Apr. 6 Put into Singapore Harbour.
- Apr. 13 Left Singapore for Tokyo.
- Apr. 24 Returned to Tokyo.

第1次南極地域観測隊行動概要

渡 辺 兵 力

要 旨

日本の南極地域観測事業は、日本学術会議南極特別委員会を中心として計画され、1955年10月正式に政府の承認を得た。当時の計画では、1956—57年にかけて第1次予備観測隊を派遣し、観測基地が発見出来た場合には、1957—58年に本観測隊を越冬させることになっていた。本事業遂行の為、1956年4月事務担当機関として文部省大学学術局内に「南極地域観測統合推進本部」が、又南極特別委員会内に「観測総合計画委員会」、「設営総合計画委員会」が設置された。観測隊の輸送には海上保安庁の巡視船「宗谷」が使用されることになった。

諸準備は、「宗谷」関係は海上保安庁が、観測及び設営関係は統合推進本部があたつた。観測関係各部門の観測技術上の準備は南極特別委員会が

担当し、基地設営関係は設営総合計画委員会の中に各専門委員会を作り、各々の委員会において準備が整えられた。

1957年10月隊長には永田武氏が、副隊長には西堀栄三郎氏が決定し、隊員も正式に発表された。隊員は23名の観測隊員と28名の設営隊員から構成され(第1表参照)、越冬可能の場合には10名を越冬隊員として残すことになった。

「宗谷」は1956年観測の為に砕氷船として改造されたが、その性能を第2表に示す。

第1次観測隊の行動日程は第3表の通りである。観測隊員はその目的に従つて、気象、電離層、宇宙線、極光・夜光、海洋の各部門の観測を船上で、又地磁気、地形、地質、氷河、海洋の観測をオングル島及びリュッツォホルム湾東岸で行つた。