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PART I - WEATHER SUPPORT

1. The request for overall weather support for [redacted] was initially made to the USAF, Hqs, Air Weather Service (AWS) in Washington through PP/AMD, the official KUBARK channel. Headquarters AWS approved the request and directed, by pouch, the 1st Weather Wing, Tokyo, to provide the support required. The pouched instructions stated that [redacted], AGO A#144672, would contact them on his arrival in Tokyo. [redacted] made contact through Colonels McDavid and Wright, NA/AMD. Two meetings were held in Tokyo. The first meeting covered the general requirements of [redacted]. Only 1st Weather Wing Headquarters personnel were present, and the 30th Weather Squadron (K-55 Korea) was designated as the unit to provide support. At the second meeting, Lt. Colonel Pusin, Operations Officer, 30th Weather Squadron, was called to Tokyo, and specific requirements were spelled out. Going through the proper channels established the fact in each AWS command that [redacted] had the approval of the next higher command; unnecessary questions were not asked, and in every case full cooperation was received. 25X1 25X1 25X1 25X1 25X1

2. On arrival in Korea, [redacted] visited the 30th Weather Squadron at K-55. Excellent support was forthcoming, but the mechanics of transmitting the forecasts presented difficulty. The [redacted] Net Control Station (NCS) was located in Seoul and the forecasts originated at K-55, 60 miles south of Seoul and a good two hours ride by jeep. The most secure system was to use the 8th Army Headquarters classified teletype system from K-55 to the Seoul area. The forecasts were then picked up at 8th Army Message Center by special [redacted] courier and delivered to NCS. NCS encoded the forecasts and transmitted them to the island base via a bilateral radio network. This handling was not the most desirable, but had to be accepted because of security of transmission. Six to eight hours delay was incurred from the time the forecasts were put on the teletype at K-55 until they were deciphered at the Island Base. 25X1 25X1 25X1

3. The overall target was divided into seven areas for purposes of forecasting, security and brevity of transmission (see Attachment A). The 30th Weather Squadron was requested to make up daily, at midnight, a 24 and 48-hour forecast. These forecasts were too far in advance, but were dictated by two factors: (a) the 6 - 8 hours required for transmission, and (b) the ship's travel time, also 6 - 8 hours, from the Island Base to its Approximate Launch Position (ALP). The lengthy forecasts were alleviated somewhat by an arrangement with K-55 wherein the Island Base, on receipt of a favorable 24-hour forecast, immediately requested a 12-hour forecast for the same valid time as the 24-hour. In this event, the launch ship departed from the Island Base and received the 12-hour forecast enroute to its ALP. If the 12-hour verified the 24-hour, the launch ship proceeded on course; if not, it changed course to coincide with wind directions of the later forecast.

4. Arrangements were also made wherein summaries (hindcasts) were supplied upon request. After each mission a summary was requested covering the area of operations and the period of time involved (launching period, uptime and downtime). These summaries were used in comparison with the conditions thought to be in existence at the time of the launch.

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5. A basic principle of free launchings is that an on-the-spot pibal reading be taken just prior to release. This principle was necessarily violated to some extent. During the months of June and July, low and middle clouds plus fog and overcast prevented taking pibal readings over 10,000 - 15,000 feet. However, there is one Rawinsonde station, K-14 (Kimpo AFB) in Korea where four daily readings are made and broadcasted in the weather code. These readings were monitored by the launch ship and helped to compensate somewhat for the inability to take on-the-spot readings. The Kimpo broadcasts were not to be relied on for regularity, as difficulties of one kind or another prevented them from broadcasting every reading.

6. In addition to the daily forecasts received from K-55, [redacted] 25X1 set up a weather detachment on the Island Base. The personnel consisted of himself, one Chief Petty Officer and two Weathermen. The weather personnel could read morse code, and monitored daily weather forecasts, including Chinese, using a RS-1 receiver. From these broadcasts two weather charts were drawn up daily. Pibal readings were also taken from the Island Base three times daily or when visibility permitted. This small but surprisingly good weather detachment proved to be invaluable throughout the season; it should be encouraged and better equipped for next year.

