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# FORMOSA



**BOMB  
DAMAGE**

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REPORT OF

FORMOSA BOMB

DAMAGE SURVEY PARTY

TO

UNITED STATES STRATEGIC  
BOMBING SURVEY

10

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AUTH CGVBC  
INIT                       
DATE 2 Jan 1945

FOREWORD

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In the drive to the Japanese homeland, Formosa was neutralized and bypassed. This neutralization was accomplished almost entirely by the use of air power of both the Army and Navy. Prior to October 1944, very few allied aircraft had flown over Formosa; our air activity in that area being confined almost entirely to reconnaissance and photographic missions flown from China by the 14th U.S. Army Air Force.

In October 1944, the Third Fleet struck Formosa with a powerful Carrier Task Force in preparation for the landings at Leyte, in the Philippine Islands. Strikes were conducted over the entire island for several days. During these operations the principal targets were air force installations and shipping in the harbors. At the same time the China based 20th Bomber Command cooperated with the Navy's carrier based aviation by conducting several missions against Formosan targets with B-29's. The 14th Air Force also participated in these operations, using B-24's mainly.

The Navy again struck Formosa with carrier based aviation in the first half of January 1945, just prior to the landings on Luzon, Philippine Islands.

Starting in January 1945, Formosa became a target of Far East Air Forces, of which the Fifth Air Force was assigned the mission of neutralizing Formosa. With the exception of certain land based Navy and Marine units which conducted small strikes against targets of opportunity, from Philippine bases, action against Formosa was carried out entirely by the Fifth Air Force from the middle of January to the end of the war.

On 2 December 1945, a party was sent to Formosa to survey and assess the results of this air action against Formosa. This survey was in connection with the United States Strategic Bombing Survey. The party sent to Formosa consisted of three flying officers and one photographer from Fifth Bomber Command, Fifth Air Force; a civilian bomb damage expert of the U.S. Strategic Bombing Survey; and a U.S. Marine Corps Captain, who acted as interpreter. The party personally investigated damage in and around the following places: Taihoku, Kiirun, Giran, Suo Bay, Taichu, Shinchiku, Kagi, Heito, Takao, and Tainan. A separate report has been written on each major target visited. In addition members of the Japanese Army and Navy Headquarters as well as former officials in the Tainan government were interviewed for the purpose of ascertaining the overall effects of the air action against Formosa.

Throughout the entire survey the party enjoyed the enthusiastic cooperation of the Chinese Taiwan Garrison Forces as well as the cooperation of the Army Air Forces, China Theater. The Strategic Services Unit in China also assisted materially by making available to the party, all information of a related nature, compiled by that unit.

This information was in the form of true reports. The first was designated by that unit as YVS-5. While very little of the material contained in YVS-5 has been incorporated directly in this report, the whole of YVS-5 was used in the preparation of questions to be answered by eye witnesses and various government officials. The second report was being transmitted by the Strategic Services Unit while the bombing survey was being made. A photographic copy of that report was furnished the Survey party at the completion of the survey. At this time it was discovered that all the information in the second report was also included in documents already in the hands of the survey party and attached to this report as an appendix. To this extent a duplication of effort existed.

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## INTRODUCTION TO PART I

Part I is a general description and account of the total bomb damage to Formosa and the effect it had on the military situation in that part of the Japanese Empire. In the preparation of this description, translations of certain documents of the Japanese headquarters as well as the questioning of certain officials and eye witnesses were used as a basis.

The important ones of these translations are included in the appendix.

~~General~~<sup>Certain</sup> contradictions will be apparent between information contained in these documents and eye witness accounts. In general it has been attempted to evaluate these contributions and to present what is believed to be the more accurate information. Usually the eye witness accounts were considered more reliable than the government records.

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EFFECTS OF BOMB DAMAGE  
ON FORMOSA

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Formosa was one of the main pegs in Japan's "Greater East Asia Co-prosperity Sphere". The fruits and sugar produced in Formosa were shipped to Japan. Much of the raw materials obtained in remoter parts of the empire were at least partially processed in Formosa before shipment to Japan for manufacturing. Formosa is situated almost exactly half way between the Southernmost part of the Empire and Japan itself. It is in an excellent position to guard the shipping lanes to these parts of the Empire, and is also excellently situated to serve as a staging base for the launching of Japanese attacks and the repulsion of allied attacks at points to the south and to a limited extent at any point between Formosa and Japan itself. Formosa was equipped with an adequate electrical system and a very satisfactory railroad network (1).

In October of 1944 it was necessary to render Formosan airbases and ports as nearly inoperative as possible for the security of the impending Philippine landings. This was accomplished by the Navy carrier Task Forces with the co-operation of the China based 20th Bomber Command which was equipped with B-29's and also the 14th Air Force which used B-24's for the purpose.

In general this was accomplished by striking airdrome installations and runways and by hitting shipping in the harbors and docking facilities. In general the airdromes were rendered temporarily unusable and quite a number of aircraft were destroyed. At almost all the airdromes the permanent buildings were badly damaged. Notable among these are Shinchiku and Okayama airdromes, which were one of the six targets hit by B-29's. They carried out heavy raids with 500# demolition and incendiary bombs. At both places almost every building was either completely destroyed or damaged beyond immediate usefulness, and the airdromes were useless for weeks. At other airdromes the efficiency of operations was considerably reduced, but not sufficiently impaired to prevent large numbers of airplanes from being ferried through Formosa to Philippine bases. In all 400-600 airplanes were ferried through. (Refer to interview with Colonel Ashikawa and Major Hiura). Very few of these ever returned from the Philippines.

A sizeable amount of shipping was sunk in the harbors and some damage done to the docking facilities, but no harbor was put out of operation.

Approximately the same treatment on a smaller scale was accorded Formosa in the first part of January 1945 in preparation for the Luzon landings with somewhat smaller results.

NOTE (1) For a more complete study of the importance of Formosa and its economy, refer to Joint Army and Navy Intelligence study No. 37; United States Pacific Fleet and Pacific Ocean Areas Target Analysis and Air Target Maps for Formosa, and the Interim Report, February 1944, on Formosa by the Asst. Chief of Air Staff, Intelligence.

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In January 1945 the neutralization of Formosa was assigned to the Fifth Air Force as one of its primary missions. From 11 January 1945, when the Fifth Air Force first struck Formosa until the end of the war, Formosa was subjected to almost daily attacks. The Fifth Air Force dropped a total of 15,804 tons of bombs of all types and 107,445 gallons of napalm on Formosa in 7,709 sorties \*(2).

While the Fifth Air Force was assigned the mission of neutralizing Formosa, it was also committed to cover and support landings in the Philippines and also to cut Japanese shipping lanes along the South China and Indo China coasts and in the Formosa straits. To accomplish these missions the Fifth Air Force had at its disposal a striking force as follows: (1) Fifth Bomber Command consisting of four heavy groups equipped with B-24's, two medium groups, equipped with B-25's and habitually used as minimum altitude strafing bombardment, and three light groups equipped with A-20's. Of these last three groups one was in the process of converting to B-32's and one in the process of converting to A-26's during the last part of the bombing of Formosa. (2) Fifth Fighter Command consisting of three groups of P-38's, two groups of P-47's, one group of P-51's and two squadrons of the 3rd Air Commando Group, also equipped with P-51's. In addition the Fighter Command had three night fighter squadrons equipped with P-61's. (3) 91st Reconnaissance Wing of which one squadron of B-25's and two squadrons of P-51's were used for armed reconnaissance and bombing.

In general this force was used as follows: The B-24's for strikes against land targets on Formosa and for night and day searches of the shipping lanes. The B-25's for strikes against convoys and shipping reported by the search airplanes, and in the absence of shipping, targets of opportunity along the railroads, airdromes and isolated industrial targets in Formosa. The A-20's were used for strikes against isolated industrial targets in Southern Formosa, short range missions against shipping and for ground support in the Philippines. The fighters were used to escort some bombing missions, bombing missions as ground support and on some dive bombing and strafing missions against communications lines on Formosa.

Of the total of 7,709 sorties flown against Formosa, 31% was against airdrome installations and parked aircraft. On these missions 4,850.9 tons of bombs, most of which were fragmentation bombs and 4,175 gallons of napalm were dropped \*(2). This effort had a very strange effect on the Japanese Army and Navy Air Forces. Instead of trying to fight off our aircraft, they decided to hide and conserve their own.

NOTE \*(2) From Area Bomb Study Five, Published by 34th Statistical Control Unit of Fifth Air Force.

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Fighters from Formosan bases were sent up to intercept attacking Allied planes in October, but not in as great numbers as the Japanese would have liked to send due to almost complete surprise by U.S. Navy airplanes. But of those that did take off to intercept (about 100 to 200 altogether), large numbers were destroyed. (It is almost impossible to ascertain the exact number destroyed. At each base visited by the survey party, the Japanese officials interviewed, stated that most of the airplanes which took off, landed at other airdromes. However, at no field visited by the party had any substantial number of airplanes landed after having taken off from different bases to intercept American attacks. Since most of these airplanes never returned to the original bases, it is believed that most of them were destroyed. Certainly enough of them were destroyed to make a lasting impression on the Japanese High Command). After that the air defense of Formosa was practically given up. In January very few fighters took off to intercept. Those few also met with the same rough treatment, so that the first part of February we had complete control of the air. Due to the frequency of attacks, the Japanese 8th Air Division (in control of all Army aircraft) issued an order prohibiting flying between the hours of 0700 to 1600 daily. A similar order was put into effect by the Navy.

This did not mean that the Japanese were short of airplanes, because they had a total number of about 600 at this time. But they elected to save these airplanes and fuel (about 6,000 kiloliters at this time) for an all out defense of the island in case of a landing. When it became apparent that no landing would be made, this plan was changed to call for a mass suicide attack on American air force installations and shipping at Okinawa during the expected Kyushu landings.

With this plan in mind, all the available airplanes were dispersed and hidden at great distances from the airdromes and dummy planes placed on and near the airdromes. This dispersal system was very elaborate. Some times airplanes were towed as far as 15 kilometers away, often even floated across rivers, and sometimes partially dismantled. This, of course, made maintenance a great problem and rendered most of the airplanes available only on long notice. In some cases several days were required to return a given airplane to the airdrome.

No reliable figures were obtained by the survey party on the total number of aircraft destroyed and damaged on the ground. It is possible that even the Japanese Headquarters did not know accurately. (3) But assuming that the individual airdromes visited by the party are representative of all the airdromes on Formosa, it is estimated that in October, 1944, 200-300 Japanese aircraft were destroyed both on the ground and in the air, and that from January 1945 on, probably about 150 were destroyed or damaged beyond repair by Fifth Air Force Bombing and strafing.

3) Note the difference in figures submitted by Lt. Col. Ishikawa, Major Miura, and those obtained from eye witnesses at the various airdromes.

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At the end of the war there were about 700 airplanes on Formosa in various states of repair but all termed as serviceable. The Japanese estimate that from 20% to 40% could fly at any one time after being towed to airdromes from their distant dispersal areas. (4)

From the standpoint of airplanes destroyed, the effort expended on airfields seems rather unsuccessful. But from the standpoint of the great inconvenience it caused the Japanese and the consequent reduction in maintenance efficiency and the number of practice flights, it appears wholly justifiable.

The policy of hiding and holding aircraft, which was forced on the Japanese, prevented their using their air power in any large scale mass raid, but it did not prevent their carrying on suicide missions, mainly against Okinawa. Generally these missions were carried out in groups of 6 airplanes, two of which were escort aircraft, and were not intended to crash dive, but to guide the suicide planes to their target area, observe the results if possible and then return to their base (5). They proceeded to the target area at low altitude to avoid radar detection and then carried out the crash dives in late evening or early morning to minimize chances of interception. In all, the Japanese Navy flew 135 suicide sorties, 21 of which are known to have succeeded. The over all percentage of successful missions was 15%. Deducting escort airplanes the percentage would be 25%, which means that three out of every four airplanes which took off on suicide missions either returned for various reasons or were shot down before accomplishing the mission. These missions originated from Giran and Shinchiku mainly. The Japanese Army conducted 305 sorties, 54 of which returned and 31 of which were escort sorties. The overall percentage of successful missions was 6%. Deducting returns and escort airplanes the percentage of known successes was 12% (6). So that the Army's rate of success was less than half that of the Navy's. Both of these figures pay tribute to our Okinawan defense against enemy air attack.

With the exception of these suicide missions, the Japanese air activity was limited to practice flights of three or four airplanes at each airdrome in early morning or late evening, a few reconnaissance flights, and a negligible number of regular bombing missions, usually carried out by one or two airplanes.

For a more detailed description of air activity refer to interviews with Major Miura, Lt. Col. Ishikawa and the notes on Shinshiku and Okayama airdromes.

- NOTES: (4) Interview with Lt. Col. Ishikawa and Major Miura.
- (5) Interview with commander of Giran Airdrome.
- (6) Figures from report obtained from Japanese Headquarters at Taihoku.

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Of the factories of all types on Formosa, almost all were attacked, and the ones receiving the greatest damage were the sugar and alcohol industries. In the report obtained from Japanese Headquarters in Taihoku there are two alcohol plants listed as completely destroyed; 15 sugar refineries completely destroyed, 9 moderately damaged, and 4 slightly damaged. Undoubtedly there are some important factories missing from this report. Notable among these is the alcohol and butanol plant at Kagi, which was extensively damaged by fire and forced to stop production. Also from the observations of the survey party it is believed that the number of plants listed as completely destroyed is exaggerated. It is believed that all plants whose production was completely stopped by bombing are listed on the report as completely destroyed. In all it can be safely stated that the production of alcohol was reduced by at least 75%.

The sugar industry is seasonal, operating from December through April of each year. Many plants were destroyed at the end of the season or just after the season had closed, but the industry is greatly curtailed this year, operating at about 30% capacity. However other large factors tending to curtail production were:

- (1) Lack of rail transportation for the cane and refined sugar.
- (2) The change of a great deal of farming land from cane crops to rice.

This last factor was produced largely by lack of shipping. The majority of sugar was exported to Japan and some rice was imported from China. The lack of shipping forced a change in crops in an effort to make Formosa self-sufficient. Actually the destruction of sugar refineries had little effect on the production of sugar during the war, but since almost every sugar refinery also operated at least a small alcohol distillery on a year-round basis, their destruction greatly reduced the overall production of alcohol.

The production of metals and industrial chemicals was for all practical purposes completely halted, either by direct destruction of the plants or by denying them transportation for the necessary raw materials. The oil refining was reduced by an estimated 30% to 40% by direct bombing of refineries and storage facilities and later reduced to an almost negligible quantity by denying shipping for the crude oil from the Japanese holdings to the South. The amount of raw petroleum produced from Formosan wells is very small indeed and quite insufficient to keep the refineries in operation.

Other industries in Formosa were also greatly reduced due to bombing, but it is believed that their reduction had little effect directly on the military situation. All important industries had undertaken a dispersal program within Formosa, but this was never completed. The actual moving of any substantial amount of industry out of Formosa was not seriously attempted due to lack of shipping.

The power system on Formosa was fairly well disrupted as can be seen more clearly from the report on electric power. Many localities were often without power. The destruction of the transformers and

oil switches at Jitsugetsu-Tan generating plants deprived the Japanese of almost three-fifths of the power on Formosa, for the duration of the war. Even in December 1945 one plant is still completely out and the other operating at only 20% capacity.

- The 3 principal consumers of electrical power on Formosa were:
- (1) Japanese Aluminum Mfg Co. plant at Takao
  - (2) Asahi Electro Chemical plant at Takao
  - (3) Kiirun factory of Taiwan Electrical and Chemical Mfg. Co.

Together, these plants consumed about 60% of all electrical power on Formosa. However, they were all put completely out of production by direct bombing prior to the destruction of Jitsugetsu-Tan power plants. Thus actually the destruction of Jitsugetsu-Tan power plants had little lasting effect directly on Formosan industries. Rather their destruction acted to prevent any possible resumption of operation on the part of these 3 main industrial plants. (In addition these plants were also suffering from lack of raw materials due to the shipping situation). In general it can be said, bombing affected industry in three principal ways:

- (1) Direct destruction by bombing.
- (2) Reduction of available electrical power.
- (3) Reduction of available transportation of all types. Particularly shipping.

The Fifth Air Force flew 570 sorties and dropped 791.2 tons of bombs on railroads and rolling stock. This comprised 7% of the total effort by Fifth Air Force against Formosa and produced very noticeable results. Of the locomotives hit on Government controlled railroads, 7 were completely destroyed \*(7), 8 heavily damaged, 169 moderately damaged, and six slightly damaged for a total of 198 locomotives destroyed or damaged. Of this number only 14 were repaired prior to the end of the war and only 16 were repaired by December, 1945. In other words, the Japanese railroads were deprived of the use of 184 locomotives on the Government operated railroad (Only through rail transportation on the island). This was approximately half of all the Government operated locomotives. 32 passenger cars were completely destroyed, 51 heavily damaged, 115 moderately damaged, making a total of 358. Of this total, only 42 were eventually repaired as of December 1945. 147 freight cars of all types were completely destroyed, 70 heavily damaged, 267 moderately damaged, and 824 slightly damaged, totaling 1808, of which 173 had been repaired as of December, 1945.

All of this constituted quite a sizeable portion of all the rolling stock owned by the railroad transportation system of Formosa.

NOTE \*(7) All figures on railroads obtained from reports submitted to Central Railroad office in Taihoku.

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In addition, bridges, marshalling yards and repair shops were bombed. Probably the most successful single mission was accomplished by a lone B-24 one night at Kagi. One bomb was dropped in the marshalling yard adjacent to the main station, striking a string of three freight cars loaded with explosives. The explosion destroyed 4 to 6 lanes of track for a distance of about 60 meters, blew other cars over each other onto the other lanes of track and seriously damaged the station. Of approximately 18 lanes of track, only one was left passable. Traffic was halted for several hours and impaired for several weeks due to difficulty in clearing and repairing tracks.

The over all affect of bombing on railroad transportation can best be judged by reference to the table on tons and kilometer tons of freight and war goods carried each month. (Attached is a copy of this table). The heaviest traffic of 1944 occurred in December, when 109,920,887.0 kilometer tons were transported on both the main line and the Taito railroad line. In June of 1945 the traffic had fallen off to 21,937,304.4 kilometer tons, or less than 20% of the 1944 peak.

By far the most effective damage was done to shipping. This was the Achilles' heel of the Japanese Empire and this fact was very conclusively demonstrated in the battle of Formosa. Of the large ports in Formosa, Takao was eventually rendered useless for ships of greater than 200 tons, Kiirun could accommodate only one or two large ships and Karenko was very materially reduced in capacity. But probably the most effective means of isolating Formosa was the sinking of ships enroute. This was accomplished by many units over a long period, e.g. submarines, carrier task force sweeps and in some cases by surface action. But it remained for the day and night vigilance of the Fifth Air Force to completely isolate Formosa.

Throughout the first part of the war 60-70 ocean going vessels per month docked at Formosan ports. In October, 1944, the number remained 60-70. In January, 1945 it was ~~also~~ still 60-70, but in the middle of January the Fifth Air Force was operating full scale from their Philippine bases. By February the rate of sinking enroute reached two-thirds of all ships attempting to come to Formosa or return from Formosa, and the rate continued to rise until finally all attempts to maintain shipping contact with Formosa were abandoned. In May only one ship arrived; a ship of 5,000-6,000 tons loaded with military supplies from Japan and returning with sugar. This was the last ship that docked at Formosan ports until the end of the war. In May the Headquarters of the Shipping Engineers (Charged with establishing priorities, loading and unloading ships) was dissolved. The high ranking officers flew back to Japan and the rest of the personnel was reassigned to other units in Formosa.

The severing of shipping lanes affected almost every phase of the Formosan situation. The metal industries could not get raw materials; neither could they get the processed metals to Japan. Hardly any finished products were produced in Formosa, so the metal itself was almost useless. Very little petroleum came from Formosan

wells, and it was impossible to get crude oil in, which left the refineries embarrassed. Refined sugar or alcohol could not be shipped to Japan and most of it could not be utilized in Formosa. This situation was alleviated somewhat by the program of shifting cane crops to rice, but this program had not progressed sufficiently to make the situation satisfactory. The military installations were cut off from their sources of supply. The most urgently needed items were:

- (1) Replacement parts for aircraft.
- (2) Aviation fuel.
- (3) Anti-Aircraft ammunition (to a certain extent).

The only transport available was a limited amount of air transportation, which was altogether insufficient.

With the exception of the planned suicide attacks during a possible Allied landing, Formosa was all but completely isolated and neutralized at this stage. After reading the record of the interview with Lt. Col. Ishikawa, it is extremely doubtful whether even this suicide attempt would have met with any degree of success. It is to be noted that the available aircraft were not to be used in one mass effort. In fact it is very doubtful whether this would even have been possible in view of the great dispersal program and the resultant state of disrepair of the aircraft. If a small effort had been attempted, even granting that almost complete surprise were attained, the rest of the operation could have been halted by American fighter protection and bombing of Formosan airfields. The greatest success the Japanese could have obtained from this suicide attempt would have been a temporary decrease in the amount of Okinawa based aviation available for the protection and support of a Kyushu landing. It would have required extremely good timing and good fortune on the part of the Japanese for this temporary decrease in American airpower to have proved decisive.

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The following points seemed apparent to members of the Formosa Bombing Survey Party. Some of them have undoubtedly been brought out in surveys of other bombed areas, but it is believed that they are worthy of note and may not be clearly apparent in the text of this report.

1. There is a definite conflict in many instances between parts of the same information received from different sources. An example of this is the small delay in rail traffic according to the report on railroad damage submitted by Japanese Headquarters on Formosa, contradicted by eye witness accounts at Kiirun, Kagi, Taichu, and Shinchiku. Another example is the small number of aircraft said, by Lt. Col. Ishikawa and Major Miura, to have been destroyed on the ground as against the comparatively large number enumerated by the commanding officers of the various airdromes visited. In general, the eye witness accounts are believed to be the more accurate on these and similar cases.

2. In view of the foregoing it is believed that in many respects the Japanese Headquarters had an erroneous picture of the condition of their own troops. It is possible that some decisions were made in the higher echelons of command without the benefit of an accurate estimate of the situation.

3. A heavy concentration of bombs on a single mission seems the best solution when it is desired to "knock-out" a permanent installation such as the Okayama aircraft repair and overhaul depot or the Jitsugetsu-Tan power plants. However, when it is desired to deny the use of certain facilities such as ports, airdromes, and railroads, very frequent attacks by a smaller number of aircraft, if necessary, seems in general to be the most economical solution.

4. Many of the bombs were incorrectly fuzed. Instantaneously fuzed bombs seem most efficient against frame buildings, while a longer fuze setting seems more destructive against reinforced concrete structures. These instances of incorrect fuze settings were largely due to the fact that many of the targets hit were secondary targets, the fuze settings having been chosen for the primary target.

5. Incendiary bombs were very effective against factories. A direct hit with a G.P. bomb often damaged only a small part of the machinery. However, when a large fire was started, the machinery was usually extensively damaged.

SUMMARY OF AIR EFFORT USED AGAINST FORMOSA.

Formosa was attacked by carrier based airplanes of the United States Fleet in October 1944, and again in January 1945. In both of these engagements, the action continued for several days. No accurate figure is available on the effort used, but it is believed that several thousand sorties were flown and that the average bomb load was about 1,000 pounds.

The Fourteenth Air Force conducted an extensive photographic coverage of Formosa, but made few attacks against land targets on the island. No accurate figures on these attacks are available in the Far East, but it is believed that about three missions were conducted in October 1944, each mission employing about one group of B-24's. It is estimated that approximately 600 tons of bombs were expended on these missions.

The 20th Bomber Command attacked Formosa in October 1944, and again in January 1945. The following is taken from a teletype message from the Commanding General, United States Army Strategic Air Forces, giving the statistics of these missions.

