TMJ
MT
X-21

U. S. NAVAL TECHNICAL MISSION TO JAPAN
CARE OF FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

NS/fk

14 December 1945

RESTRICTED

From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.

Subject: Target Report - Japanese Use of Balloons for Barrage, Bombing and Aerology.

Reference: (a)"Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report is a summary of the findings and reports prepared by other technical intelligence agencies after exhaustive investigations. Since the work is already completed and the reports are comprehensive it is not considered advisable to prepare a detailed report for Target X-21 of Fascicle X-1 of reference (a).

2. The summary was prepared by Capt. M.S. Zaslow, AUS.

C. G. GRIMES
Captain, USN

30696

RESTRICTED X-21

JAPANESE USE OF BALLOONS FOR BARRAGE, BOMBING AND AEROLOGY

"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945

FASCICLE X-1, TARGET X-21

DECEMBER 1945

U.S. NAVAL TECHNICAL MISSION TO JAPAN

TABLE OF CONTENTS

SUMMARY

MISCELLANEOUS TARGETS

JAPANESE USE OF BALLOONS FOR BARRAGE, BOMBING AND AEROLOGY

Investigation of Japanese balloon activities has been exhaustively exploited by various Army and Air Corps agencies. These investigations have generally followed the line of Japanese specialization; i.e., barrage balloons and paper bombing balloons.

Most detailed information is available concerning the four Japanese barrage balloon models (models 1, 2, 4, and 97). In a report prepared by the U.S. Army Engineer Technical Intelligence Section (1), performance data, physical characteristics, design, manufacture and production figures, as well as operational technique, are fully described. This report is referenced as "Technological Survey, Japanese Barrage Balloons (9-27 November 1945) by Mr. George E. WEIDNER, Senior Engineer". Sections on materials are devoted to the flying cable and the elastic cord, and the preparation, spreading, calendering, doubling, and vulcanizing of the fabric cloth. Photographs, diagrams, and explanations of moorings and inflation equipment, and information on operation and maintenance are included; balloon cement, envelope, gas value, dialation system, and angle of trim are treated in details.

Plans for stragetic employment of balloons never considered the use of more than ninety barrage balloons in all of JAPAN, thirty each in the TOKYO, OSAKA and the MOJI-SHIMONOSEKI areas; no more than five hundred were manufactured. The report contains details of the make-up of barrage balloon teams and organization of the chain of command, as well as a history of barrage balloon research.

Balloons and complete equipment, including winch, flying wire, fairlead, and inflation accessories, have been found and are enroute to the office of the Chief Engineer, Engineer Board, Fort BELVOIR, VA.

Although no paper bombing balloons have been recovered intact in JAPAN, presently available information is so complete as to enable construction of an authentic copy of the Japanese model.

Detailed study of the balloon as a carrier has been made in a U.S. Army Engineer Technical Report series which treats principally of the inflation, launching, and physical performance characteristics, as well as the apparatus employed for maintaining flight. This series of reports is referenced

as "Technological Survey, Paper Bombing Balloons (13-28 November 1945) by Mr. George E. WEIDNER, Senior Engineer". The report includes a complete description of vertical flight control apparatus, both fuse and hopper types. From the plant manufacturing these balloons, data was obtained regarding engineering and production, as well as information on methods of construction, chemical composition of coating materials, and cost of each balloon. A full report on the history of research activities concerning the paper bombing balloons has been made to Army Engineer Technical Intelligence and FEAF by the men responsible for such work. The report (in English) forwarded by FEAF is titled "Japanese Report of Research of Bombing Balloon (October 1945) by the Ninth Military Laboratory" (Lt. Col. NIIZUMA, Central Liaison Office, Grand Imperial Headquarters, and Dr. ARAKAWA, Central Meterological Observatory). This report describes balloon types "A" and "B", and discusses the key problems which centered about the causes of descent. Dimensions, and details of construction and manufacture are included, as well as data on height-maintaining apparatus, bombs, and radio sonde. A history of the launchings, and comment on the development of the paper bombing balloon project has been published by FEAF. (Air Technical Intelligence Group, Advance Echelon, FEAF, Report No.138 (23 November 1945) by Dr. W.H. PICKENING of the AAF Scientific Advisory Group).

Major Ray V. JONES of GHQ Technical Intelligence Section has made a most complete study of the balloons as a weapon. His interview with Major General S. KUSABA of the Ninth Military Laboratory revealed that the project was calculated to be nothing more than a stimulus to home morale. Design was exclusively that of the Japanese Army, no assistance of any kind having come from the Germans. It was estimated that approximately 10% of the total of 8000 to 9000 balloons released would reach the American mainland. Operations were ordered ceased by the War Ministry because of negligible results, advent of unfavorable weather, and a shortage of hydrogen gas. Balloon bomb loads did not exceed 45 kilograms, but consisted generally of a 15 kilogram high explosive bomb and four 5 kilogram incendiary bombs, or several special 12.2 kilogram incendiary bombs. It appears that the project was never considered with much enthusiasm.

Study of these balloons in relation to meteorological use and forecasting techniques has been made by FEAF and is fully described in their report - "Investigation of Japanese Weather Service".