7. The AWS have a detachment at PY-Do (Island). Weather data from PY-Do is fed into Weather Central (K-55) through the AACS communications 25X1 system. This data was returned to the Island Base in the form of the [redacted] 25X1 [redacted] finished forecast, but many hours later. PY-Do does not have Rawinsonde facilities and were also handicapped in taking good visual pibal reading because of low ceilings. PY-Do proved to be the hub of [redacted] 25X1 launchings, as all ship launchings were made within a forty-mile radius of it. PY-Do is 8 - 10 hours ship's travel time from the Island Base. Later during the 1955 launching season arrangements were made wherein 25X1 [redacted] at the Island Base, could monitor PY-Do. The proper AACS frequencies were obtained from the 30th Weather Squadron, and additional weather information was available to the island weather detachment direct from source. Weather from PY-Do was important as it was received direct and it originated in the area of most interest to [redacted] 25X1

8. There are several changes possible in the mechanics of transmitting weather information that will greatly improve the overall picture. Emphasis should be placed on reducing the time lag between K-55 and the Island Base. Particularly when the launching ships are on missions more frequent and later forecasts should be supplied. The 30th Weather Squadron will cooperate completly, but security aspects of using telephones and codes must be worked out and approved. The 30th Weather Squadron agreed to requisition on 1 March 1956, 500 each Air Weather Charts (bland) for 25X1 use by the island weather detachment. They also will provide [redacted] with other miscellaneous items that might be needed if an emergency shortage should arise.

25X1 9. [redacted] paid a visit to 30th Weather Squadron on 12 September for a discussion of the 1955 season and the coming 1956 season.

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Lt. Colonel Hogland had taken command of the 30th Weather Squadron since the implementation of [redacted] and will remain in command until June 1956. 25X1
Major Jesse B. Havard, Chief Forecaster, 30th Weather Squadron is the case officer from the Air Force standpoint. Major Havard is scheduled for rotation in January 1956. Colonel Hogland suggested that [redacted] 25X1
on his return visit to 1st Weather Wing request a climatology study for 1956 to assist in [redacted] planning. 25X1

10. On 21 September Colonel Wright, [redacted] called on 25X1
the 1st Weather Wing, Tokyo. 1st Weather personnel present were: Colonel Shtogren, C.O.; Lt. Colonel Williamson, Intelligence Officer; and Majors Arnold and Craig. These officers were witting and a general discussion
25X1 of [redacted] took place. [redacted] expressed appreciation for the excellent 25X1
support already received and the support anticipated for 1956. A specific request was made for a climatology study for the months of April, May, August and September. Studies for April and May are to be used in planning for the actual date of activation of the Island Base. Six copies are to be delivered to Colonel Wright for KUBARK distribution. It was requested that the studies be made as sterile as possible, particularly as it is desirable to turn over one copy to the ROKN in its original form.

PART II - HYDROGEN SUPPLY

1. The final quantity of hydrogen cylinders to be used for [redacted] 25X1
in 1956 SHOULD BE LEFT OPEN until the entire supply system is thoroughly investigated. The number of cylinders required will depend directly on the "refill time lag". "Refill time lag" should be considered as that period of time between the departure of the empty cylinders from the Island Base until they are refilled and returned to the Base. A brief resume of difficulties in 1955 will present the problem and should help in overcoming it in 1956. It must be accepted that the consumption of hydrogen will always be erratic. Its overall use is entirely dependent upon favorable weather conditions and it is further restricted by the number of cylinders that can be carried on each of the launching ships. The maximum number carried on the YP-1 was 130 and it is estimated that 250 will be carried on the YMS. In addition to the ships, launchings will be made from the Island Base.

2. One thousand cylinders were planned for and put into use on
[redacted] in the first part of the season. The unexpected lengthy refill 25X1
time lag required that an additional 500 cylinders be requested on a crash basis. Initially, consumption was slow due to the limited carrying capacity of the single launching ship. Only 339 were expended between 3 June and 16 June and were returned for refill. Prior to their return to the Island Base, four consecutive favorable launching days occurred and the remaining 650 cylinders were used. The Island Base was without hydrogen for sixteen days and on at least five of these days, launchings could have been made.

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3. Movement of cylinders for [redacted] was handled through normal MSTS channels and schedules. Timewise, this means of movement was entirely unsatisfactory. An average of three ships departed Yokohama for Inchon per month and vice versa, this is a result of the US forces in Korea and cannot be expected to be more regular in 1956. Apparently, even these ships were not scheduled but on an as need be basis. Refilling hydrogen cylinders by normal MSTS movement encompassed: 25X1

a. Arranging for an LCU to pick up empties at the Island Base and delivery to Inchon — 3 to 4 days.
b. Scheduling bottom space and waiting for ship's departure from Inchon to Yokohama — 2 to 10 days.
c. Sea travel time Yokohama to Inchon — 6 to 10 days.
d. Truck transportation to and from the point of refill — 7 to 10 days.
e. Awaiting bottom space for return to Inchon — 2 to 10 days.
f. Return sea travel time — 6 to 10 days.
g. Off loading to pier at Inchon and transhipment by LCU to the Island Base — 3 to 5 days.