14 OCTOBER 1944.

OKAYAMA A/C PLANT, YOKKYAMA, FORMOSA.  
A/C BOMBING: PRIMARY, 103; OTHERS, 12.  
TOTAL TONS RELEASED 651.

DISPOSAL ON TARGETS TOTAL BOMBS

TYPES OF BOMBS	FUSING		OKAYAMA	OTHERS
	NOSE	TAIL		
500 LB GP M-43 & M-64	.1	.01	1519	175
500 LB INCEND M-76	INST	N.D.	1085	120

XX BOMBER COMMAND MISSION NR11

16 OCTOBER 1944  
OKAYAMA A/C PLANT, HEITO A/D FORMOSA.  
A/C BOMBING: PRIMARY, 43; OTHERS, 29.  
TOTAL TONS RELEASED: 368

DISPOSAL ON TARGETS. TOTAL BOMBS

TYPES OF BOMBS	FUSING		OKAYAMA	TAKO	TOSHIEIN	HEITO	OTHERS
	NOSE	TAIL					
500 LB M-43 & M-64	.1	.01	500	55	24	450	161
500 LB M-76	INST	N.D.	335			187	117

XX BOMBER COMMAND MISSION-NR 12  
 17 OCTOBER 1944  
 MAIN GULY, TOKO, FORMOSA  
 A/C BOMBING: PRIMARY, 10: OTHER 14  
 TOTAL TONS RELEASED: 84.8

TYPES OF BOMBS	FUSING		TOTAL BOMBS	
	NOSE	TAIL	T.K.O	OTHERS
500 LB H.F.	.1	.01	218	218
INC ND G.P.				
500 LB M-43 & M-64	INST	N.D.	121	56
500 LB INCEND M-76				

XX BOMBER COMMAND MISSION NR 26  
 9 JANUARY 1945  
 N.W. WHARVES, KIIRUN, FORMOSA  
 A/C BOMBING: PRIMARY, 39: OTHER 6  
 TOTAL TONS RELEASED: 286

TYPES OF BOMBS	FUSING		TOTAL BOMBS	
	NOSE	TAIL	KIIRUN	OTHERS
500 LB G.P.	.1	.01	564	87
500 LB INCEND	INST	N.D.	580	92

XX BOMBER COMMAND MISSION NR 28  
 KAGI A/F AND HEITO ARSENAL, FORMOSA  
 A/C BOMBING: PRIMARY, 55: OTHER 22  
 TOTAL TONS RELEASED: 367.8

TYPES OF BOMBS	FUSING		TOTAL BOMBS		
	NOSE	TAIL	KAGI	HEITO	OTHERS
500 LB M-26	14	S.D.	240	30	330
500 LB M-64	.1	.01	1076		255
500 LB M-76	INST	N.D.	179		50

XX BOMBER COMMAND MISSION NR 29  
 17 JANUARY 1945  
 SHINCHIKU A/F, FORMOSA  
 A/C BOMBING: PRIMARY, 77: OTHER, 9  
 TOTAL TONS RELEASED: 522

DISPOSAL ON TARGETS	TOTAL BOMBS
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TYPES OF BOMBS	FUSING		SHINCHIKU	OTHERS
	NOSE	TAIL		
500 LB M-26	14	S.D.	210	80
500 LB M-64	.1	.01	1459	198
500 LB M-76	INST	N.D.	459	11

(RETURNED AND JETTISONED BOMBS NOT INCLUDED)

The Fifth Air Force conducted attacks against Formosa from January, 1945, until the end of hostilities. 7,709 sorties were flown and 15,804 tons of bombs were expended on these attacks. The statistics of these efforts are presented in Area Bomb Study Five, published by the 34th Statistical Control Unit.

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## INTRODUCTION TO PART TWO

Part two is a detailed report on the targets visited by the bombing survey party. The targets covered in this report are only a few of the targets attacked on Formosa. However, it is believed that most of the important ones have been covered. These targets were chosen with a view to presenting a cross section of the different types of targets attacked. At least one of each significant type will be found in this section. It is believed that the data on these specific targets together with the information on the bombing as a whole presents a reliable basis on which to judge the effectiveness of the bombing of Formosa.

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TAIHOKU CITY

Taihoku, capital and largest city of Formosa, was the Civil and Military administrative Nerve center of Formosa as well as several other Japanese occupied territories, e.g. (Hainan and the Ryukyu Islands)

The area occupied by government buildings was the target of Fifth Air Force B-24's on three principal raids, 6 May, 24 May, and 31 May 1945. Most of the government buildings as well as residences in the vicinity were either destroyed or extensively damaged on these dates. On 6 and 31 May 1945, the electric building received hits by incendiary and 1,000 # demolition bombs, burning the interior and melting and twisting metal framework. The Japanese Army Headquarters building was extensively damaged by four direct and several near misses by 1,000# instantaneously fused bombs on 31 May 1945. The headquarters was forced to move to a new location as a result of this damage.

On 24 May 1945, the Governor General's office building was hit by 1,000# bombs and the building was gutted by flames. Approximately 20 civilian government employees suffocated in the cellar bomb shelter under this building from the fire and smoke of the burning building. In addition, the Vice Governor General's home and several other buildings immediately in front of the office building were destroyed on this raid. The Governor General's home, about one half mile in front of the office building also received hits.

In addition to the damage done by direct bombing, a project was undertaken at the direction of the municipal government to cut large fire lanes through the residential area of the city. Many buildings were razed but the project was not completed prior to the end of the war.

NOTE: Most of the above information on damage and dates of bombings was obtained from Mr. Y. Kojima, a civilian official in charge of Japanese military air transportation, as well as several civilian eye witnesses.

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29-FORMOSA BOMB SURVEY-TAIHOKU CITY  
 INTERIOR OF JAP HEADQUARTERS 7 DEC. 1945-2

Rear wing of Japanese headquarters showing effects of direct hit by 1000 lb. bomb on 31 May 1945.



29-FORMOSA BOMB SURVEY 7 DEC. 1945  
 BOMB DAMAGE - INTERIOR OF JAP HDQS. -3  
 TAIHOKU CITY

Another part of the same building. In background is the Governor General's office building.

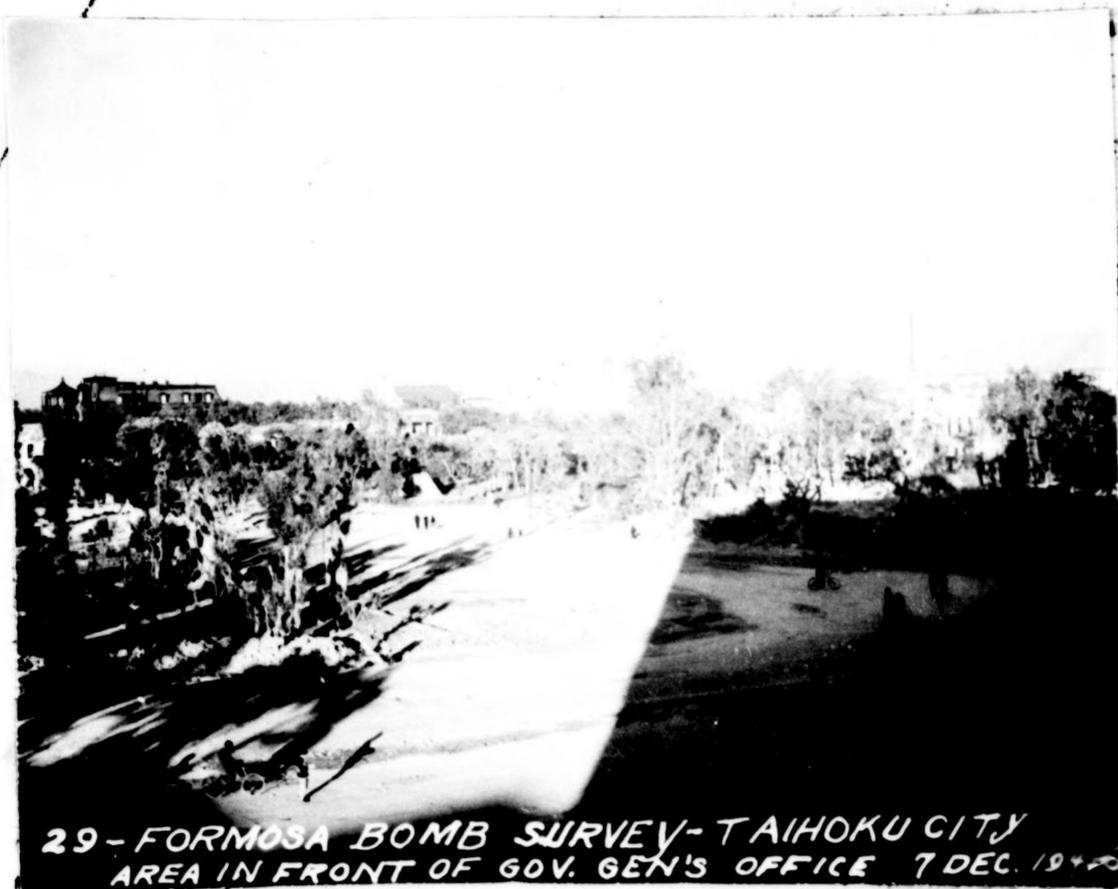
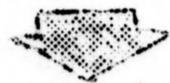


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Governor General's office building. Twenty people were suffocated in the basement when this building was bombed and burned.

View from front of Governor General's office. The residences and small buildings which occupied this area were completely destroyed.





29-FORMOSA BOMB SURVEY-TAIHOKU CITY  
ELECTRIC CO. & LIBRARY BLDGS. 7 DEC. 1945-4

A direct hit by a 1000 lb. bomb did this damage to the Electric Co. Building. (Foreground) Library Building in rear was destroyed by fire.

Chinese residential section on west side of the city. This area was being cleaned as a fire break.



28 FORMOSA BOMB SURVEY-TAIHOKU CITY  
BUILDINGS REMOVED FOR FIRE BREAKS NEAR AIR STATION

## MATSUYAMA AIRDROME

Matsuyama airdrome, situated about three miles north east of Taihoku, had concrete runways and aprons; three steel frame hangars, 150' x 300'; concrete operations and administration buildings and numerous wooden repair shops and storage buildings. South of the airdrome was a grass strip under construction. It was intended as a Navy airfield but never used except for emergency landings. Scattered about the field, particularly north of the runways were large numbers of dispersal shelters, some of the concrete arch type but the majority merely earthen revetments. A few heavy concrete pillboxes were situated along the main runway.

All of the hangars and principal buildings were destroyed or damaged sufficiently to render them unusable with the exception of one operations building. Two of the hangars were structurally intact. The aprons and runways show evidence of an extremely heavy density of 20% fragmentation bombs.

The following information was derived largely from an interrogation of Captain Makamura, airdrome and aircraft maintenance officer, who was stationed at Matsuyama throughout the bombing.

Matsuyama airdrome was used by Japanese Army fighters, bombers and transport aircraft. Primarily because of the bombing, no suicide attacks were launched from this field. However, some fighter escort for the suicide missions were flown from here.

(In an interview on a later date with Lt. Colonel Ishikawa in Taichu, reasons as follows were given for the Japanese not using Matsuyama as a suicide base: (1) The field was too near a large town and too well known, there being more chances for leakage of information. Bases for suicide missions were habitually located in isolated parts of Formosa. (2) The runway at Matsuyama was not the required 4,500' by 360', necessary for takeoffs with heavily loaded aircraft allowing leeway for mistakes of inexperienced suicide pilots.

During the Philippine campaign 2,000 to 3,000 Japanese aircraft were ferried through Matsuyama in route to Philippine bases. Forty or fifty of these planes were destroyed as a result of bombing by U. S. bombers. Some of them not damaged by bombing were unflyable due to mechanical trouble. Most of these planes had never been test flown since leaving factories. Only an estimated 40% of the planes leaving Japan actually reached the Philippines. The other 60% were either lost in U. S. bombings, lost in operational accidents or were forced to remain at one of the airdromes enroute, due to mechanical trouble.

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## Matsuyama Airdrome

The first raid on Matsuyama airdrome was made on 12 October 1944, by approximately 200 carrier based aircraft of the U. S. Navy. Every building except one operations building was destroyed or damaged at this time by 500# or 1000# bombs. 14 or 15 airplanes were also destroyed on this raid. Navy planes raided again on 18 January, 1945, and destroyed four of five aircraft on the ground leaving approximately 45 or 46 aircraft serviceable, most of them fighters.

In the October raid not a single fighter took off to intercept and very little anti-aircraft fire was brought to bear, due to complete surprise. On 18 January, air raid warning was sounded but only a few fighters were air borne by the time of the attack. However, a better dispersal system had been effected and anti-aircraft protection had been improved.

After 18 January 1945, Matsuyama airdrome was raided almost every day and night by Fifth Air Force bombers, which usually dropped 20# fragmentation bombs. This necessitated an elaborate dispersal system. In addition to dispersal areas nearer the airdrome, some airplanes were moved to the foothills south of the airdrome; floated across the small stream to the northeast; and still others were flown to Taihoku South Airdrome (South of the city). This wide dispersal system and constant bombings made maintenance a problem, especially since the airplanes were very seldom flown. Usually no more than 40% of the available airplanes were serviceable.

In spite of this elaborate dispersal system, many airplanes were damaged by the bombings. One night a B-24 dropped fragmentation bombs at and around the intersection of the main Taihoku-Kiirun highway with the entrance road to Matsuyama airdrome and destroyed between eleven and thirteen bombers. Other aircraft parked in the east portion of the airdrome were destroyed, but those parked along the west edge were seldom damaged. In all, approximately one hundred airplanes were destroyed or damaged at Matsuyama from 18 January 1945 to the end of hostilities. Despite great effort by all available maintenance personnel, only twenty of this number were finally repaired.

At the end of the war thirty airplanes remained at Matsuyama airdrome. It is presumed that they would have been used in suicide attacks on Okinawa during the Kyushu landing.

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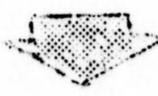


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Remaining serviceable bombers and transports. During the months when Matsuyama Airdrome was being subjected to frequent bombing attacks, airplanes were dispersed at the foot of the hills in the background.

One of the dispersal points near hills shown in preceding picture. This airplane was damaged beyond repair by falling off an improvised jack and subsequent corroding of engine and accessories. This is typical of maintenance problems resulting from policy of wide dispersal.



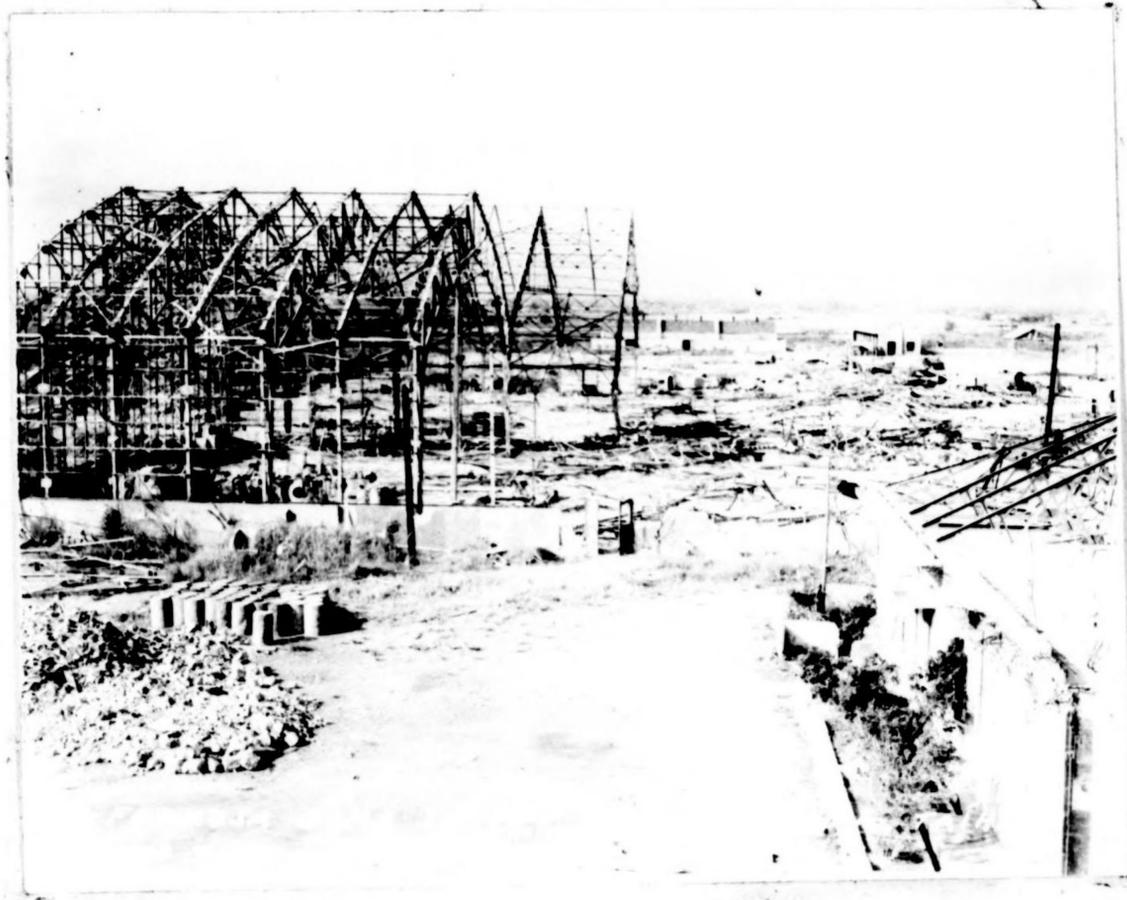
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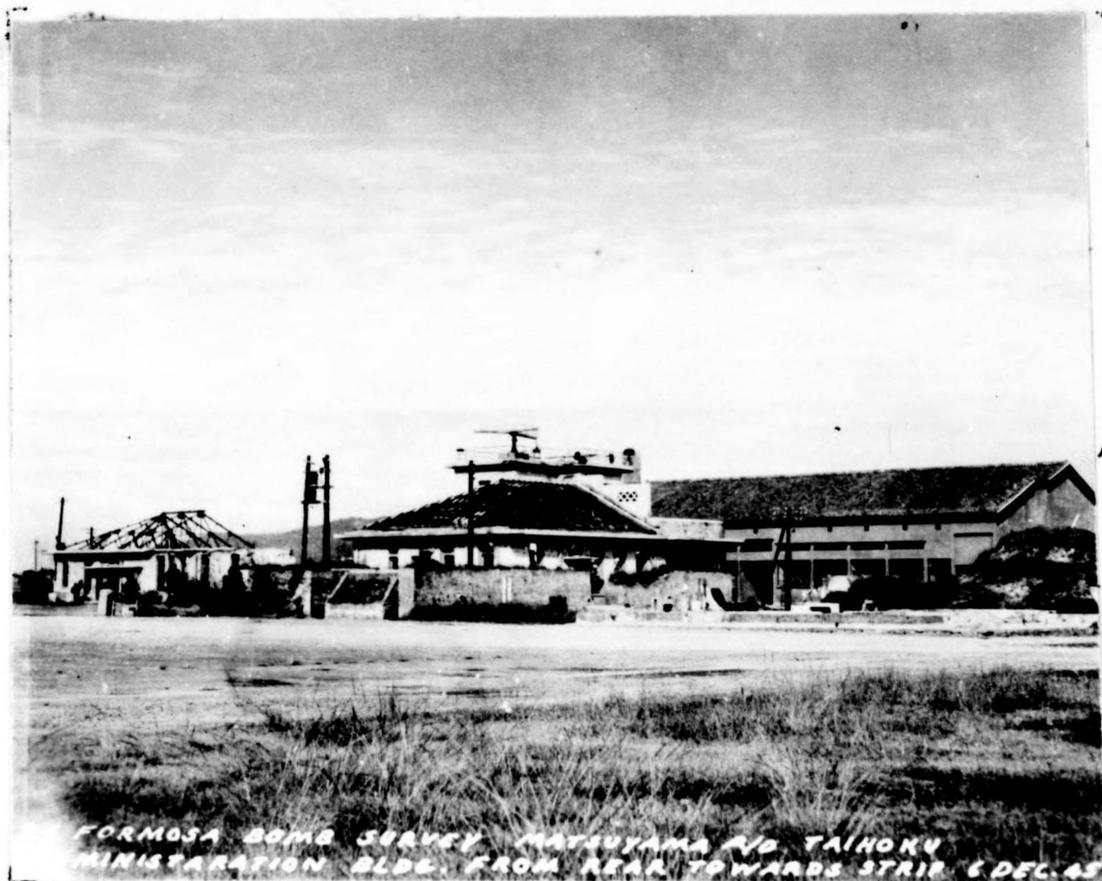


Close up of damaged hangars as seen from atop administration building. Remains of airplane burned in hangar are clearly visible at left.

Former site of maintenance hangar burned in attacks of October 1944. Hangars with sides and roof blown off and administration building in background.