The only refill time factor at this writing is 41 days, however, this should not be taken an indicative for 1956.

4. There are several alternatives to insure that there is an adequate supply of hydrogen on hand at all times, they are:

a. Procuring the entire seasonal hydrogen requirements in cylinders, approximately 9,500, and stockpile on the Island Base before the beginning of the launching season. This would eliminate rotation of the cylinders completely. However, it is very doubtful if this quantity of cylinders are in the Theater.
b. Using a sufficient quantity of cylinders in the pipe line, probably 6,000, in order to be able to continue operations even against a lengthy refill time lag. Again, availability of the cylinders is a question.
c. Using a more logically available number of cylinders, probably 3,000, and arranging "charter ship" sea transportation direct from the Island Base to Japan and return. In conjunction with this, an intensive survey should be made to determine if there is a "port" source of hydrogen in closer proximity to Inchon (sea travel time). This approach to the problem seems to be the most logical. In exploiting this means of movement, it should be determined if the cost of
25X1 sea transportation is to be charged to [redacted] and, if so, how much? If applicable, the estimated costs should be included in the [redacted] budget request. 25X1

5. The outlying AWS detachments use two types of "portable" hydrogen generators. These were investigated and neither will fulfill the operational requirements of [redacted] The smaller type generator was used to inflate pibal balloons on the Island Base where time was of no concern and thereby saving the "imported" hydrogen for missions. 25X1

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6. The use of a metal barge at the Island Base would greatly facilitate handling of the cylinders. The exceedingly high tide (24 to 31 feet) hampers loading and unloading cylinders from the launching ships when the cylinders are stored on the beach. A barge would permit changing of cylinders at any time of the day or night. Ship's fuel could also be stored on the barge.

7. Comments: Problems of proper hydrogen support will always be inherent in any project similar to [redacted] however, they can be mimimized by due cognizance thereof and proper planning. 25X1

a. On covert operations security problems will always exist. Large quantities of yellow hydrogen cylinders are almost a dead giveaway unless proper cover is established. Procured through [redacted] channels, regulations require that they be prominently stenciled and dated. 25X1
b. Transportation and handling of cylinders generally require heavy duty vehicles, fork lifts and labor. The cylinders may require palletizing for shipment and depalletizing for operational use, this requires steel banding machines, extra wooden separators and palates.
c. Safety precautions must be always observed.

PART III - TRAINING OF INDIGENOUS PERSONNEL

1. In the original minute of understanding between [redacted] and [redacted] the latter had agreed to provide a launching crew of 25 men, one meteorologist and a ship with crew for launchings. 25X1 25X1

2. On [redacted] arrival in the field and in the initial discussion with [redacted] it was agreed that: (a) only [redacted] the ROK meteorologist, [redacted] counterpart, would receive training in the theoretical aspects of free balloon launchings and, (b) three [redacted] launching personnel would be trained in the handling of equipment, weighing leaflets, techniques of inflations and safety precautions in handling hydrogen. Consequently, one week was spent in Seoul training [redacted] on the plotting board, payloads vs free lift, bursting altitudes, trajectories and dispersion. [redacted] is the ranking meteorologist in the [redacted] and has had 11 years training and experience in Korea and Japan. Therefore, the majority of the time was spent on "ballooning" and establishing a sound working relationship. 25X1 25X1 25X1 25X1 25X1 25X1

3. On 8 May, [redacted] staff employee and nine of the launching crew were sent to the Island Base to set up camp and to receive the initial shipment of 674 hydrogen cylinders. 25X1

4. On 21 May, [redacted] and the remaining personnel of the launching crew moved to the Island Base. Prior to this time, the launching ship could not be physically inspected, modified nor outfitted due to security reasons; only pictures were available. Minor modification of the 25X1

ship, primarily clearing the decks, was done at the Island Base. Proper deck loading and lashing of cylinders to the deck was worked out. Initially only 102 cylinders were carried per mission, later this was increased to 130. Inflation shields were made and also lashed to the deck. Unfortunately, without proper port facilities, the lashing of cylinders was inadequate and 37 cylinders were lost overboard when very rough seas were encountered.

5. Intense ground training of the launching personnel was conducted, starting with the hydrogen cylinder and continuing chronologically through to the release of the inflated balloon. During training, emphasis was placed on bringing each individual to the point that they could perform any of the duties required. During an extremely long launching period, job versatility is highly desirable among the launching crew. Comparatively little actual inflation experience was given in an effort to conserve hydrogen for operations. However, two trips were made to sea to accustom the crew to the roll and pitch of the ship and a minimum number of balloons were inflated and released (without leaflets). During the entire training period, the language barrier was somewhat of a problem because of the technical terminology involved. However, the subject of instruction was entirely new and all personnel were interested and eager to learn.