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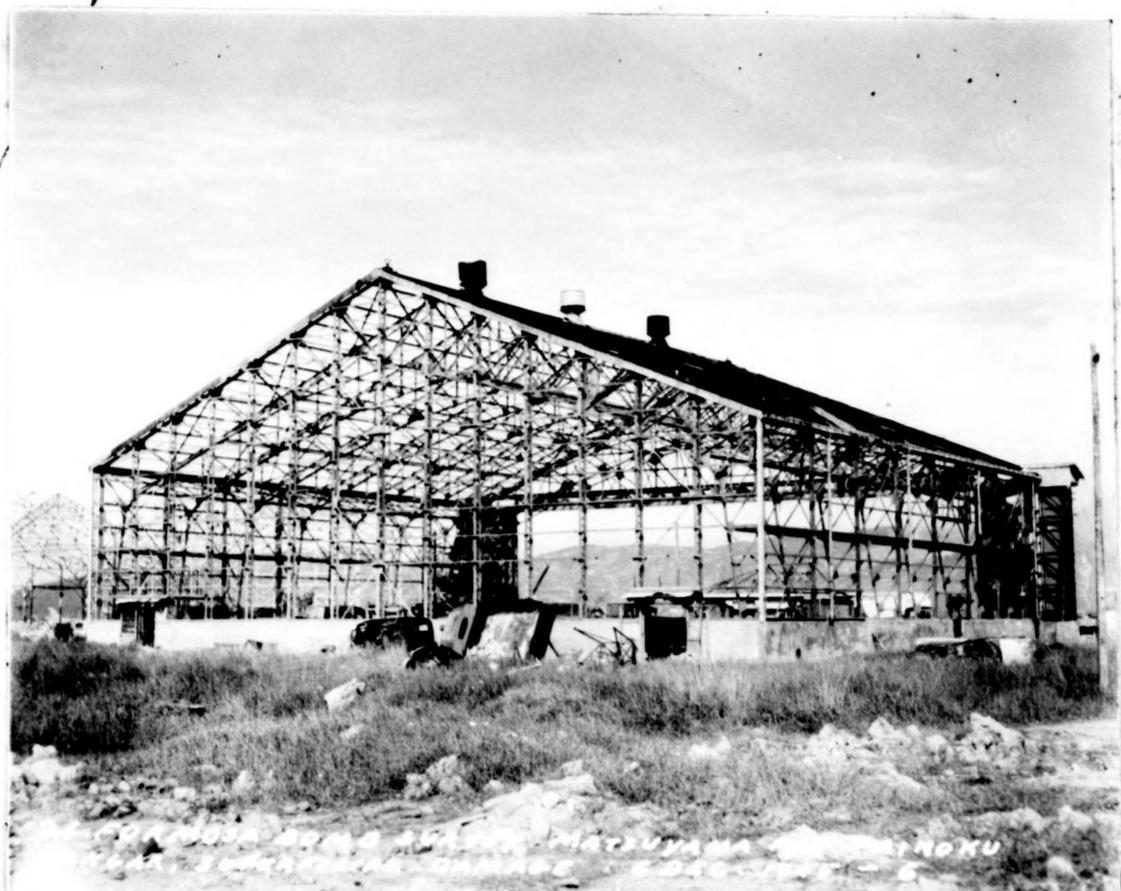
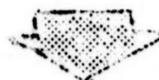


FORMOSA BOMB SURVEY MATSUYAMA AB TAIHOKU  
ADMINISTRATION BLDG. FROM REAR TOWARDS STRIP 6 DEC. 45

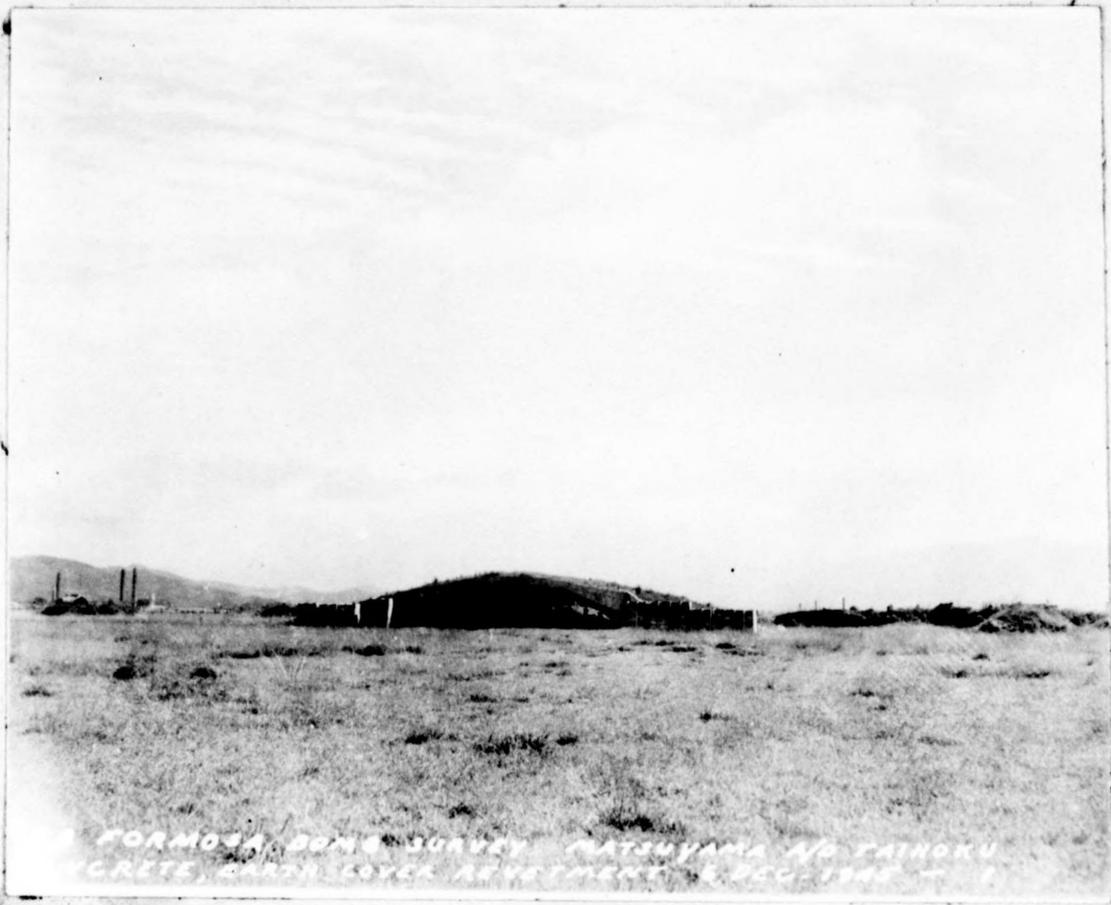


Partially damaged administration building. Concrete apron and runway show evidence of heavy concentration of 20# fragmentation bombs dropped in attacks from January through July 1945.

One hangar remains, stripped of roofing and walls, but only slightly damaged structurally.



FORMOSA BOMB SURVEY MATSUYAMA AB TAIHOKU  
REAR STRUCTURAL DAMAGE 6 DEC 45



FORMOSA BOMB SURVEY MATSUYAMA AFB TAINOKU  
 CONCRETE, GARTH COVER, AIRFIELD, 5 DEC 1945 - 1

Remaining serviceable fighters parked along west side of runway. Dispersal area and small factory are visible in background.

One of several concrete covered maintenance shelters in northwest area of A/D. Such shelters are capable of accommodating two or three airplanes at one time.



FORMOSA BOMB SURVEY MATSUYAMA AFB TAINOKU  
 CONCRETE, GARTH COVER, AIRFIELD, 5 DEC 1945 - 2

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### TAIHOKU SOUTH AIRDROME

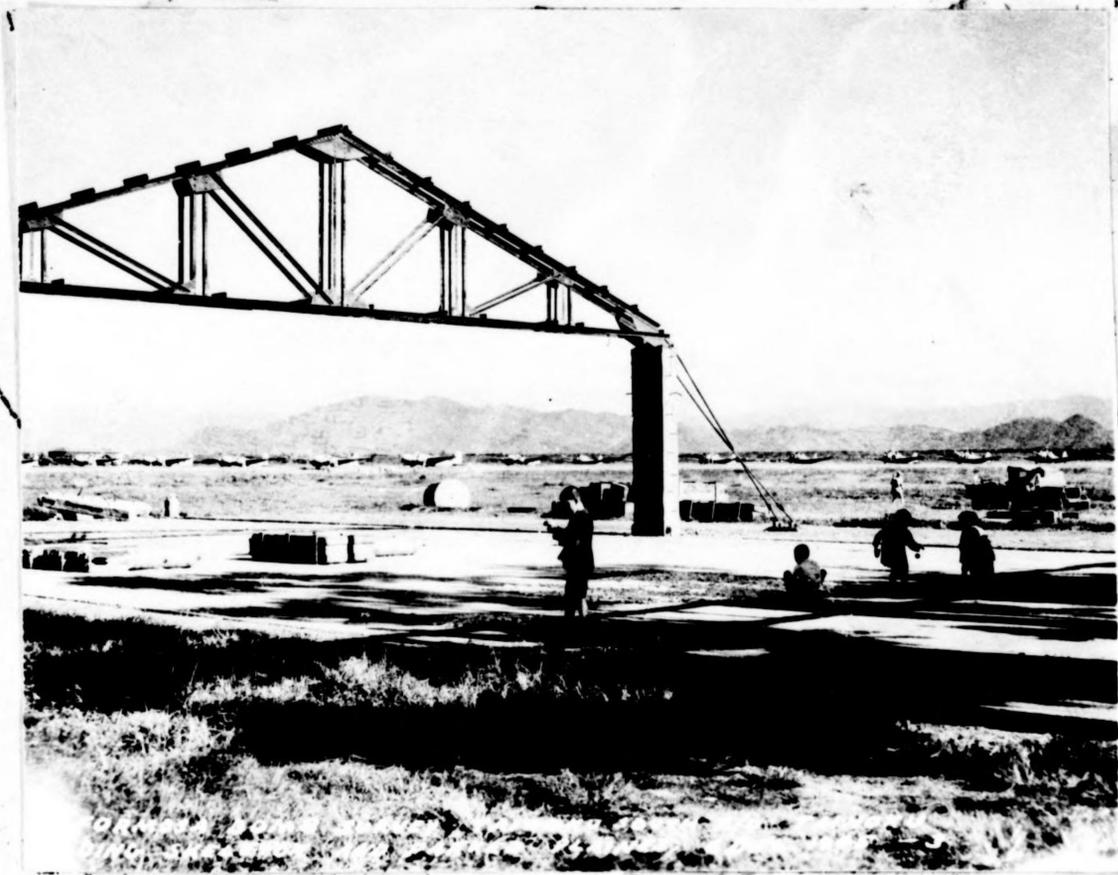
A single grass strip running northeast to southwest, with a small hangar 1,000 feet northwest of the strip, is the extent of facilities of Taihoku South airdrome. The one hangar has been dismantled. This airfield was used for glider training before the war, but in January 1945, due to our constant and heavy bombing of Matsuyama airdrome, Japanese were forced to use this field for dispersal of aircraft.

\*Taihoku South airdrome was raided only two times. First on the fifth of July 1945, again on the seventh. Both raids were by B-24's. At the time of the raids there were 30 aircraft based here. All were twin and single engined fighters and dive bombers. All damage was near the south end of the runway on both sides. Seven planes were destroyed on the West side by the first raid of 22 B-24's. One bomb landed in the kitchen of a primary school northwest of the airdrome and killed twenty of the one hundred and fifty Japanese soldiers billeted there. One twin engined fighter east of the south end of the runway and two single engined fighters 500 feet west of the center of the runway were damaged on 7 July. One of these was repaired.

No suicide planes took off from the field but one pathfinder aircraft did take off to lead a suicide flight.

\*NOTE: Most of the information on this airdrome was obtained by an interview with 2nd Lt. Yonamoto, refueling officer of the field during the war.

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Primary school about one half mile from Taihoku South Airdrome. This school was used as barracks by Japanese. Aircraft engines in foreground came from burned airplanes at Taihoku South Airdrome.

This, the only hangar at Taihoku South Airdrome, was being dismantled for camouflage purposes. Not all the airplanes in the background were here during the war. Many were flown here later, to be turned over to the Chinese Air Force.



## KIIRUN CITY & HARBOR

Prior to October 1944, Kiirun was a city of 100,000 population (of which 25% was Japanese) and the largest and most important harbor on Formosa. 18 berths, 3 dry docks, and 81,000 square meters of warehousing area were available. The harbor had 1 - 30 ton crane, 2 - 10 ton cranes, and 10 - 1½ ton cranes; and was capable of handling 3½ millions tons of cargo per year. Kiirun was connected to Taihoku by 3 railroad lines and also to Giran by 1 railroad line. The Taiwan Electrical and Chemical Manufacturing Company consumed more than seven times the total electrical energy used by Taihoku, a city of 500,000.

\*Kiirun was first attacked by Navy carrier based planes in October 1944. The extent of the damage of this strike is as follows:

A. 15% reduction of the out-put of the Electrical and Chemical Manufacturing Company.

B. Production at the steam electric power plant south of Kiirun was entirely stopped.

C. Warehouses around the inner harbor were damaged.

Carrier planes again attacked shipping in the harbor on 10 January 1945, damaging the Electrical and Chemical Manufacturing Company.

The Fifth Air Force attacks began 2 February 1945, and continued almost daily and nightly through 19 June 1945. The surveying party inspected the Kiirun city and harbor areas on 7 December 1945 and found the following damage and results of Fifth Air Force bombing:

(1) 90% of the buildings were destroyed on the east side and around the south end to one third the distance north on the west side of the inner harbor. Out of the total of 18 berths, towards the end of the war only 6 to 9 were available for use. Of the 3 dry docks, 1 was incapacitated directly by bombs and the second suffered damage to the pump house, rendering the dock itself useless. The third dry dock (10,000 ton capacity) was under construction but as a direct result of the bombing attacks, was never completed.

\*NOTE: Much of the information contained herein, and the substantiating data attached was obtained from Mr. Shih Yon Sen, present mayor of Kiirun; Mr. Muruoka, former mayor of Kiirun during the war; and Mr. Shu Jun-Zo, the harbor director.

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## Kiirun City and Harbor

Of the 81,00 square meters of warehousing space only 10,000 were totally destroyed by bombs; however, a large percent of the remaining warehousing is of little value as concussion and flying debris has destroyed practically all doors, windows, and skylights and in many cases damaged roofs also. Of the 13 cranes for unloading ships, at the end of the war only 2 were in operation. The small berth or fishing boat harbor was completely demolished.

(2) There are seven sizeable merchant ships sunk in the harbor. There are also 28 smaller merchant crafts known to be sunk in the harbor. No trace of any damage to Japanese Naval ships could be found, nor could any information be obtained from the harbor officials concerning believed damage to Naval vessels. No extensive repairs were made on any ship in this harbor during the war. In the later months of the war only an average of one ship per month docked in Kiirun harbor. This was not due to the limited facilities of the harbor, but to the lack of ships.

(3) Two of the three railroad lines between Kiirun and Taihoku were severed by raids in early June. The third (cutting all rail communication between Kiirun and Taihoku) was cut later in June, and was finally repaired for operation in September. The railroad to Giran was also knocked out on the same day as the third Taihoku railroad line. The two spur lines serving the warehouse and dock area were damaged. Thus by the end of June 1945, there was no rail transportation available for the city.

(4) The Taiwan Electrical and Chemical Manufacturing Company was first hit in October 1944 by the Navy causing damage which resulted in a decrease of 15% of the production of the factory. Another raid in January 1945 by the Navy resulted in an additional 10% decrease in production. On 31 March 1945, three direct hits by Fifth Air Force bombers on vital parts of the factory, caused it to cease production completely. Mr. Mizuno, the plant manager, stated that if all materials for repairs were available, the plant could operate again in three months from this date.

(5) Kiirun suffered 267 people killed or dead from injuries and 297 injured. During the heaviest bombing approximately 70% of the population left Kiirun for protection in the nearby hills and towns. 4,332 residences alone were destroyed. Almost every municipal or government building was destroyed or damaged, and two evacuated hospitals were heavily damaged. It is estimated that 61% of the whole city was destroyed. A total of 1,504 tons of bombs were dropped, the greatest part of which was dropped at night by radar or through an undercast by radar.

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## Kiirun City and Harbor

### Observations:

The docking and port facilities were the target on most of the Kiirun missions. However, these facilities are situated in a narrow band surrounding the harbor. Since many of the bombs were dropped by radar, a great deal of damage was done to the city as a result of near misses on harbor facilities. Not as much damage was done to the port as would seem consistent with the large tonnage expended. However, the bombing as a whole had the desired result. The rail transportation was denied; most of the population was forced to evacuate; and the ships were unable to make this port (due probably to strikes against shipping enroute). In effect, Kiirun as a port was denied to the Japanese.

### JAPAN SUGAR INDUSTRIAL COMPANY LTD. TAIWAN BRANCH

#### Interview of Mr. Y. Nishida, Manager

5 May 1945, the plant was bombed by 5 B-25's which dropped 15 bombs and strafed. 2 separators were destroyed out of 24. 8 warehouses burned. 2 residential buildings of employees destroyed. 2 locomotives on plant's private railroad were destroyed. At the time of this bombing the factory was not operating because it was not the sugar season, but if it had been in production the effects of bombing would have cut production 20%. (Season is December through April)

28 May 1945, 7 B-25's dropped 33 bombs and strafed. 4 separators were destroyed, 1 vacuum pan destroyed and electric transformer building with the transformers destroyed. 12 houses of employees, 1 warehouse and the alcohol factory were totally destroyed. This plant, if it had been producing during this raid, would have been without power until a substitute source could have been arranged. The alcohol plant had voluntarily ceased producing 2 years prior to the bombing attacks, therefore, its destruction had no effect on Japan's war efforts.

Annual normal production of sugar is 20,000 tons. However, the plant was not producing at the time of the survey in December 1945, because lands that had been raising cane were now producing rice. Entire output of the plant was always shipped to Japan from Kiirun.

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Testimony of Mr. Maruoka (Former Mayor of Kiirun under Japanese) and Mr. Shih, Yen Sen, the Present Chinese Mayor, (has been in office only 3 weeks).

Shih Yen Sen states, "267 people died during the bombing by American planes, 297 were injured and 4, 332 residences were entirely destroyed. 25 % of the population of Kiirun is Japanese. The total population before the war was 100, 000. During the heaviest bombing period the population dropped to 30,000, most of the people moved to the hills surrounding Kiirun or to Taichu. Now the population is 70,000."

Mr. Muroka states, "There were two hospitals, one civilian and one military, both were damaged by the air raids but no patients were injured. All patients had been removed prior to the air raids and patients were removed from the military hospital when the air raids began."

Due to the raids in June 1945, there was only one out of three railroad lines operating between Kiirun and Tainoku. Later in June that line was also bombed and no trains operated until September 1945. Raids were conducted on the following dates: 13 and 16 of October 1944, by Navy Grummans, 31 Mar. 45, by B-24's, 16 May, B-24's and P-38's, 16, 17, 18, 19 June, P-38's and B-24's.

During the raids in October of 1944 by Navy Grummans, the steam plant was knocked out."

Mr. Shu Jun-Zo (Harbor Director)

Mr. Shu Jun-Zo exhibited books and papers to substantiate his statements. However, he also questioned Mr. Maruoka who was mayor and harbor director under the Japanese.

Before the war 18 berths, 3 dry docks and 81 thousand square meters of warehouse area were available. One 10,000 ton dry dock was under construction. Now 6 berths and possibly three more are available. Two of the three dry docks were out of commission due to bombing. One of the berths was out of commission because of a sunken ship at its entrance. 71,000 square meters of warehouse space now available. There was one small fishing-boat dry dock operating. The unfinished 10,000 ton dry dock is still incomplete.

Before the war the harbor had 10 - 1.5 ton, 2 - 10 ton, and 1 - 30 ton cranes. At the end of the war all but two of the cranes were inoperative. The small berth or fishing-boat area was completely destroyed. This area was used to repair and berth fishing junks. No damaged ships were repaired during the war.

Two railroads in front of the warehouses were damaged therefore there was no railroad facilities during the last part of the war.

During peace time the port ~~facilitated~~<sup>handled</sup> 3,500,000 tons of cargo per year, but after the war the amount of possible tonnage dropped 30 %. Even with that available, only one ship arrived per month, as a result of the bombing of shipping. In peace time 15 ships could have been handled each month.

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SURVEY OF AREA OF DAMAGE IN  
KIIRUN CITY

WARD NO.	AREA IN SQ. M.	PERCENT	AREA DESTROYED
1	100,000	84.45 %	84,450
2	67,500	70%	47,250
3	50,000	60	30,000
4	27,000	24	6,480
5	24,000	24	5,760
6	36,000	30	10,800
7	112,500	24	27,000
8	149,500	70	104,650
9	175,000	90	157,500
10	100,000	60	60,000
11	120,000	80	96,000
12	51,000	70	35,700
13	48,000	50	24,000
14	30,000	90	27,000
16	52,000	20	10,400
17	120,000	80	96,000
18	180,000	85	153,000
19	320,000	24	76,800
20	175,000	90	157,500
21	368,500	55	202,670
22	175,000	60	105,000
TOTAL	2,513,000	61.3%	1,541,000

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OUTLINE OF HARBOR SET-UP

	Before Bombing Damage		Present
30 T moveable electric crane	1	1	0
10 T moveable electric crane	2	2	0
3 T moveable electric crane	10	3	7
Floating docks	5	4	1
Floating docks	12	3	9
	(in square meters)		
Buildings	47,500	3,500	44,000
	(in square meters)		
Warehouses	34,000	7,000	27,000
	(in ship capacity)		
Wharfage	15	2	13
Anchorage	Generally undamaged but must be dredged in front of ASAHI-MACHI and FUKUTOKU-MACHI.		
	(in meters)		
Loading Space	4,743	2,280	2,463
Water Hydrants	34	Unusable because of damage to pipelines in the city after end of Sept.	
Oil Hydrants	4	Unusable due to damage of oil pipelines.	

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STATUS OF KIIRUN HARBOR  
(as of September, 1945)

1. Both East and West breakwaters undamaged.
2. Lighthouse is in operation.
3. Harbor buoys unlighted because of lack of gas.
4. Channels and anchorages undamaged (However, there are several sunken ships in the harbor).
5. Tugboats (2) both sunk but there are ships to take their place.

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KIIRUN IMPORTS AND EXPORTS  
(in tons)

YEAR	EXPORT	IMPORT	TOTAL
1935	1,575,537	1,175,178	2,750,715
1936	1,817,397	1,281,804	3,099,201
1937	1,933,842	1,291,787	3,225,629
1938	2,214,413	1,201,661	3,360,073
1939	2,272,824	1,255,937	3,538,761

TRAFFIC OF PRINCIPAL PORTS OF FORMOSA

1940	KIIRUN	2,800,000 T per yr.
	TAKAO	2,160,000 T per yr.
	KARENKO	200,000 T per yr.

PERCENTAGE OF TRADE HANDLED FOR KIIRUN

	TAIWAN (Y)	KIIRUN (Y)	%
1935	613,864,419	314,786,895	51
1936	680,634,925	352,011,184	52
1937	762,298,787	377,687,064	50
1938	823,113,029	403,527,218	49
1939	1,001,588,039	490,630,463	49

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KIIRUN DOCKING FACILITIES  
WHARFAGE

Wharf No.	Length	Type of Ship	No. of Ships	Remarks
No. 1	218.2 M.	6000 T.	1	Including 545.4 M. of special coal docks.
No. 2-4	554.5 M.	10000 T.	3	
No. 5-10	740.0 M.	3000 T.	5	
No. 11-13	343.6 M.	3000 T.	1	
No. 14-18	900.0 M.	10-20000 T.	5	
TOTAL	2,756.3 M.		15	

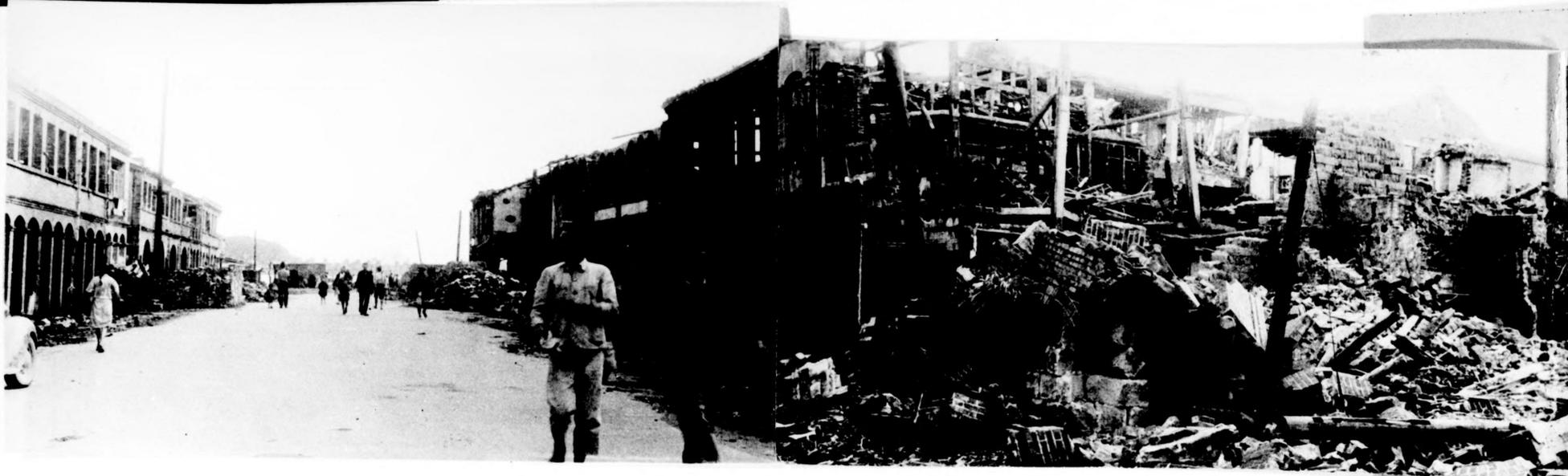
KIIRUN SHIPPING

Date	STEAMERS		SAILING CRAFT	
	No.	Tonnage	No.	Tonnage
1935	2,463	9,201,966	4,150	166,126
1936	2,475	9,491,961	2,451	123,312
1937	2,423	9,610,024	1,642	109,476
1938	2,094	8,694,877	1,209	93,267
1939	2,512	11,004,435	1,162	87,993

TOTALS

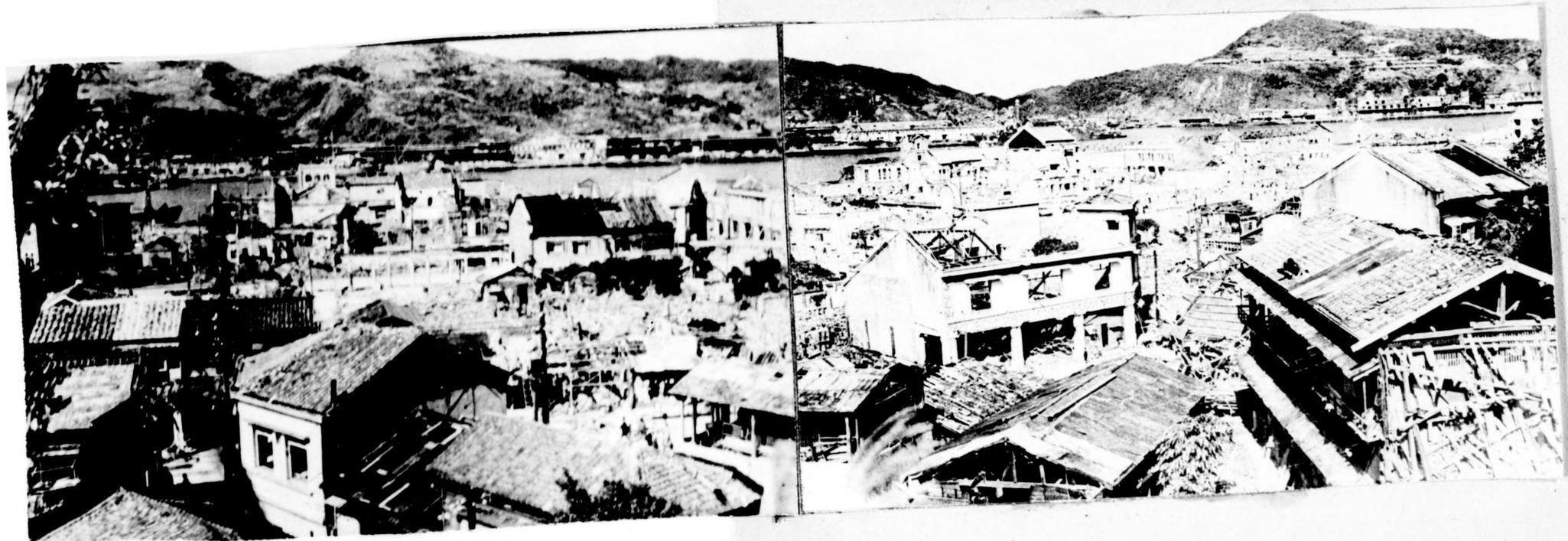
	No.	Tonnage
1935	6,613	9,368,092
1936	4,926	9,616,273
1937	4,065	9,719,500
1938	3,303	8,788,144
1939	3,674	11,092,428

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Panoramic view of part of business district on east side of harbor.

Panoramic view from Japanese shrine looking northwest across the harbor. In the background can be seen the docks and warehouses. A corner of the customs house is visible in the upper left hand corner. In the foreground is a part of the business section.



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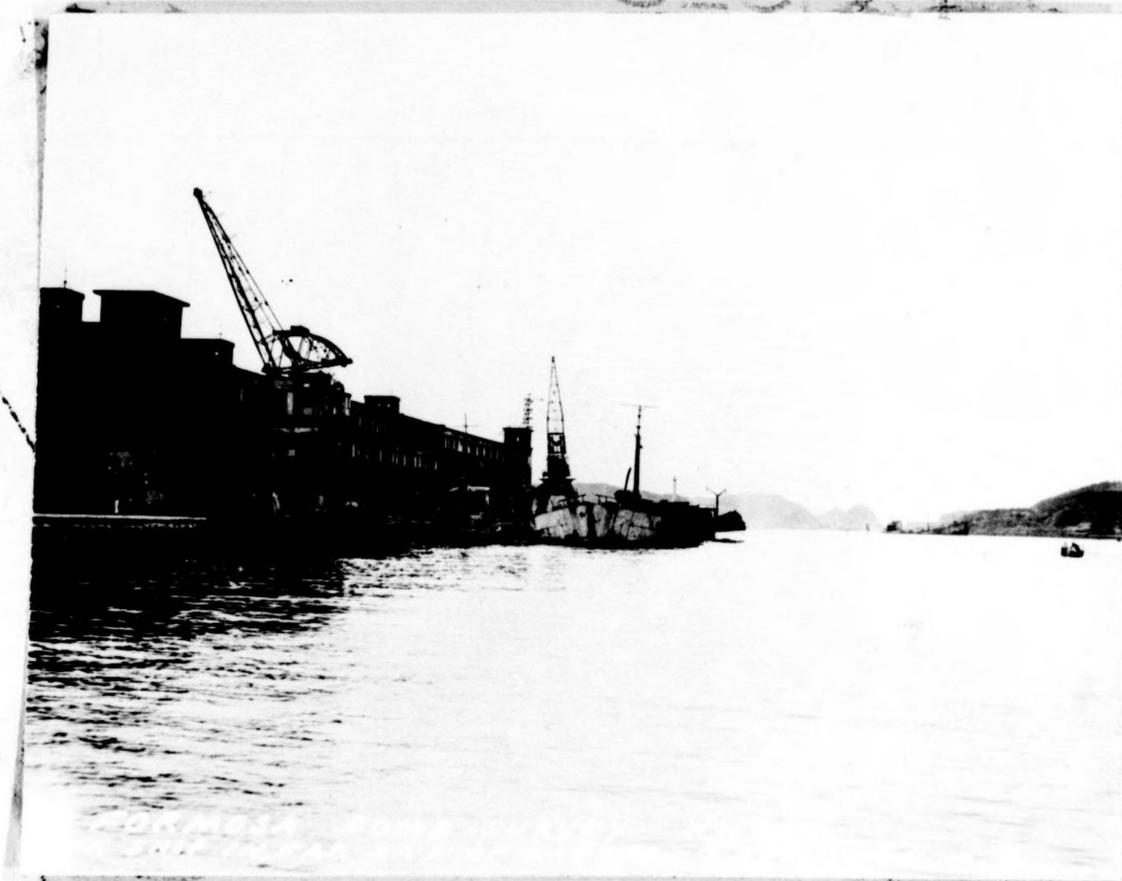
Panoramic view from top of harbor office looking southeast across end of harbor into area occupied by municipal buildings. A sunken ship is quite prominent at the left. Many smart coastal vessels and fishing boats were destroyed here by fragmentation bombs. The wreckage of a few is visible on the far shore.

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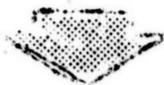
Panoramic view from top of City Hall looking southeast into business district. Harbor is visible at left. Post Office is in the center background.



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Looking southwest on the northwest side of the inner harbor, shows damage to wharf and an inoperative 10 ton crane. There is a damaged railroad to the rear of the wharf.



Looking northeast on the northwest side of the inner harbor. In the foreground is an inoperative 10 ton crane, and a sunken large merchant ship. In the left background is a large warehouse. Although not hit directly, most of the windows and doors of this warehouse are blown in by concussion and the roof is damaged.



30 FORMOSA BOMB SURVEY KINRU  
GYUCKO HARBOR  
DEC. 1945

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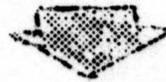


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East side of south end of inner harbor shows damage to warehouses along the docks.

Damaged buildings along east side of inner harbor. The damaged building on the right was Japanese Naval office building.



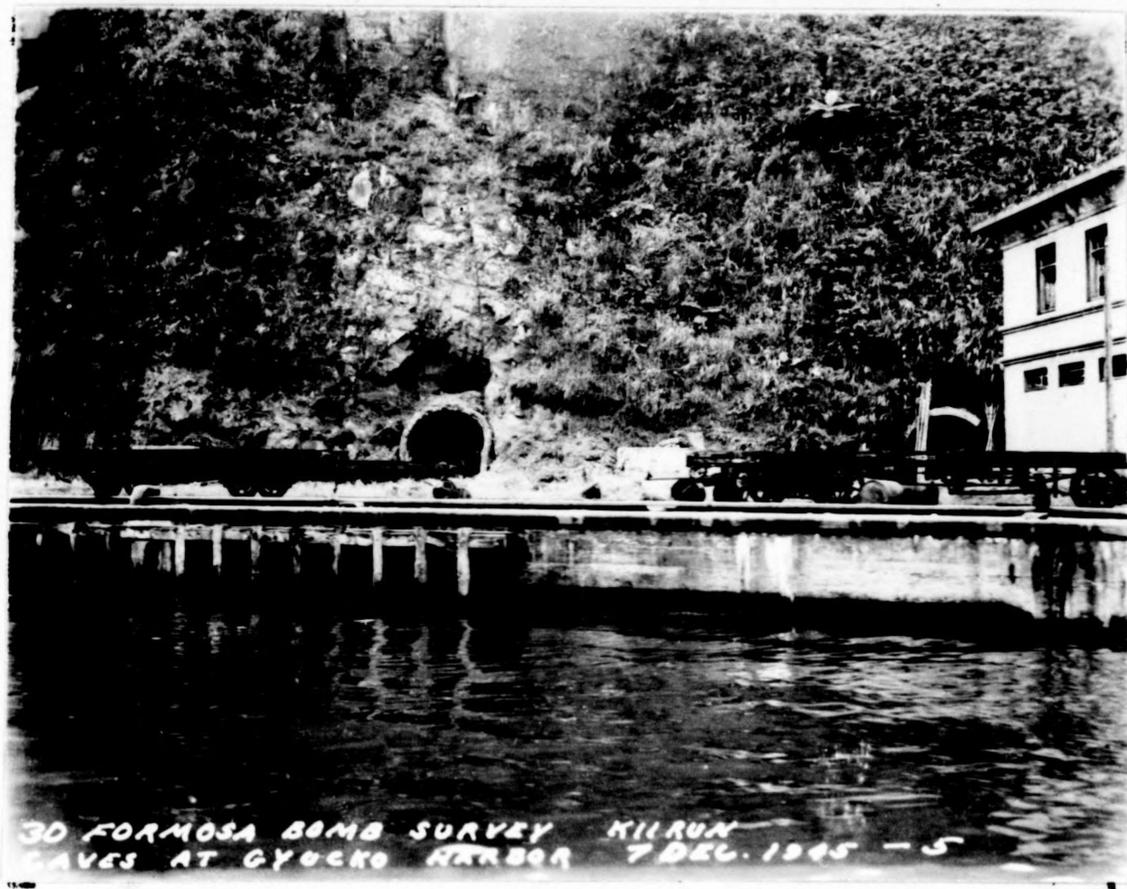
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Bow of ship that was blown in two  
in the outer harbor in October, 1944.

Stern of ship that was blown apart.  
Navy carrier plane is believed to have  
hit this ship with a torpedo.





30 FORMOSA BOMB SURVEY KIIRUN  
CAVES AT GYUOKO HARBOR 7 DEC. 1945 - 5

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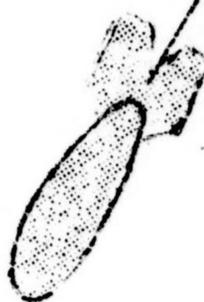


North side of entrance into Gy-  
choko. Shows fuel stored in caves.  
Similar caves are in all hills about  
Kiirun and in many hills along the  
highway between Kiirun and Taihoku.

Drydock and shops at the northwest  
end of Gychoko. The drydock is inoper-  
ative and the shops 90% destroyed. The  
large ship on the left is severely dam-  
aged and resting on the bottom of the  
harbor.



30 FORMOSA BOMB SURVEY KIIRUN  
SHOPS AND DRY DOCKS TARGET NO 7 DEC. 1945 - 3



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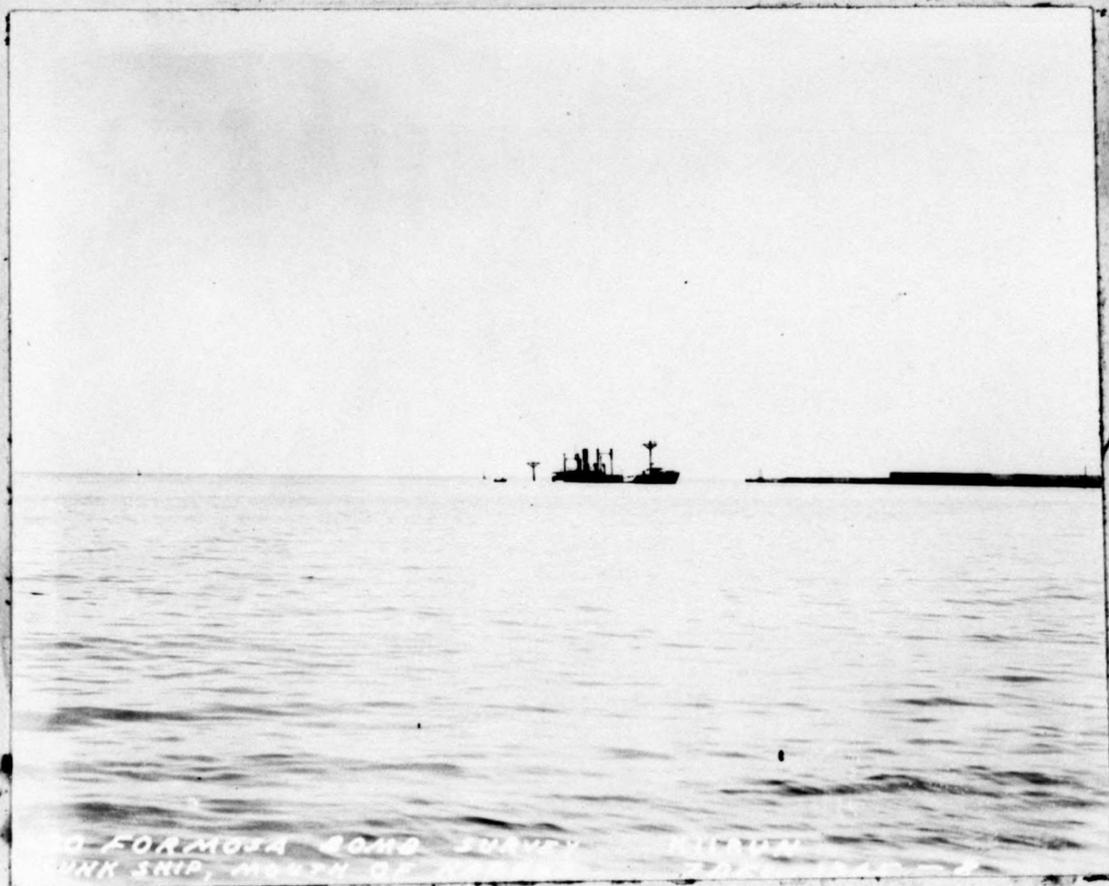
Looking west at the south end of the inner harbor. Shows extensively damaged office building. The slightly damaged building on the extreme right is the office of the Harbor Director. Railroad station can be seen in left background.

Across the extreme south end of the inner harbor, all buildings are destroyed. This was a downtown business section.



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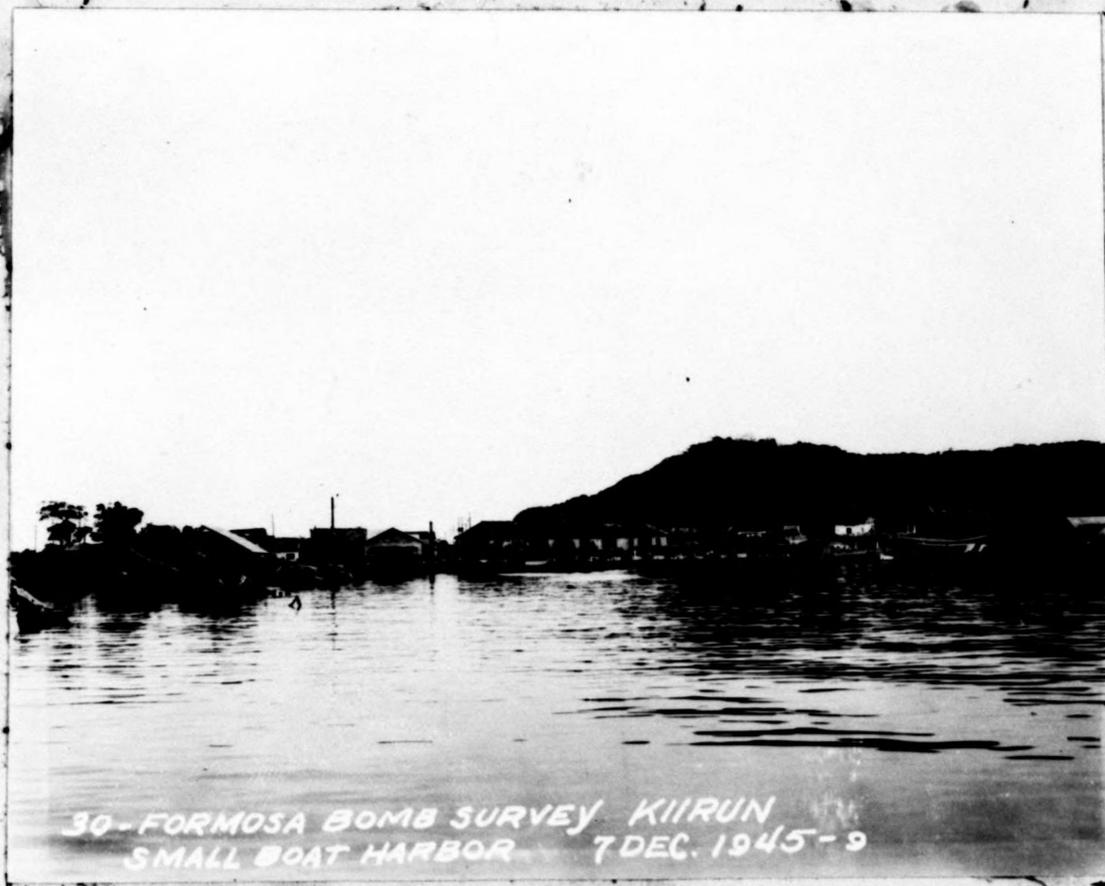


30-FORMOSA BOMB SURVEY KIIRUN  
UNK SHIP, NORTH OF HARBOR 7 DEC 1945-9



Sunken ship with undamaged break-  
water on the right.

North side of fishing boat harbor  
shows damaged buildings to the right and  
rear center and damaged small boats on  
the left.



30-FORMOSA BOMB SURVEY KIIRUN  
SMALL BOAT HARBOR 7 DEC. 1945-9

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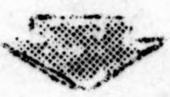


30 FORMOSA BOMB SURVEY KILRUN  
DAMAGED BUILDINGS 7 DEC. 1945 - 3

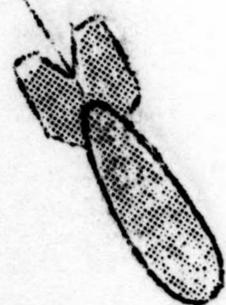


Destroyed and damaged buildings  
on the east side of the fishing boat  
harbor.

West outer harbor breakwater is un-  
damaged.

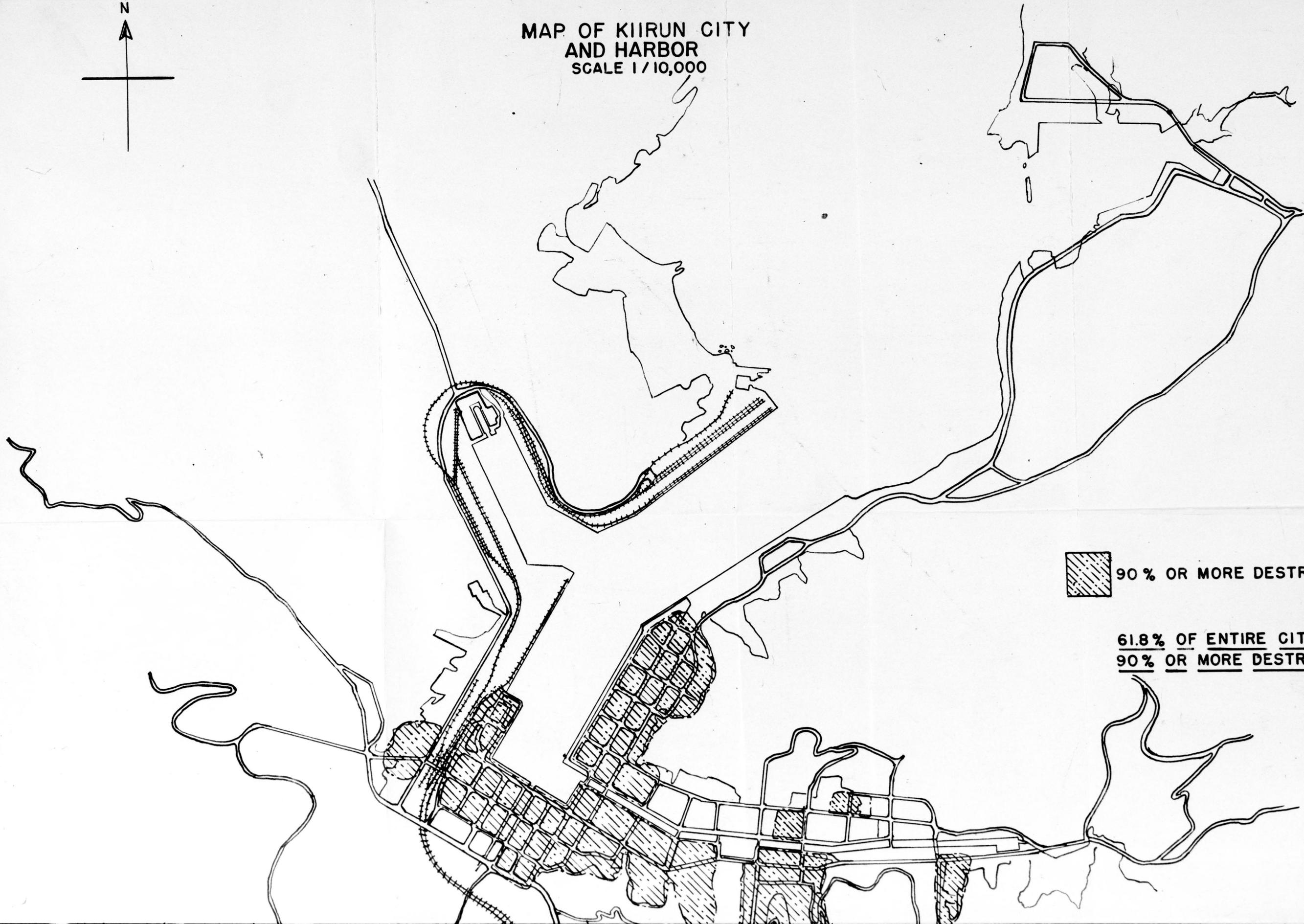
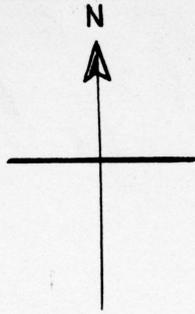