6. June 1, the planned target date, the launch ship was mission-ready and the launching crews were trained. However, conditions were unfavorable on that date. On 2 June, the ship departed X at 1640 hours, began launching at 2240 hours and completed the first mission 3 June at 0530 hours. All launching personnel proved to be "land-based" sailors and consequently seasickness prevailed.

7. The launching crew became progressively more proficient on each mission and were highly qualified in every aspect of balloon inflations at the end of the season. [redacted] has agreed to augment the launching crew 25X1 but these same personnel will constitute the cadre for the increased launching crew in 1956.

8. After several successful missions [redacted] assigned two additional 25X1 officers to [redacted] The first was an executive officer; the second was 25X1 another [redacted] meteorologist. The meteorologist was an understudy to [redacted] 25X1 25X1 25X1

9. It is [redacted] opinion that [redacted] is technically qualified 25X1 to handle weather requirements and balloon launchings. His greatest handicap is his lack of approach to mass production techniques which are essential.

PART IV - TECHNICAL EQUIPMENT

1. <u>Manifold systems</u> for supplying hydrogen to the inflation stations were not included in the initial planning for [redacted] The deck loading 25X1 and arrangement of the cylinders on the launching vessel were details that had to be worked out at the last minute and precluded designing a suitable

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manifold system in advance. The only approach was to rely on using the gas from individual cylinders simultaneously, which required employing a number of regulator valves to expedite inflations. In the latter part of the launching season, a versatile type manifold system was designed to accommodate the ship's cylinder loading arrangement. Six manifolds were tested to determine the minor modifications that might be required prior to final procurement action. These six manifolds can be attached to 10 cylinders each and are so designed that as many cylinders as desired can be fed into the outlet hose (see photos). Detailed drawings are attached. For 1956 a sufficient number of manifold systems should be supplied for
25X1 [redacted] that will completely eliminate using individual cylinders on either launching ship. In addition, there should be approximately 20 manifolds (200 cylinders or approximately 800 balloons) that remain attached to the full cylinders on the Island Base. This will provide an ever-ready maximum capability of making launchings from the Island Base with a minimum number of men. The manifold requirements are included in the logistical annex for 1956.

2. <u>Inflation shields</u>. The first inflation shields were too small. A balloon with a 2-pound load was inflated with 400 grams free lift and its diameter was used as a basis for the dimensions of the shields. Later, when two 1/2-pound loads were released, the shields were too small and required building new and larger ones. The shields were made at the Island Base, using "jackleg" carpenters. Sandpaper and rasps had been overlooked but were needed to smooth up the rough surfaces that punctured the balloons. The final recommended size of shields for the J-100 balloon (shipboard launching) is 5'6" wide by 5'6" deep by 6'6" high (see photos). This size will accommodate maximum payloads and the necessary free lifts. Six shields were lost overboard due to high surface winds and rough seas. Secure lashing with proper hardware is essential, and the shields themselves must be of sturdy construction. One-quarter inch plywood did not prove satisfactory for [redacted] It warps, and the standard size sheet, 25X1
4' by 8', requires splicing. Personnel and facilities were not available to design and construct a satisfactory type of "collapsible" shield. The non-collapsible shields used were damaged or destroyed by high winds even while on the Island Base. Non-collapsible shields were a security risk when the launching ship was enroute to or returning from a mission. Also, it was necessary to remove the shields when the ships went into port for maintenance or refueling. A canvas covered, folding type shield should be designed.

25X1 3. <u>Inflation nozzles</u>. The several types used on [redacted] were strictly makeshift and field expedients. The balance weigh-off principle of inflation had to be discarded completely; this necessitated that a light-weight nozzle be used and free lift regulated by the addition of the proper gram weights to the nozzle. A light-weight nozzle was not available and therefore had to be improvised. Even though these were used successfully they should be improved.

4. <u>Valves</u>. The screw-type valves supplied by [redacted] were satisfactory, 25X1
but a quick action type would expedite inflations. Using the screw-type valve over inflations will occur and this requires releasing the excess gas. Over inflations unnecessarily waste time and gas. The rubber hose

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leading from the cut-off valve to the inflation nozzle should be the light-weight chemists type.

5. Foot spreaders. [redacted] designed and made a prototype foot spreader. 25X1
This is a device, activated by foot, to hold the mouth of the balloon open while the leaflets are being inserted. The design principle of the prototype was very good but required strengthening. The spreaders used on [redacted] 25X1
[redacted] were made in the [redacted] motor pool and satisfied the requirement; 25X1
however, several improvements are recommended. They are: roller-bearing pulley or runner; the flexible steel cable be adjustable in length; and the foot pedal be placed at an angle to the prongs (see photos).