30 FORMOSA BOMB SURVEY KILRUN  
BREAKWATER IN OUTER HARBOR 7 DEC. 1945 - 7



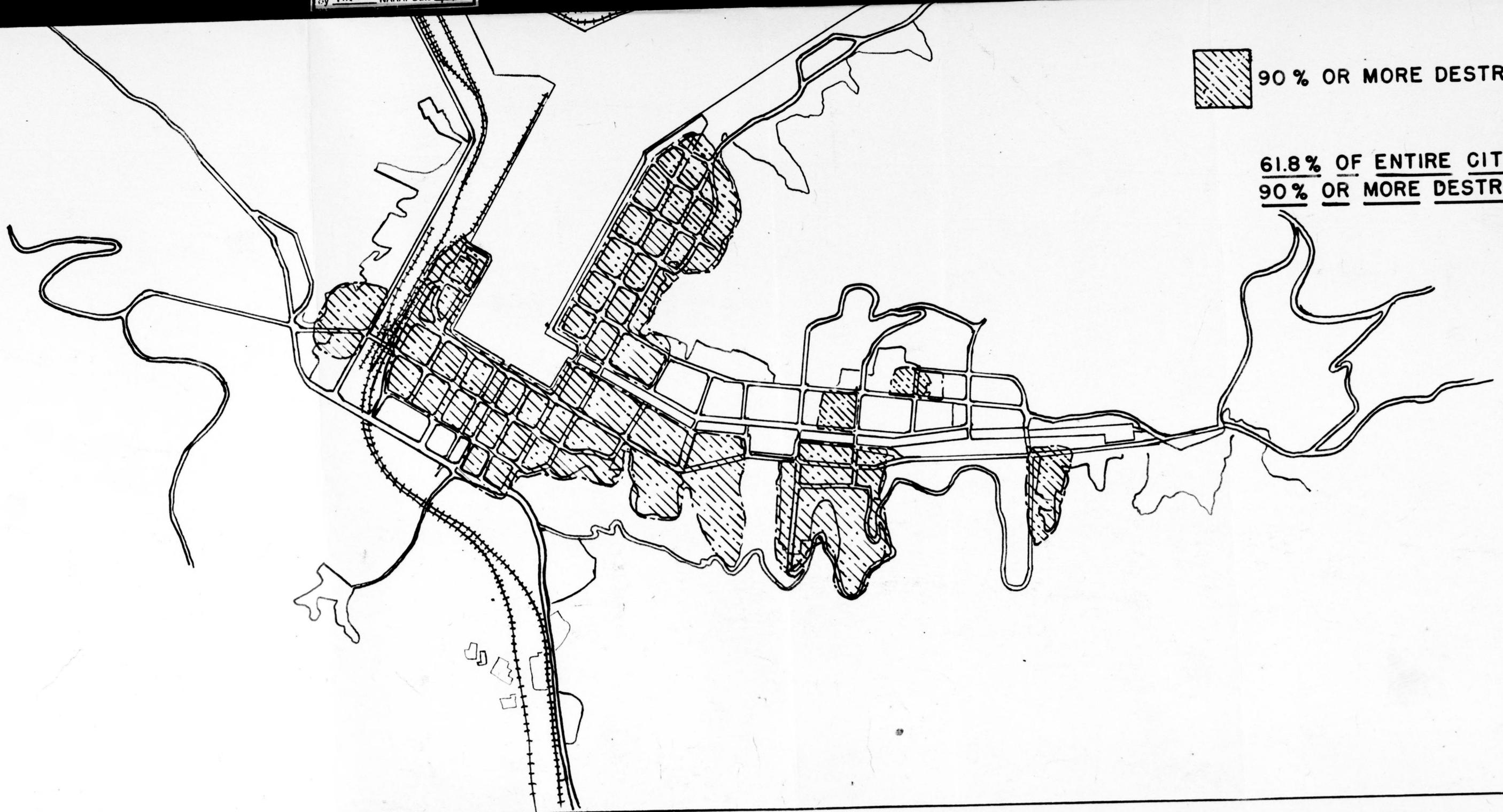
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MAP OF KIIRUN CITY  
AND HARBOR  
SCALE 1/10,000



 90% OR MORE DESTROYED

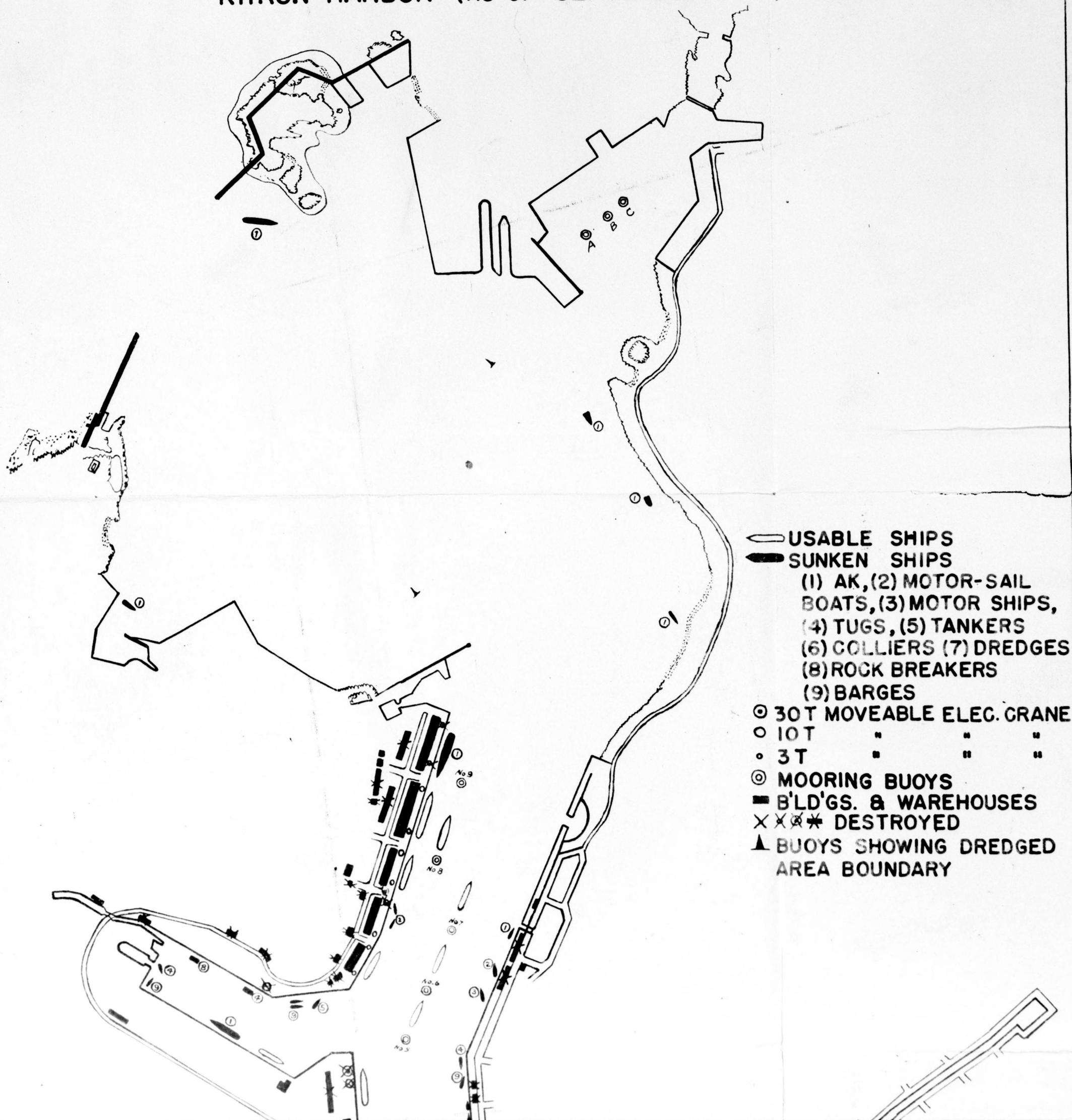
61.8% OF ENTIRE CITY  
90% OR MORE DESTROYED

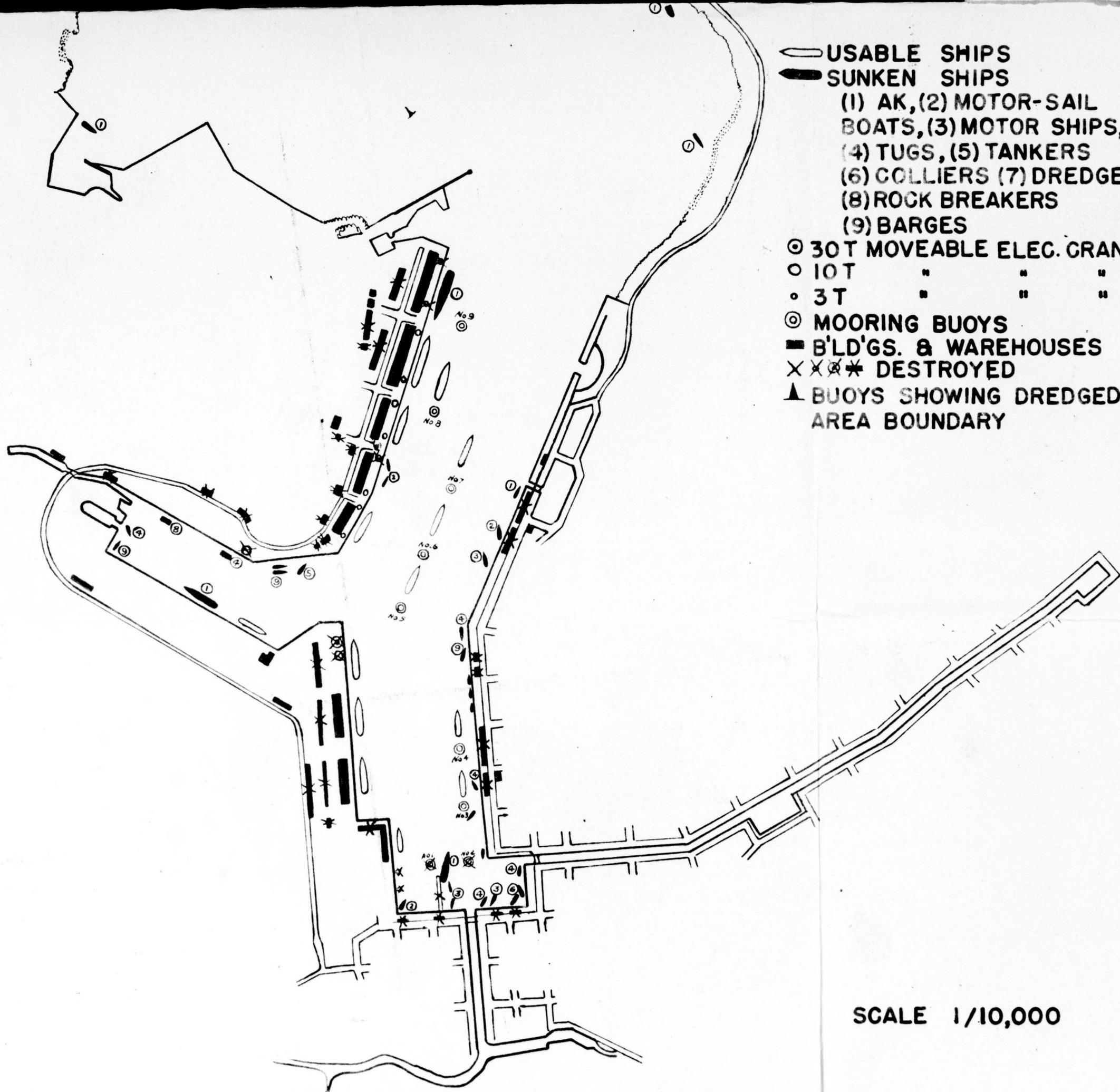


 90% OR MORE DESTROYED

61.8% OF ENTIRE CITY  
90% OR MORE DESTROYED

# KIIRUN HARBOR (AS OF SEPTEMBER 1945)





- USABLE SHIPS
- SUNKEN SHIPS
- (1) AK, (2) MOTOR-SAIL BOATS, (3) MOTOR SHIPS, (4) TUGS, (5) TANKERS
- (6) COLLIERS (7) DREDGES (8) ROCK BREAKERS (9) BARGES
- ⊙ 30 T MOVEABLE ELEC. CRANE
- 10 T " " "
- 3 T " " "
- ⊙ MOORING BUOYS
- B'LD'GS. & WAREHOUSES
- X X X DESTROYED
- ▲ BUOYS SHOWING DREDGED AREA BOUNDARY

SCALE 1/10,000

SECRET

### GIRAN TOWN

Giran is situated in the center of a fertile valley on the east coast of Taiwan. An abundance of timber exists in the surrounding hills and Giran's one industry, a saw mill, was kept in production until May 31, 1945, when American bombs destroyed it. One railroad connects Giran with Kiirun and Hatto.

Heaviest air raid was suffered on 31 May 1945\*. B-25's in 3 waves of 6 planes each, made a strafing and bombing attack. The population received only short notice of the raid, therefore many were killed. In all one soldier and 140 civilians died. 10 houses burned, 172 completely destroyed, 59 heavily damaged and 121 slightly damaged. Many direct hits were scored on air raid shelters. The railroad was slightly damaged. The saw mill was also burned on this raid, and has remained inoperative ever since. Two warehouses storing sugar were destroyed on May 19, 1945.

\*NOTE: Information on Giran was obtained from interview with Captain Watanabe, Japanese Brigade headquarters who was stationed at Giran during the war.

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Giran street scene showing damage by a 500 lb. bomb. 172 such buildings were destroyed.

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### GIRAN SOUTH AIRDROME

Giran South airdrome is located two and one-half miles south west of the town of Giran. The main field has one concrete runway and another diagonal grass runway. Approximately two miles north of the main airdrome is a satellite field with one grass runway. West of the two fields is another grass runway which was unknown to American intelligence during the war. Houses were always moved onto the field when it was not in use. The main airdrome had 10 concrete covered hangars and several other small shop buildings and barracks.

On 3 and 4 January 1945, 15 or 16 Navy Grummans attacked the airdrome for the first time. At this time there were no actual combat planes stationed at the fields. However, dummy planes were parked on both the north and south strips and these were attacked by the Grummans. One transport plane was destroyed on the South strip at this time.

On 9 January 1945 about 6 Grummans attacked the main airdrome and one transport airplane, a storehouse at the west end of the strip and 50 drums of gasoline were destroyed.

On 1 and 2 April, 12 B-24's bombed dispersal areas between the north and south fields. 4 barracks burned and another barracks just north of the main strip was damaged. At the time of this attack there were no planes parked in this dispersal area. However, there were 100 planes hidden in the foothills west of the area. Nine Japanese were killed, 3 wounded and 20 civilians injured or killed.

On 18 April, 1945, a formation of B-24's hit the west end of the main airdrome and destroyed the signal center, 2 Navy fighters and 1 truck parked west of the west end of the strip. Twelve or thirteen Navy planes were parked in the area near the truck and plane destroyed, but these were not damaged.

On 30 April 1945, 8 P-38's attacked a group of men attempting to move fifteen fighters from dispersal areas in the foothills. Seven of the airplanes were destroyed by strafing.

On 19 May 1945, 9 P-38's attacked machine gun positions in the area near the main airdrome. There was no damage on that attack but later the same day 11 P-38's attacked and damaged 6 of the anti-aircraft positions. 1 was badly damaged, 2 moderately damaged and three others located between the west strip and the main airdrome were lightly damaged.

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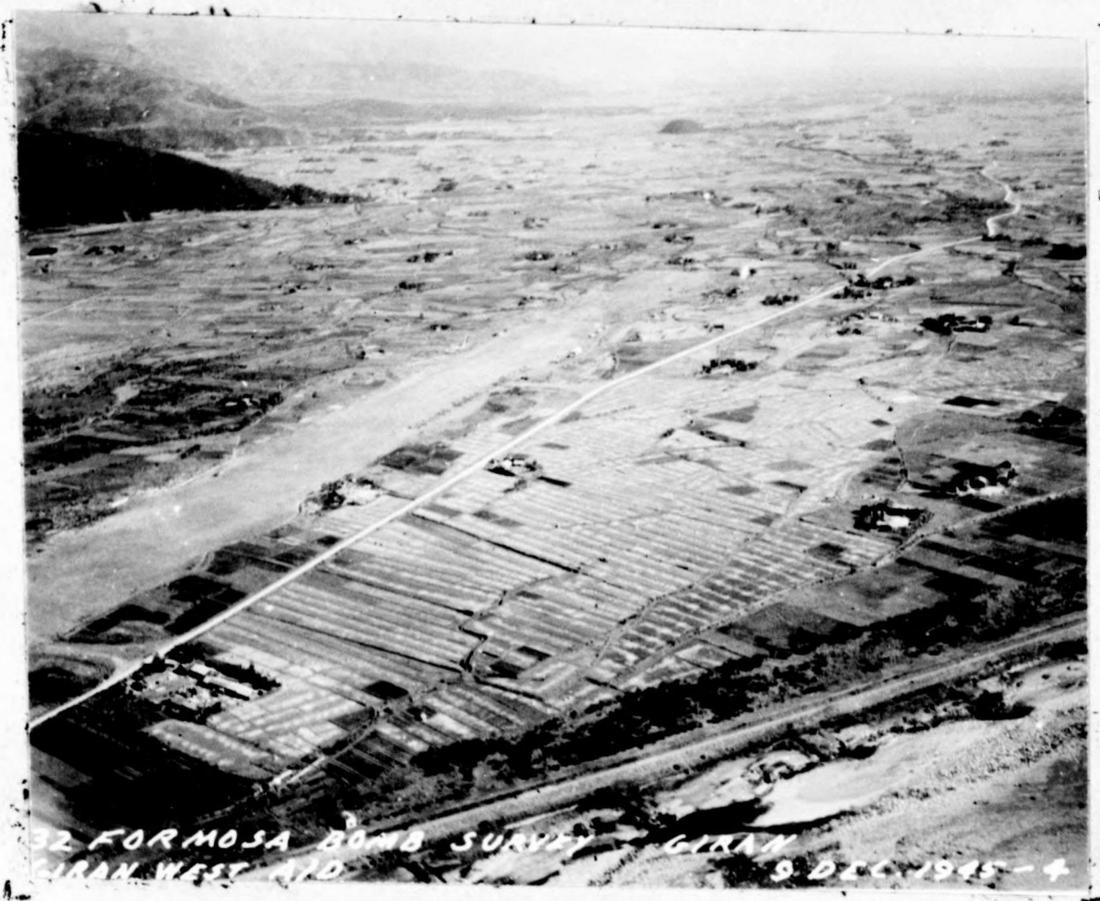
Giran South Airdrome (cont)

From May until the end of the war 100 planes were hidden in the foothills west of the airdrome. These planes had been transferred from other Formosan bases. All were fighters. None of the fighters based at Giran airdrome were used for interception of American bombers, as the planes were being saved for suicide attacks.

60 to 70 suicide missions were launched from Giran airdromes against Okinawa during the war. These were Army suicide missions. Formations of suicide planes and escort fighters usually were composed of 4 to 6 planes, 2 suicide, to 1 escort. Only once were suicide planes escorted all the way to the target. After that, fighters protected suicide planes during takeoff operations only and the escort airplanes turned back just short of the target area. Suicide missions were staged through Ishigaki and Miyako for refueling, until these two bases became untenable. At this time extra fuel was provided so that pilots could detour bad weather, but later, due to the shortage of fuel, only gas for one-way trip was carried. There were no figures available on the number of Navy suicide attacks launched from this area.

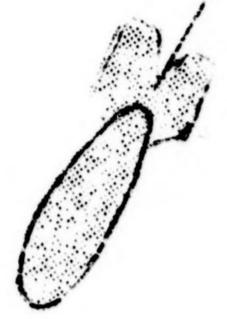
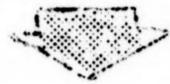
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Aerial photo of the Japanese 'hidden' airstrip west of Giran. During the war, dummy houses were placed on the strip for camouflage. Mountain foothills around which airplanes were dispersed are shown in background.

Japanese 'hidden' airstrip west of Giran showing undamaged fighters. At the close of the war there were 100 such fighters dispersed in the foothills west of the strip.



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R A T O C I T Y  
R A T O C I T Y

Rato is a small city located 5 miles inland from the east coast and about 60 miles south of Kiirun. Rato is on the railroad line between Suo and Kiirun. The only industry of importance is the Taiwan Industrial Company, the only plant on Formosa which produced paper for the printing of newspapers. This plant had a capacity of 80,000 to 100,000 pounds of paper per day.

\*Rato was first hit in January 1945, by carrier based aircraft. 8 people were killed and 64 wounded; hits on the paper mill stopped production for 20 days, after which the output was again normal.

From March to July frequent raids by small numbers of bombers completely stopped the production at the paper mill. 62 buildings, including warehouses at the paper factory and at the railroad station, were destroyed and 63 were damaged. 65 residences were burned, and 63 were damaged. 30 people were killed and 203 injured. The present production of the paper mill is 25 % of capacity.

\*NOTE This information was received from Mr. Tun Lo Kuei, mayor of Rato; and Mr. H. Kanado, manager of Taiwan Industrial Company.

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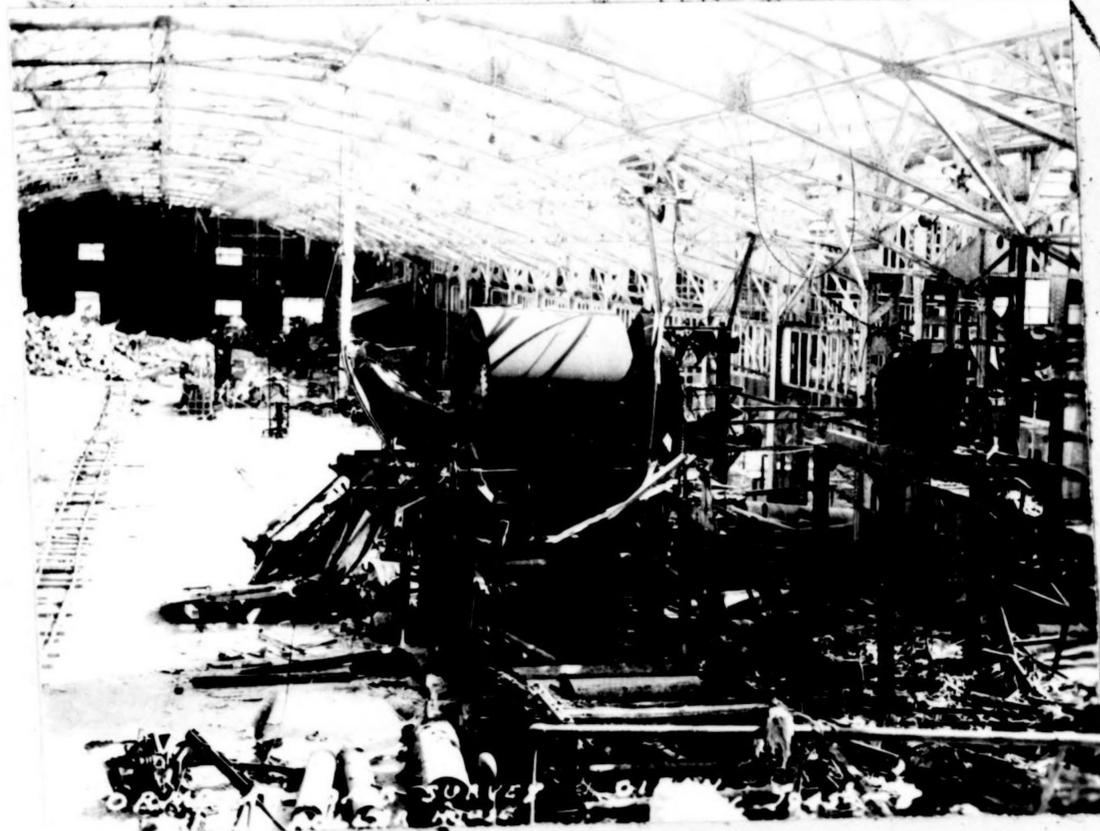


FORMOSA AREA SURVEY GIRAN  
PAPER MILL RATO BOLLER HOUSE 7 DEC 1945 - 5



The Taiwan Industrial Company, Rato. After strikes of July 1945, production of 80,000 to 100,000 pounds of paper per day was completely stopped.

Interior damage to Rato Paper Factory. This was the only plant on Formosa that made paper for the printing of newspapers.