PART V - LOADING BALLOONS

1. Weighing leaflets and loading them into the balloons is not a difficult nor time consuming job when given the proper equipment and sufficient personnel. The basic items of equipment are: (a) foot spreaders (see Part IV); (b) five pound grocery scales are obtainable on the open market, the balance type is preferable to the clock-face type and (c) a sufficient quantity of footlockers (see photos) or suitable substitutes for packing and handling the balloons after loading. Footlockers are more of a prerequisite for shipboard launchings than land launchings.

2. Mass production techniques are called for when loading large quantities of balloons and proper thought should be given to layout and organization of the loading site. Twenty men should be able to load 1,000 balloons in four hours. A typical operation should consist of: (a) one supervisor; (b) three men handling boxed leaflets and loaded footlockers; (c) five men weighing leaflets; (d) six men operating the foot spreaders and inserting the leaflets in the balloons and, (e) five men packing the loaded balloons in the footlockers. Bulk leaflets should start on one end of the table, the loaded balloons finish on the opposite end.

3. The Launching Officer places his estimated requirements on the Supervisor, that is, the total number of balloons required, a quantity breakdown with the respective payloads and the leaflet themes to be used. The Supervisor keeps a record of all loading and marks each footlocker to show the number of balloons, their payload and the theme number. In addition, he keeps a record of the number of balloons ruptured on the foot spreaders. The three men handling the new or boxed leaflets merely "feed" the men weighing leaflets and also take care of the footlockers after they have been filled with balloons. The men weighing leaflets do not actually weigh each stack (see photo). The first stack is weighed and then used over and over as a leveling-off stack for the succeeding loads. The scales are placed handy and occasionally a leveled-off stack is weighed to check on accuracy. The spreader operator simply inserts a stack of leaflets in each balloon (see photo). The J-100 balloons are packaged ten to an individual box and 25 to 40 boxes to the shipping carton. The shipping cartons should not be opened until the balloons are ready for loading.

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When the cartons are opened, the boxes of ten balloons should be placed beneath the spreader table where they are handy to the spreader operator (see photo). The men packing the footlockers with the loaded balloons drain the excess air from the balloon, to save space, and carefully pack them in footlockers. Careful handling of the balloons should be exercised throughout the loading process to prevent tears and punctures. Rough, careless handling will increase the percentage of premature bursts on inflation. The standard metal QM footlocker 15" deep by 18" wide by 29" long will hold: 45 J-100 balloons with a 1½ pound load; 30 with a 2 pound load or 25 with a 2½ pound load. The number of footlockers required will depend on the launching capability.

4. Balloons should not be loaded in anticipation of missions, but only on receipt of a very favorable forecast. Even then, loading should be planned for completion just prior to the ship's departure. This criteria was used throughout [redacted] but one mission was cancelled at the last minute. Several weeks later these balloons were launched and the percentage of premature burst ran 19%. On another occasion 1,100 balloons were loaded for a mission; not only did the winds change but policy also, the leaflets were thrown out completely. A "down-side" up version of the foot spreader had to be improvised to unload the leaflets from the balloons. 194 balloons were ruptured in the process of unloading. Premature bursts ran 16% when the unloaded balloons were reloaded and finally launched.

5. Loading balloons on shipboard enroute to the launching position did not prove feasible or practical. The space required, properly protected from the winds, did not exist on the launching ship. The launching crew were land-based sailors and seasickness prevailed on every mission.

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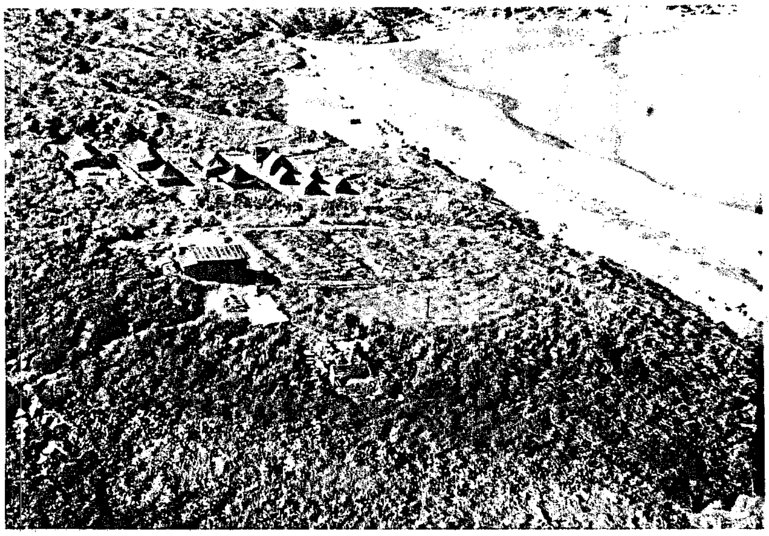
PART VI - [redacted] MISSION DATA

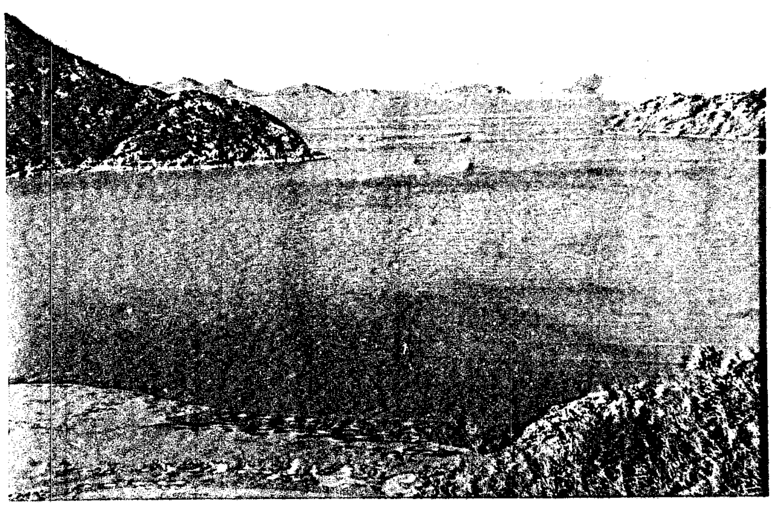
MISSION NUMBER	DATE 1955	BALLOONS USED P.BURSTS	BALLOONS USED LAUNCHED	TOTAL WT.(LBS) LAUNCHED	NUMBER INFLATION (SHIELDS)	TIME REQ'D FOR LAUNCH	NUMBER CYLINDERS EXPENDED	REMARKS
1	2 June	24	322	644	4	6 hrs. 50 min.	98	10 balloons were burst by hitting rough edges of the shields on release.
2	14 June	34	471	1,058	4	6 hrs. 10 min.	116	
3	16 June	57	413	1,208	4	6 hrs. 40 min.	120	
4	30 June	97	583	1,214	5	7 hrs.	167	15 balloons were burst by contact with the superstructure of K-192, This was first time ship was used.
5	14 July	67	509	974	4	5 hrs. 30 min.	130	
6	15 July	49	204	437	5	1 hr. 45 min.	54	
7	16 July	30	325	575	4	3 hrs. 30 min.	66	
8	17 July	80	819	1,638	5	8 hrs. 05 min.	208	
9	3 Sept	200	1,064	1,881	2	11 hrs.	296	
10	13 Sept	27	323	646	4	4 hrs.	78	

NOTE: 1. During the period 16 June to 30 June the launching ship was out for repairs.

2. During the period 18 July to 7 August the hydrogen supply was completely exhausted.



1. The island base camp site.



2. The cove looking west from the camp area.

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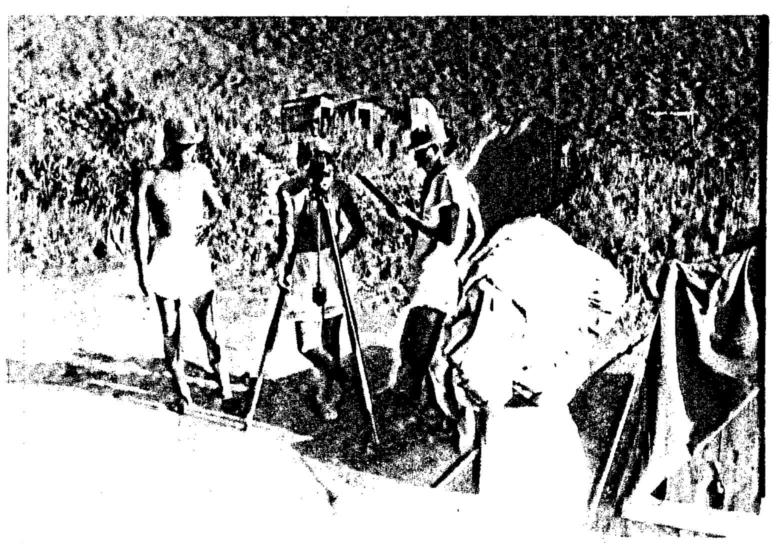
5. Inflating J-100 balloons for pi-bal reading. Portable hydrogen generator was used in an effort to conserve gas. Procedure requires 2o minutes.