RATO - WAR DAMAGE PICTURE

Time and Place	PERSONNEL			RESIDENCES			PROPERTY			Less Than		
	Dead	Mis- sing	Serious Wound	Light Wound	Completely Burned	Half Burned	Badly Damaged	Com- plete	1/2		1/3	1/3
0800 3/1/45 16th Block RATO	1			1								
0930 3/1/45 TAIWAN Dev Co., GOKETSU Plant	7		13	47								
0800 4/1/45 NIKETSU Sta. GOKETSU				1								
0940 4/1/45 Native Village												2
0820 9/1/45 16th Block RATO												2
1225 5/3/45 TOZAN												1
1300 1/4/45 SHONAN in TUZANSHO												2
1300 1/4/45 INZAN in TOZANSHO												2
1055 5/5/45 YONHYAKUMEI in GOKETSU	1											
1025 16/5/45 SHIKETSU in GOKETSU				1								
1150 16/5/45 SHIKETSU in GOKETSU				1								

SECRET

SECRET

RATO - WAR DAMAGE PICTURE

SECRET

Time and Place	PERSONNEL			RESIDENCES			PROPERTY			Less Than	
	Dead	Mis- sing	Serious Wound	Light Wound	Completely Burned	Half Burned	Badly Damaged	Com- plete	1/2		1/3
1150 16/5/45 Two Wards in GOKETSU	1		1	1	3			3			
1305 16/5/45 TAISHU in SANSEISHO				2	40	2		40	3		3
1330 31/5/45 SHIMOSHIMIZU in GOKETSU				1							
1250 31/5/45 TOZAN				3							
1300 31/5/45 SOKO in SANSEISHO	1										
1050 25/6/45 16th Block RATO	26		7	14	22	7	54	19	4	10	43
1015 30/6/45 SHIMOSHIMIZU in GOKETSU											
TOTALS	38		24	78	65	9	54	62	7	10	46

SECRET

DATE	PLACE	EQUIPMENT DAMAGED	CAUSE	EXTENT	REMARKS
3-1-45	Taiwan Development Company	Finishing Plant	Bomb	Badly Damaged	1 killed; 14 severely wounded; 69 lightly wounded.
"	Ward 16 Rato	Train (Passenger)	Strafed	Stalled	1 killed; 1 lightly wounded; locomotive knocked out; locomotive knocked out.
"	"	Residence	"	Slight	
"	"	Telephone line.	"	Cut	RR and Police line cut.
4-1-45	Banun (Native Village)	None	Bomb	None	1 severely wounded; 1 slightly wounded.
9-1-45	Goketsu-sho (2nd Unit)	"	Strafed	"	3 telephone and high tension wires cut.
"	"	Train	"	Knocked out.	1 loco., 3 coaches. locomotive knocked out.
"	"	Residence	"	Slight	2 slightly wounded.
5-3-45	Near Tozan Station	Train	"	Unusable	Locomotive immobilized.
"	Fuju Bridge in Tozan-sho	Bus	Tracer Shell	Entirely burned.	1 slightly wounded.
"	Near Goketsu sho pub. off.	Residence	Strafed	Slight	
"	Taiho in Goketsu-sho	Residence	Strafed	Slight	
1-4-45	Shonan in Tozan-sho	None	Bomb	None	4 slightly wounded.
"	Happo in Goketsu-sho	Bus	Strafed	Completely burned	1 bus.
5-5-45	Taiwan Development Co. Shigetsu plant	None	Bombed and Strafed	None	1 killed.
6-5-45	Taishu in Sansei-sho	Residence	Strafed	Completely burned	4 buildings.
"	"	"	"	Half burned	2 buildings 2 slightly wounded.

SECRET

DATE	PLACE	DAMAGED	CAUSE	EXTENT	REMARKS
6/5/45	TAIWAN Dev Co, SHINKET- SO Plant	Tracer Shell	Completely Burned		
31/5	TOZAN and NANKO in TOZAN-SHO	None	Strafed	None	3 slightly wounded.
25/6	RATO City	Residence	Bomb	Entirely Burned	22 houses; 11 killed; 19 seriously wounded; 14 slightly wounded.
"	"	"	"	Half Burned	7 houses.
"	"	"	"	More or less dam.	54 houses.
"	"	Telephone poles and lines	"	Cut in numerous places	
"	MEIJI Public School, RATO	School rooms and office	"	Completely Burned	4 Wings.
"	"	"	"	More or less dam.	7 Wings; still un- repaired, the roofs leak in many places.
"	SHOKOKU Public School RATO	"	Blast		
30/6	SHIMOSHIMIZU in GOKETSUSHO	None	Strafed	None	2 dead.
3/7	TAIWAN Dev. Co, SHIKETSU Plant	Factory	Bomb	Completely or half burned	Oil storage; carpen- ter shop; firemen's station; offices; warehouses.
"	"	Telephone lines and poles	"	Completely Destroyed	
6/5/45	GOKETSU in GOKETSUSHO	Residence	Strafed	Completely Burned	3 buildings.
"	TAIWAN Dev. Co, SHIKETSU Plant	Factory Building	Bombed and Strafed	Completely Burned and damaged	Finishing Plant, 4 sto- ries; water tank; NAK- azato Sta; paper fin- ishing mach; grinder; transformer room.

## SUO TOWN AND HARBOR

Suo is the only port between Kiirun and Karenko on the East Coast of Formosa. The natural outer harbor offers good anchorage for large ships while an inner basin has been built for fishing boats and small merchant vessels. There are small boat construction yards in the inner harbor, and 2 fuel tanks near the entrance to the harbor. The small ships were used chiefly for supplying the military installations along the East Coast.

Suo was attacked three times by carrier based airplanes -- once in October 1944 and twice in January 1945. The results of these strikes were 20 houses destroyed and 90 damaged; 14 fishing boats destroyed or sunk; 16 people killed, and 7 wounded; and extensive damage to the cement factory.

The portland cement factory south of Sou town produced 550 tons of cement per day until the Navy raids of January 1945. At this time Navy bombs destroyed a 1,000 H.P. motor and the transformer room stopping production until the end of the war. Most of the warehouses, storage buildings, and shops were damaged or destroyed in May 1945, by the Fifth Air Force.

The Fifth Air Force struck shipping at Suo Bay several times with small numbers of B-25's. On all these raids about sixteen small ships (75 to 200 tons) were destroyed and some damage was done to the ship building yards. Then on 13 July 1945 one group of B-24's struck. On that date 150 small warehouses were burned and 120 were half destroyed. The small ship harbor facilities were demolished. The ship building yards were destroyed, burning 8 ships under construction. One small tanker (loaded with gasoline for local ship use) exploded and sank. After this raid Suo Bay was used only by very small fishing boats.

The information contained herein was obtained from Mr. Liao FuPun, mayor of Suo; Mr. Nakajima, manager of the cement factory; and 1st Lt. M. Sadayoski, intelligence officer of the 28th Shipping Engineer Regiment, stationed at Suo during the bombings.

SECRET



Suo Shipbuilding Yards are shown on the left. A wharf for small fishing boats has been burned off on the right. The small ship docking area is not shown in this picture but is to the left across the harbor.



SECRET

SHINCHIKU TOWN

Schinchiku, in addition to being the site of a large Navy airport and several Army camps, is also the seat of the Provincial Government. There are also several small factories located here: two of which are the Taiwan Glass Co. (producer of sake and beer bottles) and a plant of the Formosa Tannic Acid Co. In addition a government operated natural gas experimental station is located here. Schinchiku is also a rail center of medium importance being at the junction of the main line with several small spur lines. It has a roundhouse, some repair shops, and a switching and marshaling yard with about twelve lanes of track.

The railroad installations were first hit on 13 October 1944, by carrier based airplanes of the U.S. Navy. At this time one locomotive was destroyed and several others slightly damaged. The tracks were also slightly damaged, but were repaired in a few hours.

The greatest damage to the railroad was inflicted by 90 B-24's of the Fifth Air Force on 15 May 1945. Fifty craters were counted on the tracks, and the warehouses south of the railroad station were burned down. Four persons were killed, and traffic through the yards was completely stopped for three days.

Prior to this large raid traffic was stopped for twenty-four hours by damage to a bridge near the railroad station. Thus all traffic through Schinchiku was completely stopped on two occasions. In addition materials were not available for permanent repairs to maintenance and storage facilities in the yards. \*1

The Provincial Government Building was damaged on 15 May 1945. It suffered two direct hits by 250# instantaneously fused bombs which destroyed approximately 15% of the building. The compound of this building was hit again on 31 May, with 20# fragmentation bombs (secondary target), but very little damage was done.

The Taiwan High quality Glass Manufacturing Co. suffered five direct hits probably by 250# instantaneously fused G.P. bombs on 15 April 1945. It was again attacked on 13 May. On this raid incendiary bombs were used, and one office building and two warehouses were completely burned. On both these raids, the buildings were damaged, but the machinery was only slightly damaged. This had no effect on production, since the plant had already closed due to lack of raw materials. \*2

\*1 NOTE: Information on damage to the railroad was obtained by personal investigation and by questioning of Mr. Shoji, One, assistant station manager at Schinchiku.

\*2 NOTE: It will be noted that in the appendix, the table headed "Damages to Important Installations, Buildings, etc." (furnished by the Japanese headquarters in Taihoku) lists this plant as "completely destroyed." This is an example of the apparent policy of the Japanese to list all plants whose production ceased as "completely destroyed".

SECRET

The Shinchiku plant of the Formosa Tannic Acid Co. was damaged beyond repair by the raid of 15 B-24's in 1945. All production ceased, and no plans have been made for restoration of the plant.

The neutral gas experimental station, about one mile east of the railroad station (target 12 on FIFTH BOMBER COMMAND mosaic No. 330 A) was used by the government research bureau for experimentation in refining processes. There was no production at this establishment other than that necessary for experimental purposes. This station was bombed 14 October 1944 and received three hits. One bomb struck near laboratory and gutted the building by fire. One bomb struck a small warehouse and destroyed it. The other bomb struck the methane cracking plant and stripped off the roofing and walls by blast. Since the laboratory equipment was destroyed by fire all work was stopped by this one raid. The station was not raided again.

The number six naval Fuel Refinery is located about one and one half miles east of the railroad freight station (Targets number 6, 20, 21, 22 and 25 on FIFTH BOMBER COMMAND target mosaic, number 330 A). This plant was engaged in the production of Ethyl Alcohol.

This plant was designed to produce aviation fuel. The plans were to produce butonal; then to produce iso-octane from the butonal; and finally to use the iso-octane in the production of high octane gasoline. The plant as a whole covered a very large area, but most of the construction was never finished due to shortage of shipping to transport the necessary equipment from Japan. Since the plant was not completed, it never produced butonal -- only alcohol.

The plant was first attacked in October, 1944 by approximately fifty carrier based airplanes. On this raid thirty-four workers were killed but no substantial damage was done to the plant itself. It was again attacked in early January, 1945 by ten carrier based airplanes. In this raid, the plant was only strafed and received no substantial damage.

On 29 June 1945, eighteen B-24's attacked the city and also damaged the plant. Six workers were killed and several warehouses were damaged. One bomb hit the fermentation building and forced the plant to cease production for one week. This was the only effective damage to the plant during the war.

A comparatively small effort was expended on Shinchiku town and most of that was directed against the railroad installations. However the two small factories mentioned are examples of the fact that hardly any factory of any type escaped completely the effects of direct bombing.

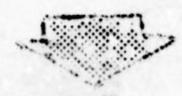
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SECRET



Shinchiku railroad station showing damage to the station. 50 craters were counted among the tracks to the right of this picture.

The provincial government building of Shinchiku Shu received 15% destruction.



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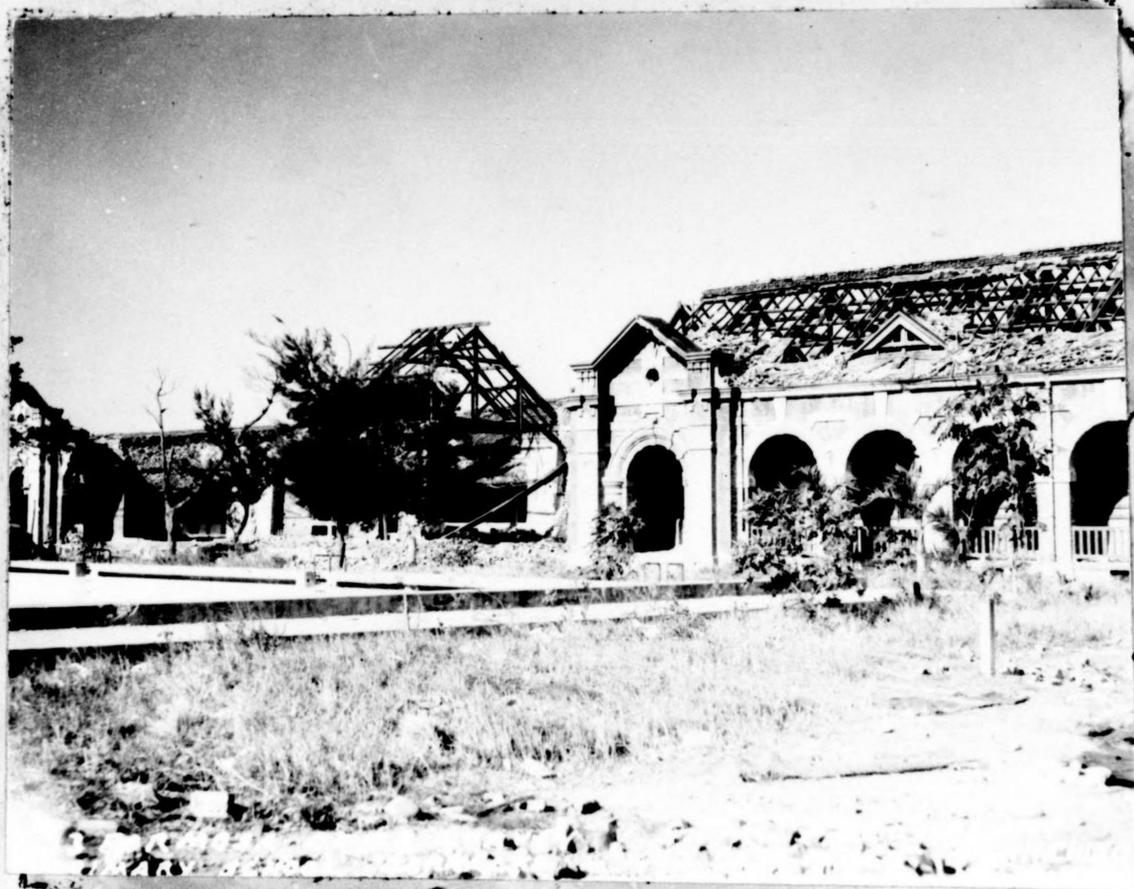


Formosa Tanic Acid Company (Shinchiku) was damaged beyond repair on 15 May 1945.

Taiwan High Quality Glass Company (Shinchiku) main building is slightly damaged. 2 warehouses to the rear of the building were burned.

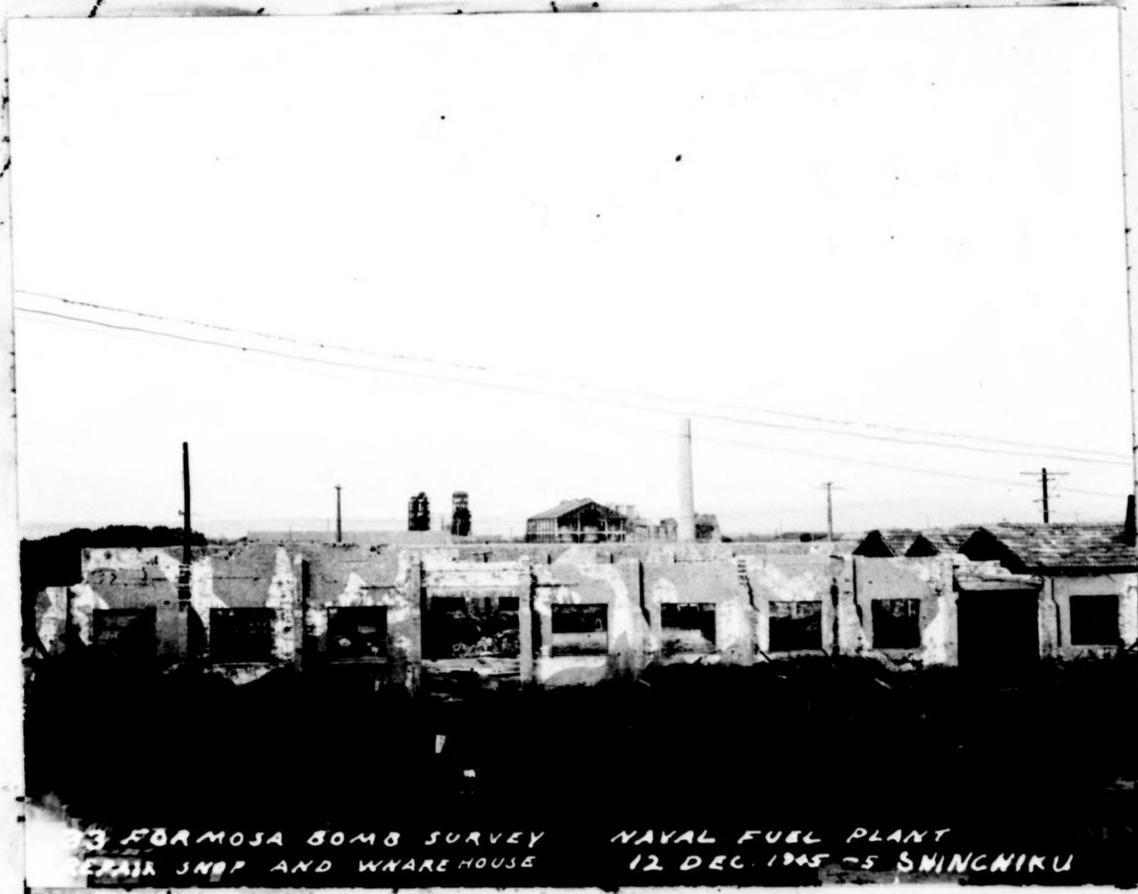


SECRET



Shinchiku primary school, used as barracks, is completely destroyed.

Destroyed repair shops of the #6 naval fuel refinery. In the background is the damaged fermentation building.



FORMOSA BOMB SURVEY NAVAL FUEL PLANT  
REPAIR SHOP AND WAREHOUSE 12 DEC 1945 - 5 SINCHIKU

SECRET



33 FORMOSA BOMB SURVEY NAVAL FUEL PLANT-SHINGNIKI  
DAMAGED SUGAR CANE STOREHOUSE 12 DEC 1945

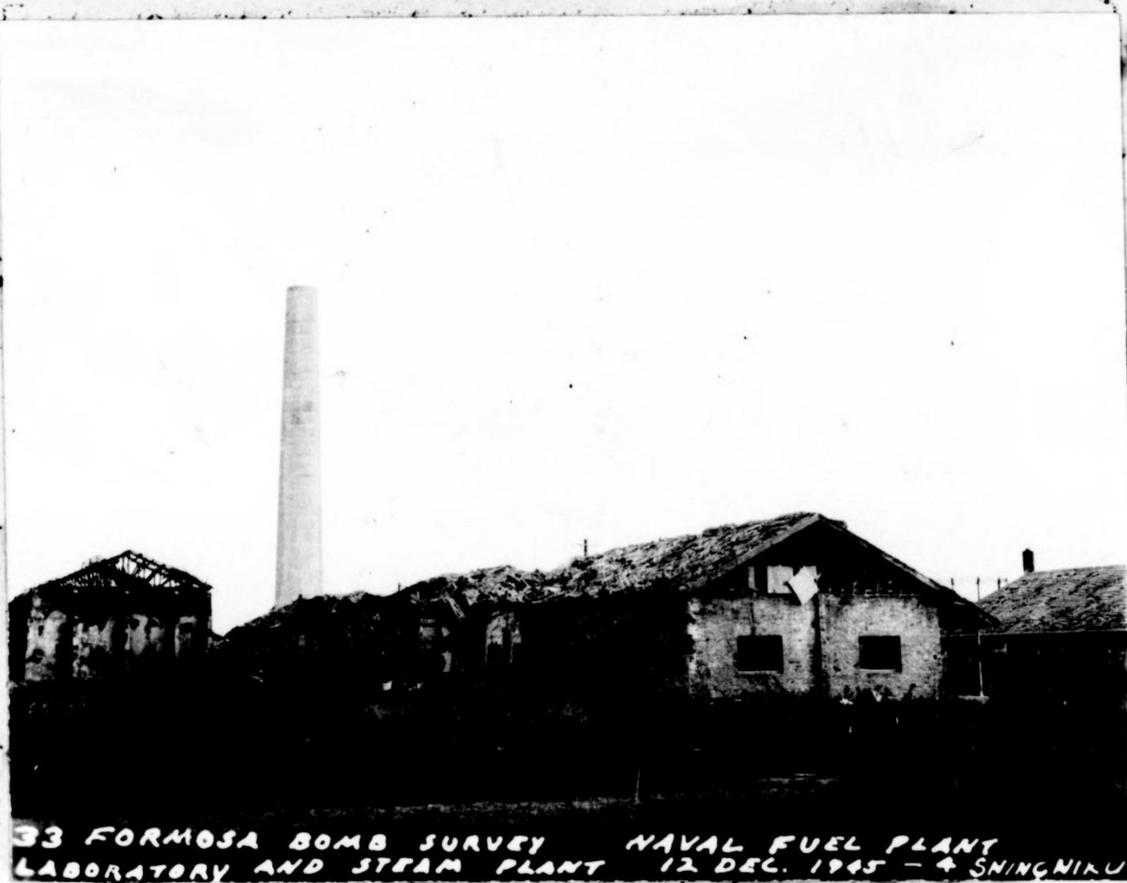
Warehouses and storage buildings of the fuel plant are widely dispersed. This picture shows damage to several such warehouses.

The sugar cane storage buildings of the alcohol plant at the refinery were heavily damaged.



33 FORMOSA BOMB SURVEY NAVAL FUEL PLANT-SHINGNIKI  
DAMAGED SUGAR SUPPLY WAREHOUSE 12 DEC 1945

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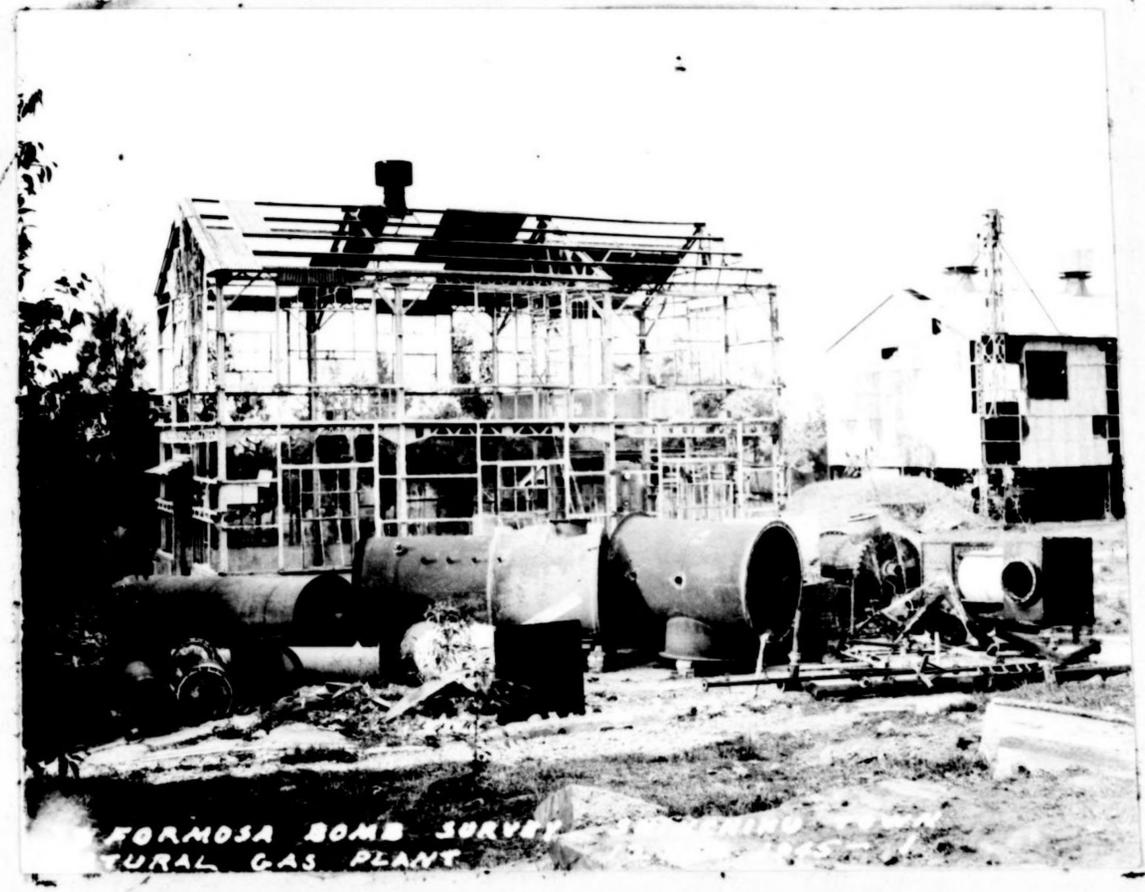
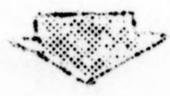


33 FORMOSA BOMB SURVEY NAVAL FUEL PLANT  
LABORATORY AND STEAM PLANT 12 DEC. 1945 - 4 SHINGHURU



The natural gas experimental station laboratory suffered a direct hit. Laboratory instruments were destroyed totally stopping all work at this station.