6. Theodolite reading.

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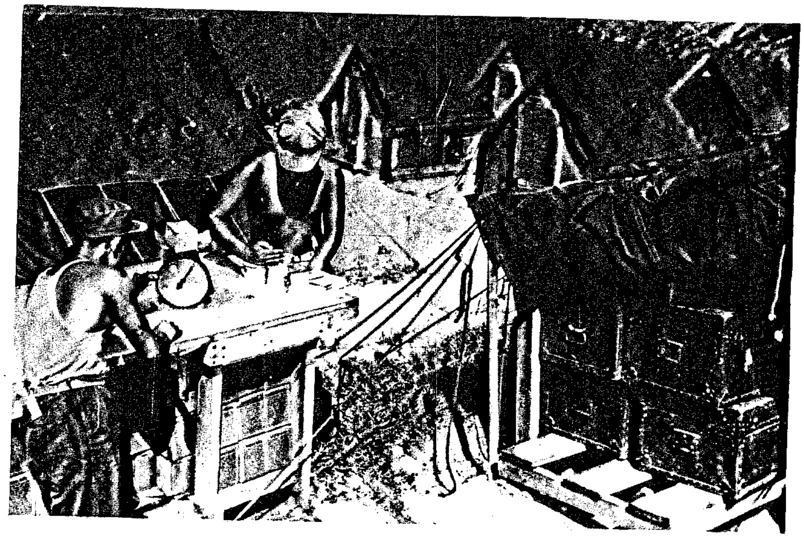
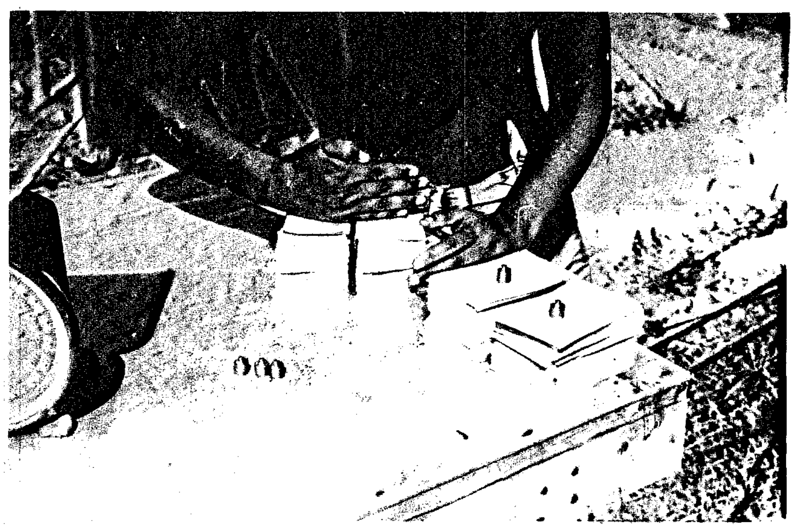


7. Weighing leaflets. A stack of leaflets is weighed and thereafter used as a measuring stick. Occassionally the stacks are weighed to check acuracy.



8. "Leveling off" stack of leaflets.

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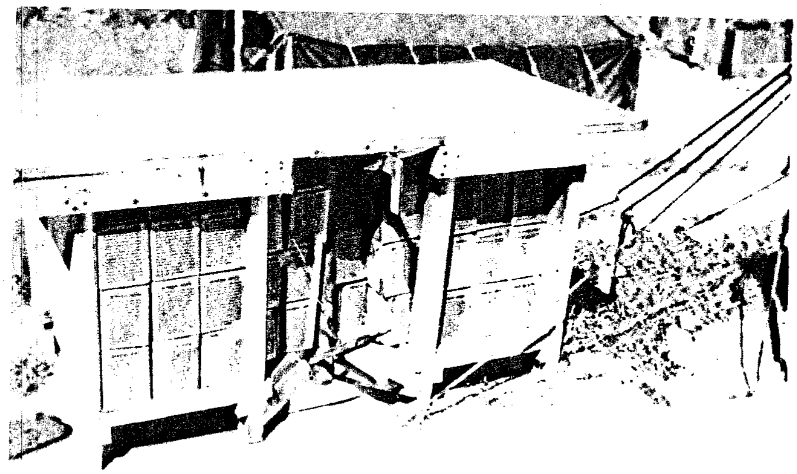
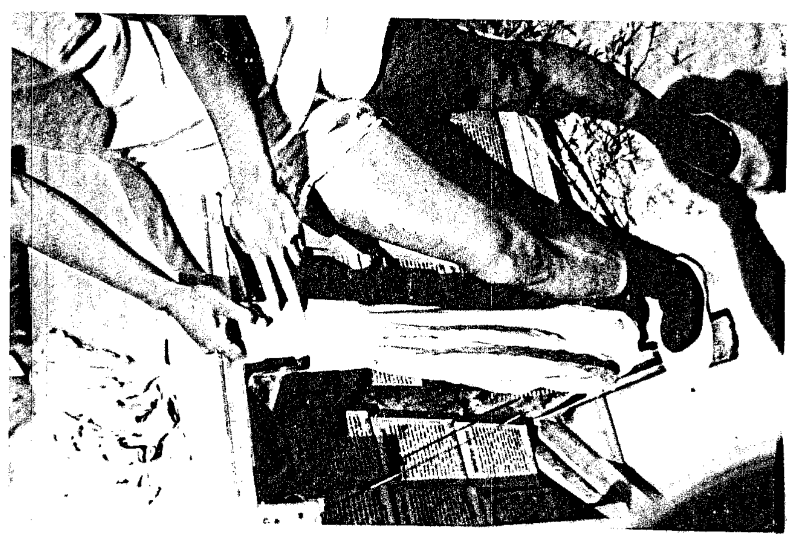