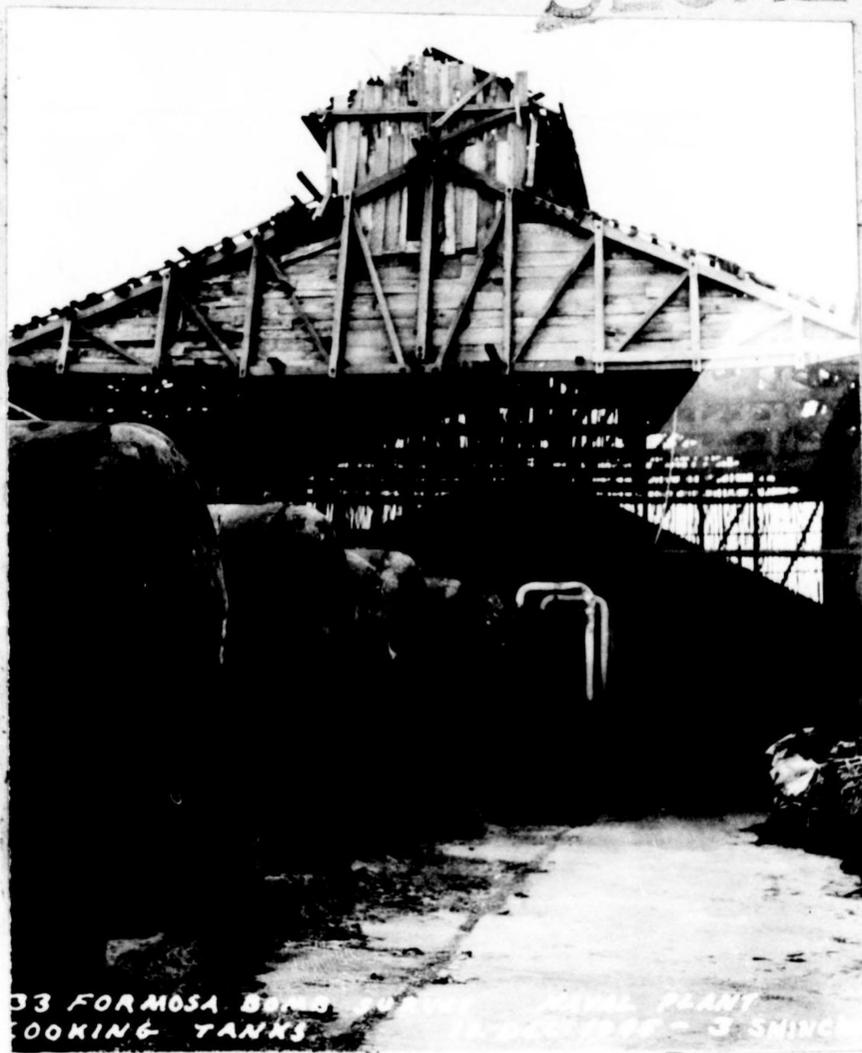
Damaged machinery and buildings of the natural gas station.



FORMOSA BOMB SURVEY SHINGHURU  
NATURAL GAS PLANT

SECRET

SECRET



The Methan Cooking Plant  
of the experimental plant was  
damaged by a near miss.

SECRET

## SHINCHIKU AIRDROME

Shinchiku Airdrome was a Japanese Navy tactical air base during the war. It was equipped with two large concrete runways. An East-West runway, 4750' X 300', and a Northeast-Southwest runway 4750' X 608'. There were several large hangars served by adequate concrete aprons and taxiways. The buildings were all of permanent construction, either brick or concrete. In addition there was a large dispersal area equipped with concrete covered shelters for the parked airplanes.

In December 1945 the runways were useable, but were covered with filled-in bomb craters. The taxiways and aprons were entirely unsatisfactory, being covered with bomb craters and debris. In fact it was very difficult to drive an automobile on this part of the airdrome. Almost all the buildings were destroyed, and the others were heavily damaged. The hangars had been stripped of roofing and walls by bomb blast, but were only slightly damaged structurally.

The two largest attacks on Shinchiku Airdrome were conducted by carrier based aircraft on 12, 13, and 14 October 1944 and by B-29's of the 20th Bomber Command on 17 January 1945. On these two raids almost all of the buildings and hangars were destroyed or damaged. In addition several airplanes were destroyed on the ground and the landing area put out of operation by the B-29's. The first navy raid was the only one intercepted from this base. At that time only twelve of the thirty intercepting fighters returned, which discouraged any further interceptions.\*1

The Navy attacked again on 3 January 1945. But on this raid very little damage was done.

From March until the end of the war the Fifth Air Force made almost daily attacks with varying degrees of damage. A few airplanes were destroyed or damaged from time to time until at the end of the war there were only about twelve left.\*2

After January 1945 Shinchiku was merely a landing area with limited parking space which itself was under almost constant attack. The Japanese troops stationed here were well impressed with United States Air Power.

NOTE: \*1 - For a detailed description of bomb damage, refer to the following record of interview with Captain Suzuki.

\*2 - At the time of the inspection by the bomb damage survey party, there were fourteen on the field, and several of these had been flown in after the end of hostilities to be turned over to the Chinese Air Force.

## INTERVIEW WITH CAPTAIN SUZUKI

(Commanding Officer of Airdrome from July, 1944, to the end of the war)

The testimony of Captain Suzuki was, in substance, as follows:

All of our records were destroyed at the end of the war on orders from Tokyo as a result all the facts will have to be given from memory. However, I was present during all the raids.

We were first attacked October, 12, 13, and 14, 1944, by Grumman fighters and Curtis SB2C's. In all, between 400 - 500 sorties were flown against this airdrome and many bombs were dropped; the largest being 500 pounds. At the time we had fifty airplanes here, forty of which were fighters. On the first raid thirty fighters took off to intercept, but only twelve returned, so interception was not attempted again.

Question: How many attacking airplanes were destroyed by your fighters?

Answer: I don't know. I doubt if any were. At least, none were claimed.

On these raids direct hits were scored on two large hangars. Almost all of the buildings in the vicinity of the hangars were burned. Of the six large barracks (capacity, 300 men each) three were destroyed. The only buildings which escaped damage altogether were the headquarters building and the officer's mess. However, only ten casualties were suffered. We had sufficient warning and almost all of us were in air raid shelters prior to the bombing. At this time the Commander in Chief of the Combined Fleets, was here and narrowly escaped when a bomb hit at the entrance to his shelter.

On these raids ten fighters were destroyed on the ground, and the runways were damaged by bomb craters. However these were repaired in a few hours. I consider these raids the most severe inflicted upon this airdrome. The pilots seemed more skillful and more aggressive than those who came later.

On 3 January 1945, we were again attacked. At this time I was in the mess eating turkey. I never ate turkey again - it was unlucky. On this attack American Navy airplanes strafed the area in many waves of five each. But only the concrete apron was damaged by bombs. Some buildings were damaged by blast and by strafing, but all the damage was soon repaired.

Question: How many airplanes were here at that time?

Answer: About 20 - 30, but none were damaged to any extent. No interception was made in view of our unfortunate experience last October.

Our next attack occurred on 17 January. At this time seventy to eighty very large airplanes, probably B-29's, came. They made a mass attack in formation and dropped many bombs. Afterward we counted 1800 craters. The bombs ranged in size from small fragmentation bombs to 1000 pound bombs. The pattern covered the whole airdrome very intensely. Almost the whole airdrome was either destroyed or heavily damaged. At this time there were about thirty airplanes on the field and all were damaged. Later we succeeded in repairing about half of them.

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We never repaired any of the installations except the runways after this raid.

After this raid it was decided to use Shinchiku for only a small number of suicide airplanes. These were to be used against Okinawa. However, we had sent out only 20 missions, when we decided to use the planes for night torpedo attacks instead of suicide attacks.

Question: Were any reconnaissance missions flown from here?

Answer: During the Philippine Campaign this was a reserve base to Takao, which controlled the reconnaissance. When the Philippines fell, Takao was considered untenable. After this reconnaissance missions originated here and staged through Koshun when scouting the Philippines.

At the end of March we were attacked by about 36 B-24's not much damage was done here, but the auxiliary field had thirty dummy planes on it, and all of them were attacked. At this time we had a little less than thirty airplanes based at Shinchiku. This number remained the same, except for losses on the ground, until the end of the war.

On May 15, about 80 B-24's attacked, but most of the bombs were dropped on the city. Here two torpedo planes were burned and several night fighters were damaged, but these were soon repaired.

After this I can't remember the specific raids. We were attacked almost every day, and a little damage was inflicted each time.

Question: What was the main function and mission of Shinchiku airdrome?

Answer: At first the Naval Aviation Headquarters for Taiwan was located here, but after the Philippine Campaign, due to the shortage of airplanes, the individual units were moved around as needed and controlled directly by the Commander of the Combined Fleets.

Question: Was this a satisfactory arrangement?

Answer: Not very. The base commanders were responsible for carrying out a certain mission whenever airplanes were made available, but they were seldom familiar with the particular tactical unit furnished for the purpose. A misunderstanding between the base commander and the unit commander often resulted.

Question: Why weren't more fighters used for interception?

Answer: After our first try in October 1944, it was considered unprofitable.

Question: Was any provision set up for ground controlled interception?

Answer: Yes, but it was not used, since we chose not to intercept enemy aircraft. Our airplanes which happened to be caught in the air were just cautioned to avoid raiding airplanes.

Question: Did you have any radar control for your anti-aircraft guns?

Answer: Yes, but not until the end of May of 1945, and then it was not very successful. I believe we shot down only one American airplane with anti-aircraft

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Question: How many guns did you have, and what kinds ?

Answer : We had 30, 7.5 cm. guns, 90, 20 mm. machine guns, and 60, 13 mm. machine guns.

Question: Why were not your airplanes dispersed over a wider area as was the case at other airdromes on Taiwan ?

Answer : The terrain was not suitable. The surrounding ground was too soft. However, the concrete shelters were effective against all bombs except fragmentation.

Question: How many airplanes altogether were destroyed on the ground at this airdrome ?

Answer : About 30 were destroyed in the concrete shelters and many more in the repair shops.

Question: Did you receive any new airplanes from the factory at Okayama ?

Answer : Okayama was an overhaul and repair depot, not a factory, but its destruction increased our maintenance problems considerably. Our training and practice had to be curtailed. This was also due to the fact that our small number of airplanes were of many types.

Question: Was there any headquarters on Taiwan which controlled both Army and Navy aircraft ?

Answer : No, but the two cooperated in strategy and exchanged reconnaissance information. Sometimes an exchange of supplies was needed and was hard to effect, but in the expected landing on Taiwan it was planned to put the naval aircraft directly under the Army's 8th Air Division.

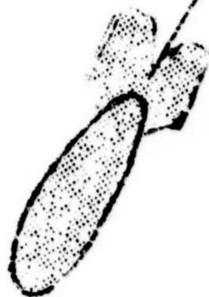
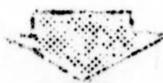
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Shinchiku Airdrome showing 2 destroyed hangars and 1 hangar with roof blown off. Along the street can be seen air raid shelters and revetments for vehicles during air raids. Two C-47's west rear left are of the survey party.

A close-up of one of the destroyed Shinchiku hangars. Note 2 large bomb craters in fore ground. This large concrete apron was rendered useless by a heavy concentration of such craters.



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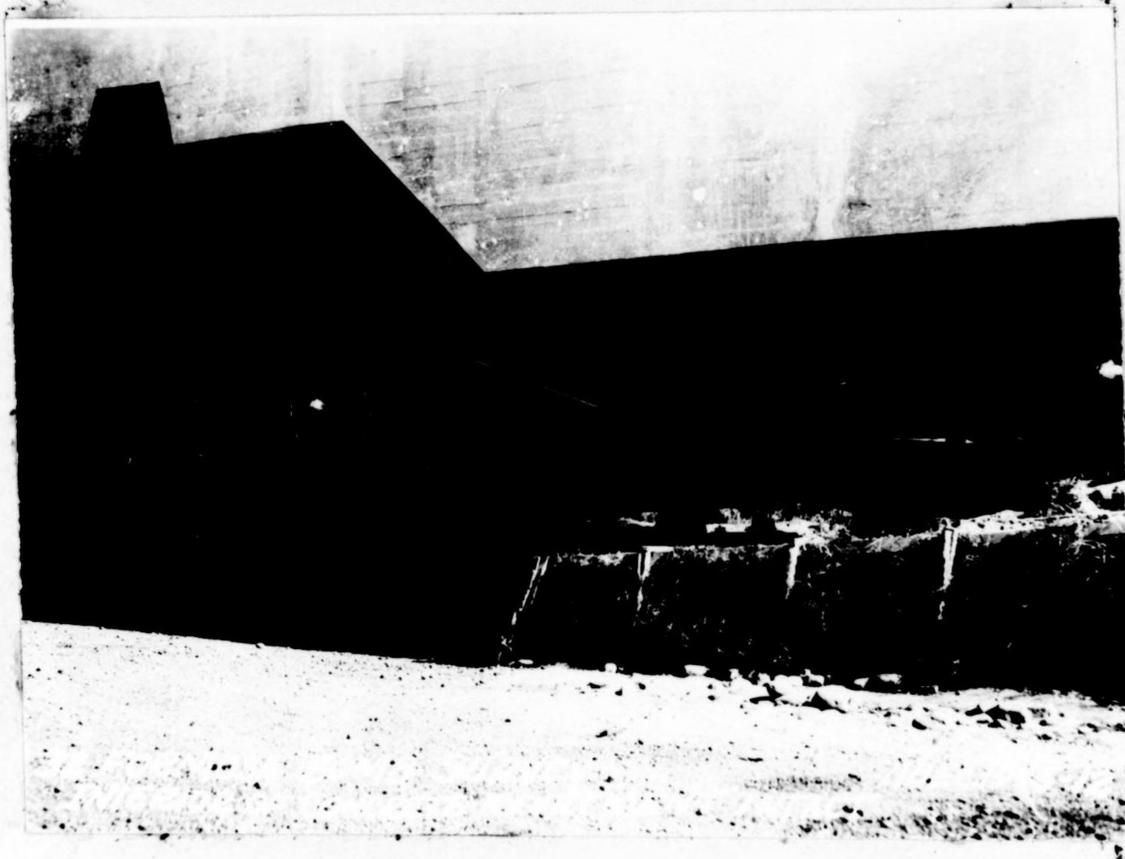


Shinchiku airfield barracks  
are destroyed by bombs and fire.

The intensity of the Shinchiku  
airdrome bombing is shown by the  
number of visible craters in the  
picture. This was a barracks area.



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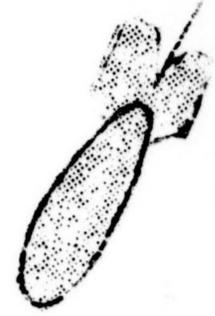


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One of the large concrete covered  
revetments at Shinchiku. There are  
three torpedo bombers in the  
revetment.

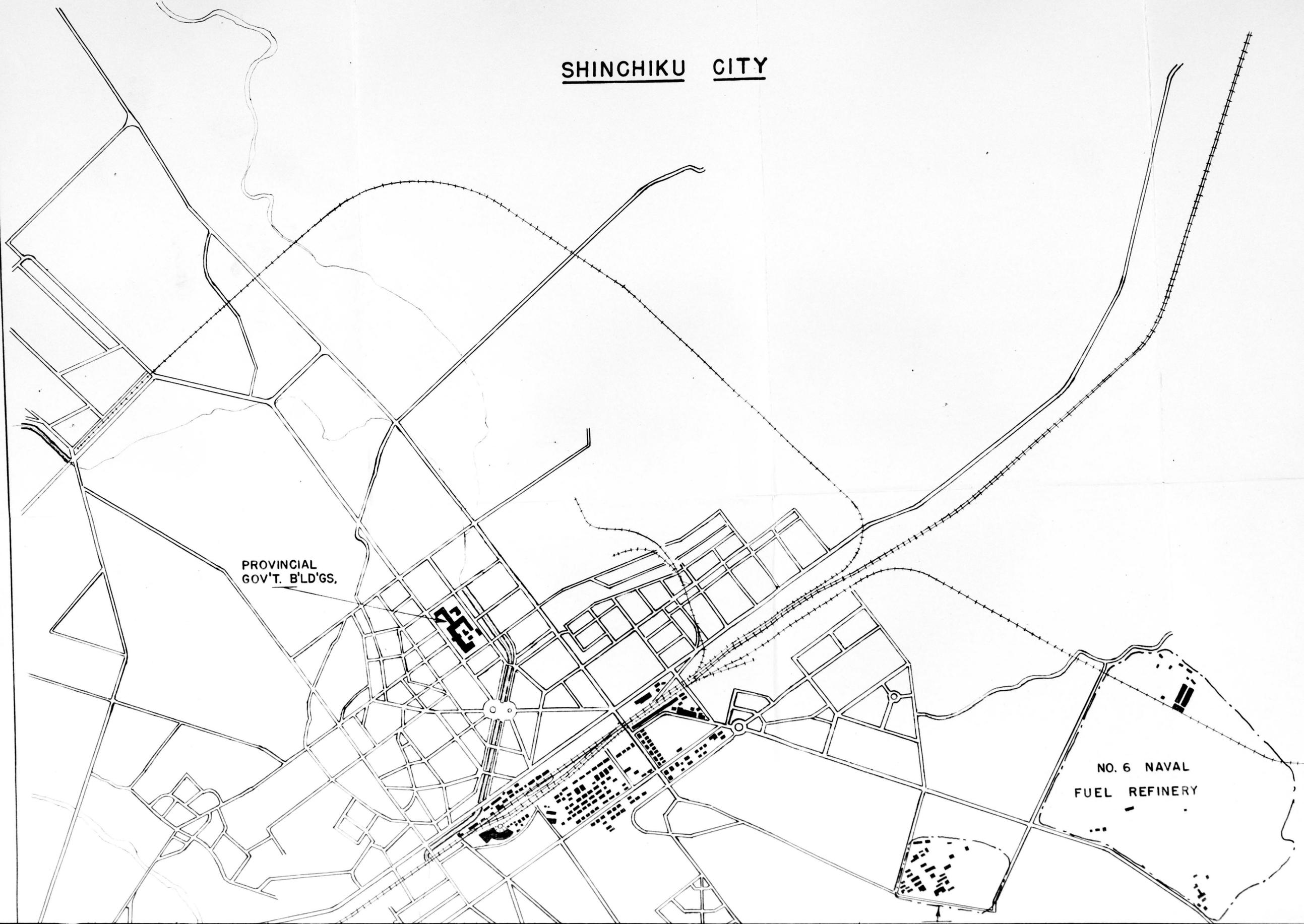
This revetment received a  
direct hit collapsing it on top  
of a Betty bomber. There were 20  
of this type revetments at  
Shinchiku.



32 FORMOSA BOMB SURVEY - SHINCHIKU AND  
CONCRETE COVERED REVETMENT 11 DEC. 1945 - 8

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# SHINCHIKU CITY



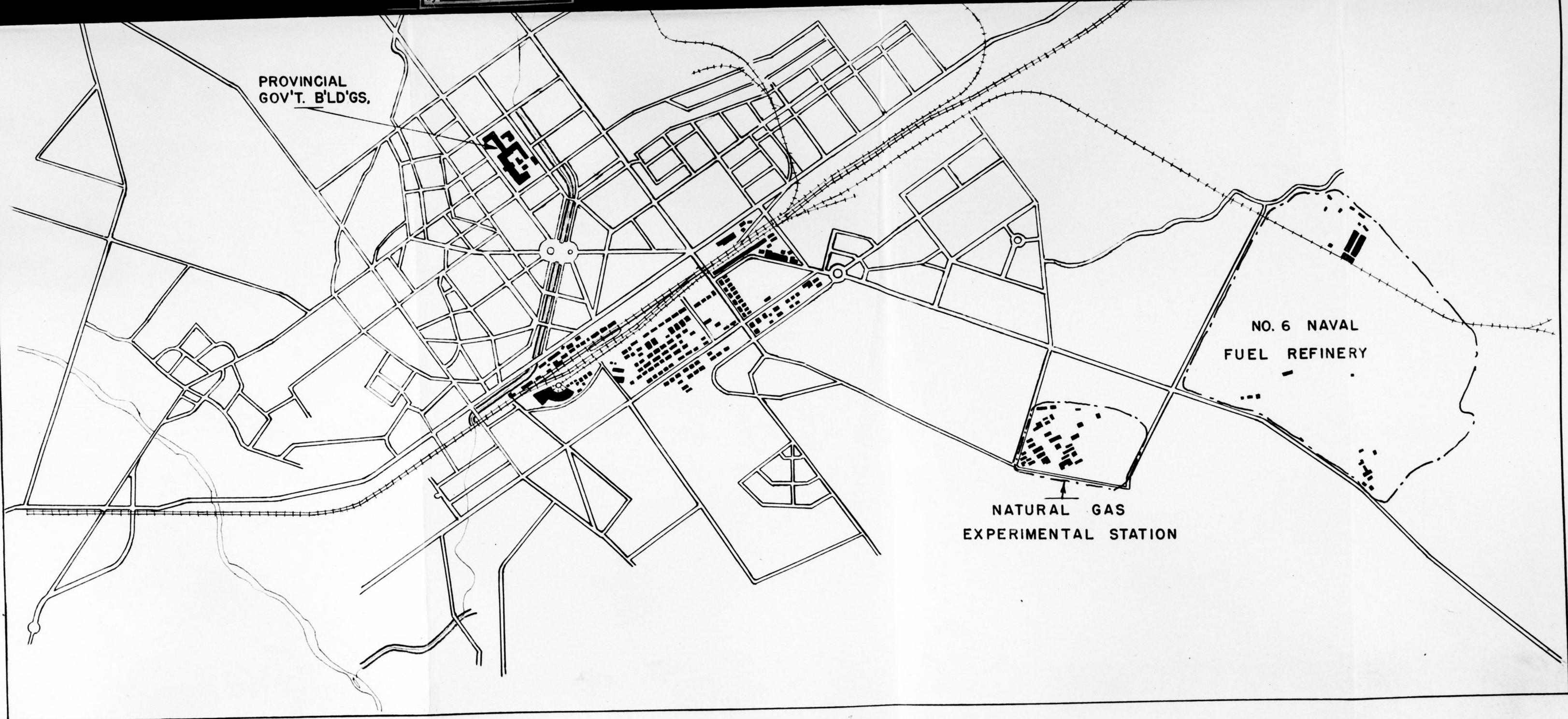
PROVINCIAL  
GOV'T. B'LD'GS.

NO. 6 NAVAL  
FUEL REFINERY

PROVINCIAL  
GOV'T. B'LD'GS.

NO. 6 NAVAL  
FUEL REFINERY

NATURAL GAS  
EXPERIMENTAL STATION



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Products of the Byoritsu Oil Refinery were, automobile gasoline, aviation fuel, kerosene, medium grade lubrication oil and paraffin. There are oil wells, natural gas wells, and natural gasoline wells within a circumference of 6 kilometers. Well flow of crude oil is about 75,000 gallons per month. 5% of this is refined into aviation fuel, 30% into automobile gasoline and 65% into petroleum by-products. The well flow of natural gasoline from well at Kinsei is about 40,000 gallons per month. From this natural gasoline 25,000 gallons of aircraft fuel and 15,000 gallons of automobile gasoline can be refined per month.

Bombing attacks have destroyed a majority of machinery and equipment. Those undamaged are as follows:

a. 1	Steam still	Capacity 5,000 gallons.
b.	3 Batch "	" 2,500 gallons each.
c. 2	Batch "	" 1,000 " "

There is no cracking plant intact. Storage capacity was about 650,000 gallons of automobile gasoline, 355,000 gallons of aviation fuel, and 80,000 gallons of crude oil.

Bombing began on this refinery on 17 May 1945, when 6 B-24's dropped fragmentation bombs on the drum factory, totally destroying it. Plant production was not impeded by this loss, but that left them with only a limited supply of drums. On 26 May 1945, 6 B-25's attacked, dropping 250 pound para-demo bombs and strafed. Fragments of bursting bombs punctured the side of a 50,000 gallon storage tank which was never repaired. Strafing did not penetrate these tanks since they were surrounded by brick walls.

4 B-25's scored direct hits on the Ammonia compressor room on 2 June 1945. The compressors and the room they were housed in, were completely destroyed. Four dud bombs were also found here. Production was reduced by 30% for one month, but had returned to normal production before the end of the war.

NOTE: Information included in this report was obtained from Mr. Kazunomi Morita, Manager of the factory throughout the bombing period.

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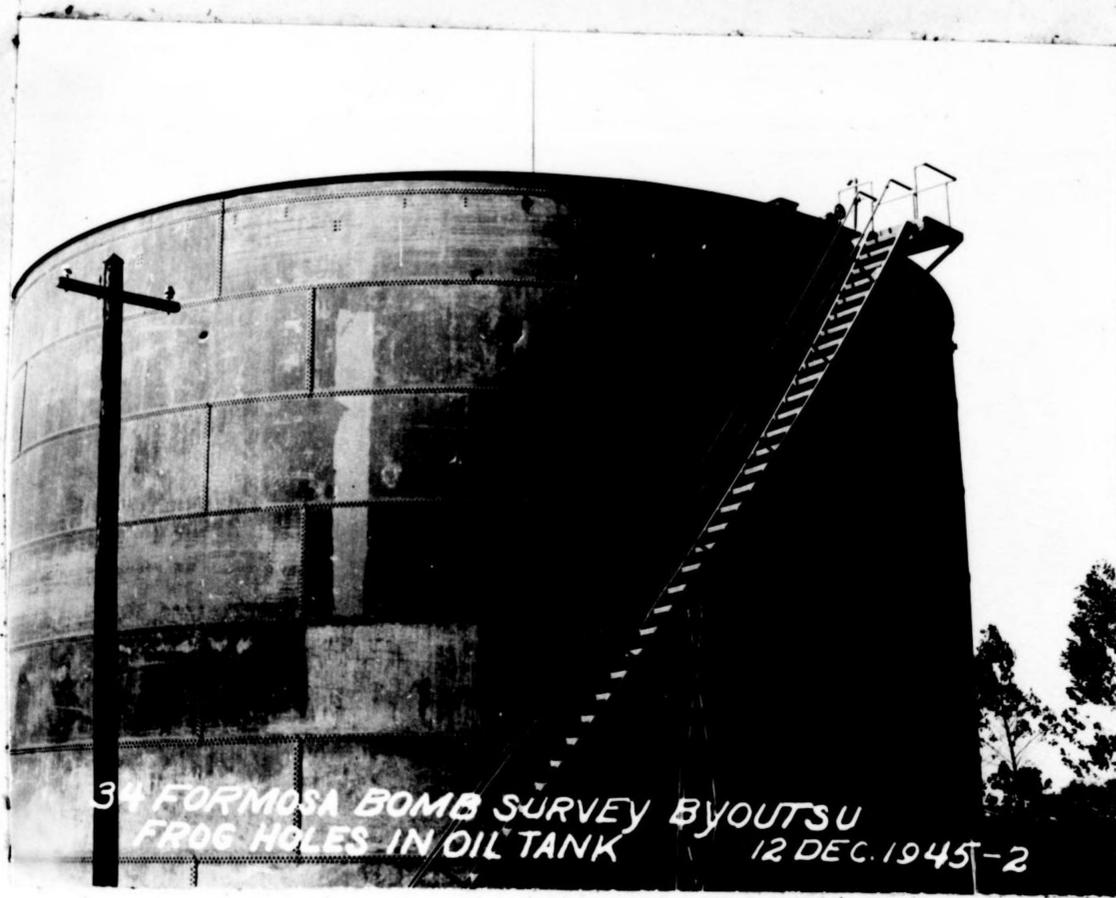


This building of the Byoritsu oil refinery is completely burned out. The heat caused the steel roof structure to collapse. The machinery pictured is a total loss.

The ammonia distillery building and equipment are destroyed.



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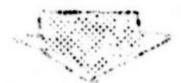
34 FORMOSA BOMB SURVEY BYOUTSU  
 FROG HOLES IN OIL TANK 12 DEC. 1945-2

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This 500,000 gallon storage tank was damaged by fragments of bursting bombs and has not been repaired.

The sheetmetal shop in the foreground was destroyed. The distillation plant in the rear was slightly damaged.



34 FORMOSA BOMB SURVEY BYOUTSU  
 SHEET METAL SHOP & DISTILLATION PLANT 12 DEC 1945-3



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34 FORMOSA BOMB SURVEY - BYOUTSU  
OIL DRUM STORAGE - 12 DEC. 1945-3

The gasoline storage tank area was slightly damaged. In the rear is the damaged 500,000 gallon tank.

Byoritisu oil drum warehouse is totally destroyed.



34 FORMOSA BOMB SURVEY - BYOUTSU  
GASOLINE STORAGE TANKS - 12 DEC. 1945-1

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## TAICHU AIRDROME

Taichu airdrome was built as a tactical field for both fighters and bombers. The main strip is 4,750' x 390', topped with macadam. To the west of the main strip is an auxiliary strip somewhat shorter, built for training. Taxiways, revetments, and maintenance facilities were adequate to handle 200 aircraft.

The following is taken from an interview of Major Fukui, the commanding officer of the airdrome during the war.

On the 1 and 2 January 1945, Japanese reconnaissance planes sighted the U. S. Navy off the coast of Formosa. Dispersal precautions were immediately taken, as air combat was prohibited at this time. Navy carrier planes attacked on the 3 and 4 of January, destroying 5 aircraft, damaging 3 hangars and damaging the runways. At this time there were 30 fighters and 20 bombers on the field.

On 14 January 1945, an American reconnaissance plane flew over and alerted the base. All aircraft except 7 took off and circled at sea while 36 B-29's came in and bombed, destroying 4 fighters of the seven remaining on the ground and destroying 2 kiloliters of aviation gasoline. Casualties were many, including 70-80 infantry soldiers SW of the field.

The Fifth Air Force hit Taichu airdrome nine times from 2 March 1945 to 2 July 1945. 47 aircraft were destroyed and 4 were damaged. The runways and revetments were so thoroughly bombed that aircraft were hidden as far as 10 kilometers from the field. 24 hours notice was needed for towing a plane back to the strip and preparing it for flight. In all 81 soldiers and army employed civilians were killed and 29 injured. All 3 of the hangars were destroyed or seriously damaged; 2 barracks buildings were destroyed, and one school building used as a barracks was destroyed.

After 2 July 1945 (last raid) there were 100 aircraft on the base. Later planes were ferried up from Java, Sumatra, and Indo China, increasing the number to 200, all of which remained at the end of the war. These figures include planes at Shinshoi and Sambon auxiliary fields.

20 suicide missions were staged from this base against Okinawa. The remaining aircraft were being held for mass suicide attacks against Okinawa during an expected landing on Kyushu by American forces. If Formosa had been bombed in August 1945, all available fighters would have been used to protect suicide airplanes on the ground.

TAICHU AIRDROME

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TESTIMONY OF MAJOR FUKUI  
Commanding Officer of Taichu  
Airdrome during war. Staff  
~~Officer in charge of operations~~  
~~8th Air Division.~~

3 January 1945: Navy Grumans 27 strong bombed the airdrome and buildings. 4 airplanes on the ground were destroyed, 1 damaged, but never repaired. Hangar damage, 30 fighters and 20 light TEB's, damaged. No interception. Planes were prohibited to conduct air combat. They had ample warning of an air raid. Planes were dispersed before the raid. On the 1st and 2nd of January the Japanese reconnaissance spotted ships near Formosa so precautions were taken.

4 January 1945 Grumans attacked and heavily damaged runways. 25 bombs were dropped. Probably 500" bombs. Barracks were damaged. 2 more hangars heavily bombed. No aircraft damaged. Same aircraft on the ground as on the previous raid. Dummy aircraft were placed north of the field. Real aircraft were dispersed south of the field. Bombs barely missed the dispersal area, just east of the aircraft.

14 January 1945, 18 B-29's bombed twice. Observers believe eighty 100 Kg and 250 Kg bombs were dropped. These bombs were proximity fused for observers said they burst in the air just off the ground. Many casualties. 70-80 fighters and 50 twin-engine heavy bombers were stationed here. 2 kiloliters of gasoline burned. 4 other fighters were damaged. Prior to the raid an American Reconnaissance plane flew over, this alerted the base and all but 7 airplanes took off and flew around over the ocean until the bombers left. 70-80 infantry soldiers were killed along a road S.W. of the airdrome.

2 March 1945, 27 B-25's attacked from the hills toward the ocean. They came in 2 waves of 6 aircraft, flying at minimum altitude. Then a wave of nine planes struck and another wave of six. Para-frag bombs were dropped and strafing accomplished. 140 fighters and 60 bombers were on the field at that time. 4 fighters and 2 bombers were destroyed. 2 more fighters damaged, but later repaired. 1, B-25 was shot down. The whole crew was killed. 2 Japanese were killed and 1 wounded.

17 March 1945, 44 B-24's attacked several times. Hit agricultural school south of the river that runs south west of the airdrome. This school was used as soldiers barracks. 10 fighters which were dispersed around the school were destroyed. 1 barracks destroyed at the airdrome. Several Japanese soldiers were killed. 5 fighters destroyed at the north west corner of the field. At that time the commanding officer received severe reprimand from the

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Taichu Airdrome Interview . Major Fukui

commander of the 8th division. 200 fighters and 60 bombers were stationed at the field at this time.

14 April 1945, 5 or 6 B-24's attacked several times. Observed to have bombed Toyohara airdrome. After that 7 attacked Taichu airdrome, dropping bombs at the north west corner of the airfield. 100 fighters, 50 bombers were stationed at the field. 2 of the fighters were destroyed. The taxiway leading to the mountain dispersal area was damaged but immediately repaired.

17 April 1945, 28 B-24's came in five waves. At this time the number of aircraft stationed here remained the same. 1 fighter and 1 bomber destroyed. One was parked on the west side of the field and the other on the south side. Many bombs hit the landing area. On the same day an auxillary field was attacked by 16 B-24's. 1 barracks was damaged. There were no real aircraft on this auxillary field. 20 civilian casualties but none of military status.

18 April 1945, 65 B-24's, 2 P-38's and 1 P-51 attacked. In 10 fighters burned in the dispersal areas south of the field and east of the field. 150 bombs were dropped. Same number of aircraft stationed here as recorded on the 14 April, minus the damaged or destroyed aircraft. Suicide planes began to come in from Toon. 2 arrived between the 14 and 18 of April.

16 May 1945, 54 B-24's bombed the taxiway to the mountains and the officers' club and barracks. 6 soldiers were killed. 4 planes destroyed (1 bomber and 3 fighters).

18 May 1945, 64 B-24's, B-25's and P-38's bombed and strafed. 1 B-24 was shot down by anti-aircraft guns. Crew all killed. No parachutes were observed. One wing was shot off and the plane spun in. 4 Japanese planes (fighters) were destroyed. At this time no replacements had come in since 17 April. Planes were being transferred to northern part of Formosa. Giran airdrome and Toon were receiving most of them. 5 soldiers were killed. 50 bombs hit the runways. 300 bombs hit on or near the mountain dispersal taxiway.

15 June 1945, Several attacks. 5 P-38's and 96 B-24's, attacked in several waves. So many planes that ground observers could not accurately count them. 3 fighters and 1 bomber destroyed. 2 more fighters were damaged but were later repaired. Aircraft damaged and destroyed were parked along roads east and south of the airdrome. 39 bombs hit the airdrome and 1,000 hit the taxiways. 5 or 6 soldiers were killed.

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### Taichu Airdrome Interview Major Fukui

2 July 1945, 5 B-24's were observed approaching but 4 turned back. The lone B-24 attacked Toyohara primary school. There was a supply dump located here, half way between Taichu and Toyohara. 34 civilians employed by the Army were killed. 28 civilians injured. 730 oxygen tanks burned and 73 belly tanks of bamboo construction burned.

After 2 July 1945, there were about 100 aircraft left at Taichu airdrome. Later planes were ferried from Java, Sumatra and a few from Indo China, increasing the total aircraft stationed here to 200 from the middle of July until the end of the war. Planes at Shinshoshi and Sambon auxilliary fields are included in this number.

### ANTI AIRCRAFT

There were 8, 7.5 cm guns; 4, 12 cm; 12, 20mm, and 8, 13 mm.

### SUICIDE ATTACKS

20 suicide sorties were staged from Taichu.

At the end of the war aircraft were being massed in this area for mass suicide attacks on Okinawa during an anticipated Kyushu landing by American Forces. If Formosa had been bombed at this time all available fighters would have been used to protect suicide planes.

No air protection of tankers was furnished because the courses of tankers were kept very secret.

250 suicide missions were carried out by fields on Formosa by the Army. 170 of these were observed to have hit targets. These missions were always staged in the early morning or late evening so that observer and lead planes could safely accompany the suicide planes. All these suicide missions were sent against Okinawa. In the battle of Formosa only fighters were used by the 8th Air Division. Out of the eighty suicide planes remaining on Formosa about forty of these came from Kyushu. Ground controled interception was set up but never used. Would have been used if attacked during massing for attack on Okinawa during the expected Kyushu landing. Bombing did not affect suicide attacks materially.

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Taichu Airbase Interview Major Fukui

DURING PHILIPPINE CAMPAIGN

During Philippine campaign night bombing missions designed to drop food and supplies to forces on Philippines were staged. Takao used as base for patrol flights. No patrols were staged from Taichu.

No interception from Taichu. Occasionally 1 or 2 planes were sent up but very seldom. They were saving planes for attacks on Okinawa. From January 1945 until the end of the war 700-800 planes arrived from Japan, 250 from other fields on Formosa.

The plan to save all available planes for suicide attacks originated in June of 1944.

In all Formosa there were 1,000 pilots at the end of the war. At Taichu there were 100-150 pilots including inexperienced pilots.

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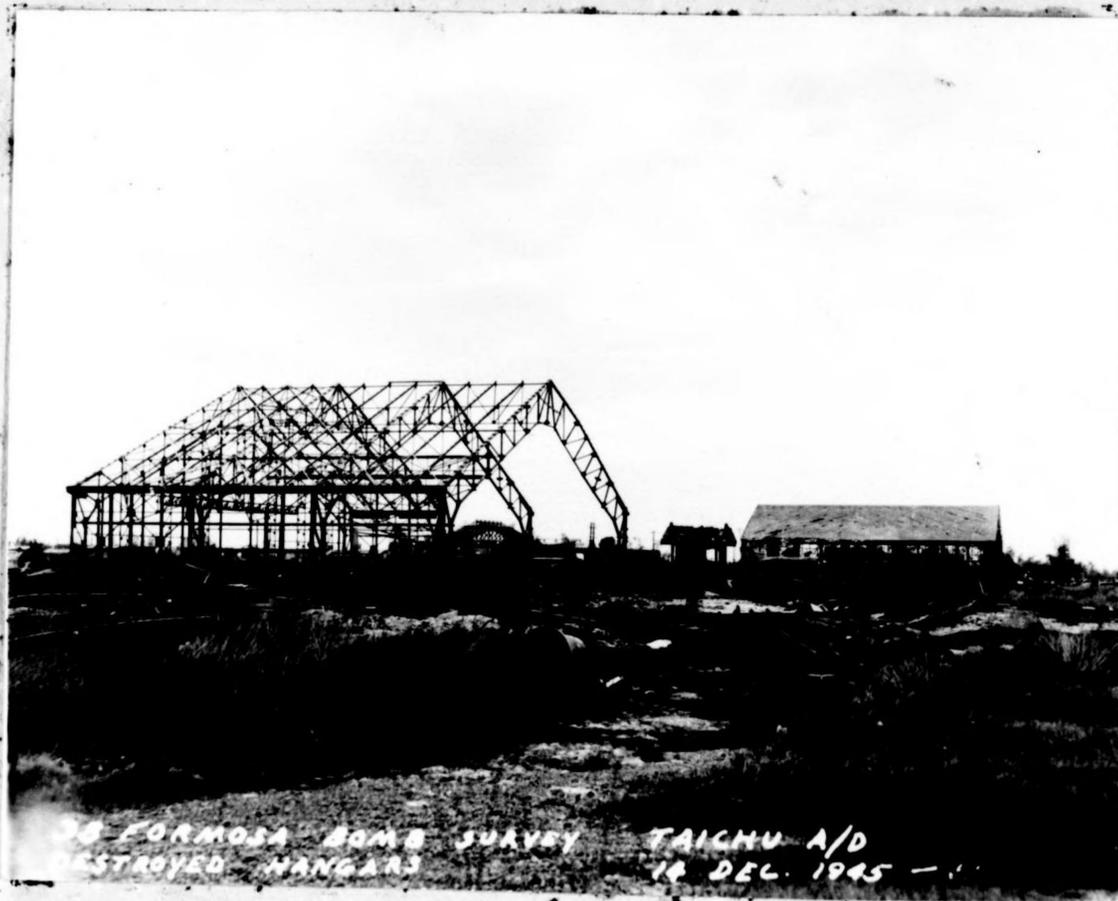
SUMMARY OF PRINCIPAL RAIDS ON  
TAICHU AIRDROME

DATE	TYPE OF PLANES	NO. OF PLANES	PERSONNEL		PLANES	DAMAGE		
			D	W		EQUIPMENT	OTHER	
3 JAN	GRUMAN	27			4	1 Hangar	Slight buring of barracks & weapons.	
4 JAN	"	19	1	5		1 Hangar 1 Barracks		
14 JAN	B-29	18	20			1 Hangar	*Damage of various equipment.	
2 MAR	B-25	27	3		6		**65,400 L. fuel.	
17 MAR	B-24	44	10		15	1 School 1 Barracks		
14 APR	B-24	7			2	Taxi-strip bad damage		
17 APR	B-24	28			2		Three Comm. lines.	
18 APR	B-24 P-38 P-51	68			10		" "	
16 MAY	B-24	54	6		4	Equipment damaged	" "	
18 MAY	B-24 B-25 P-38	64		5	4		***Fifty hits on landing strip.	
15 JUN	P-38 P-24	101	several		6		30 hits on strip; 1000 on taxiway.	
2 JUL	B-24	1	62			1 School hit	Some dam. on a/c equipment.	

NOTES: \*CO wounded, Asst. CO. Capt. SUZUKI, killed in battle.  
\*\*One (1) B-25 shot down.  
\*\*\*One (1) B-24 shot down.

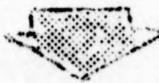
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Taichu airdrome hangar and maintenance area. Hangar in foreground is completely destroyed; hangar in center and hangar in background both suffered slight structural damage and both had roofs blown off. An attempt was being made to remove and salvage the center hangar.

In the foreground is structural steel of the destroyed hangar. The airplane whose engines are in the foreground burned in the hangar. In the background is a burned out barracks area.



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View of the destroyed aircraft at Taichu. In the far right hand corner is a serviceable "Frank" type fighter.

The line of fighters in the rear right were towed out of hiding after the end of the war.



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36 FORMOSA BOMB SURVEY TAICHU CITY  
JAP PLANES AT SATON A/D 13 DEC. 1945-2



Aircraft from Taichu Air-  
drome were hidden in wooded  
areas near an auxillary (Soton)  
strip. The airplanes shown here  
were taken out of dispersal  
after the end of the war.



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The two most important electrical generating plants on Formosa are Jitsugetsu-Tan Hydro Electric Plants numbers one and two. Number two plant is situated about one quarter mile north of the town of Suirico in the center of Formosa. Number one plant is about three miles up the river between plant number two and Lake Jitsugetsu. Together these plants furnished 143,500 kilowatts of a total of 250,000 kilowatts on all of Formosa.\*1

Of these two plants the larger is plant number one, having a capacity of 100,000 kilowatts. It was first bombed on 13 October 1944 by carrier based aircraft. On this raid both 250 pound and 500 pound bombs were dropped. Several of these bombs failed to explode and are still on the site. (December 1945) One bomb struck number two penstock, severing it and damaging penstocks number one and three by fragmentation. (This plant has a total of five penstocks.) Another bomb hit in the transformer yard, destroying the neutral rheostat. Blast walls prevented further damage.

After this raid the plant was shut down completely for one week for repairs. During this time the neutral rheostat was replaced, and the number two penstock abandoned, the salvaged parts being used to repair penstocks number one and three. At the end of one week the plant again went into operation, but with a capacity of only 80,000 kilowatts. (The 20% reduction was due to the loss of one of the five penstocks.)

On 13 March 1945, the plant was attacked by sixteen B-24's of the Fifth Air Force. 128 1000 pound instantaneously fuzed bombs were dropped scoring many hits on and near the transformer yard. All the transformers and oil switches were destroyed and burned. This stopped all operation at the plant until after the war.

On 23 March 1945 this plant was again attacked by B-24's, dropping 2000 pound bombs with 0.1 second nose fuzes and .025 second tail fuzes. Two of four storage tanks for transformer oil were destroyed. Number five penstock was damaged, and an underground water conduit to plant number two was punctured in two places. This attack had no effect on number one plant since it had been definitely put out of operation by the attack of 13 March. The damage to the underground water conduit would normally have decreased the capacity of number two plant. But number two plant itself was attacked on the same day the water conduit was damaged.

Number two plant had a capacity of 43,500 kilowatts. This plant was attacked only once -- on 23 March. On this date 16 B-24's dropped 63 2000 pound bombs with 0.1 second nose fuzes and .025 tail fuzes. Forty-four direct hits and near misses were scored on the transformer yard. Both of the transformers were burned and destroyed. Of the nine oil switches, five were burned and destroyed and the other four

NOTE: \*1 - All statistics were obtained by questioning Mr. Y. Ikeda, Japanese superintendent of main power lines to Taihoku and Takao. His duties included supervision of operation of both plants during the war.

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~~damaged.~~ All the penstocks were damaged by fragmentation. The only damage to the nearby generators was one excitor lead destroyed. This raid put the plant out of operation for the duration of the war.

In December 1945 plant number one was operating with a capacity of 18,000 kilowatts making use of one transformer which was brought from a plant under construction at Muscha. Number two plant was still completely out of operation. The restoration of these plants depends almost entirely on replacement transformers. Since there are no more suitable ones available on Formosa, it is necessary to ship them in. In view of the shipping situation after May 1945 this would have been all but impossible at any later date during the war. These plants may be considered definitely knocked out for the duration of hostilities.

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