9. The foot spreader. A device, activated by foot, for holding the mouth of the balloons open for the insertion of leaflets. The table top or working surface is acetate covered.



10. Inserting leaflets in J-100 balloons. It is recommended that the foot pedal be placed at a different angle to eliminate possible puncture.

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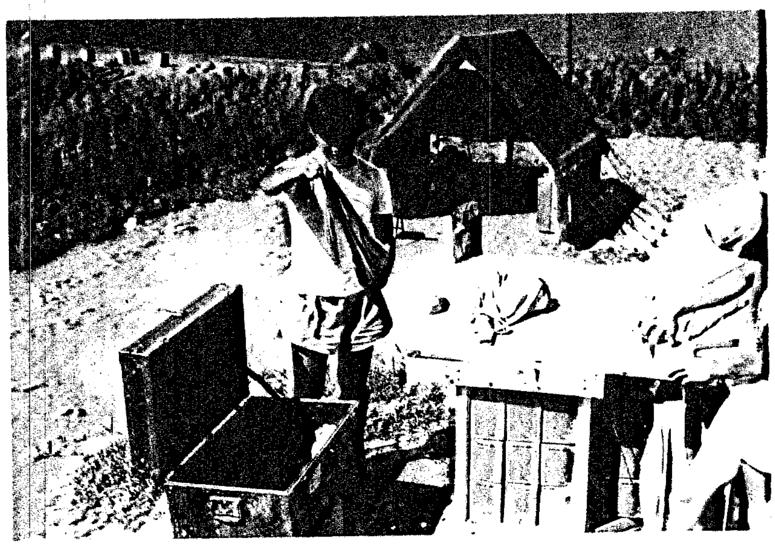

11. After insertion of leaflets, excess air is drained from the balloon prior to packing in foot lockers. Care in handling balloons throughout the entire loading procedure is essential.

12. The new balloons are stored on shelves beneath the spreader table and handy for the operator.

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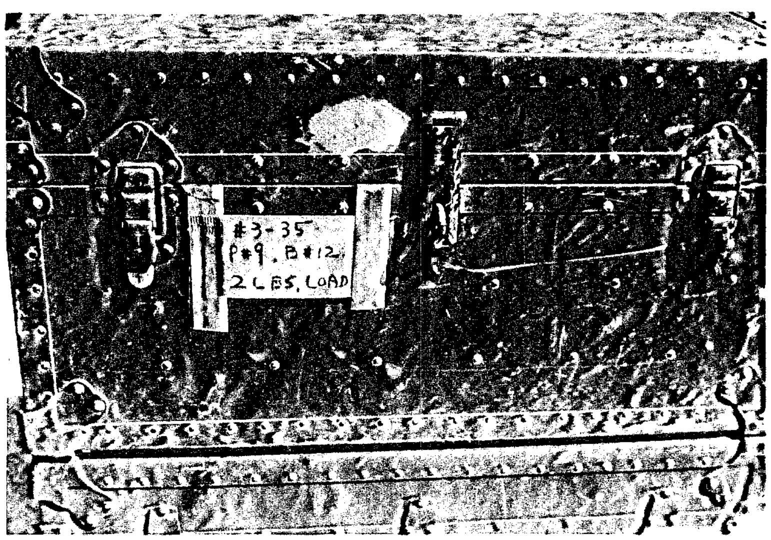
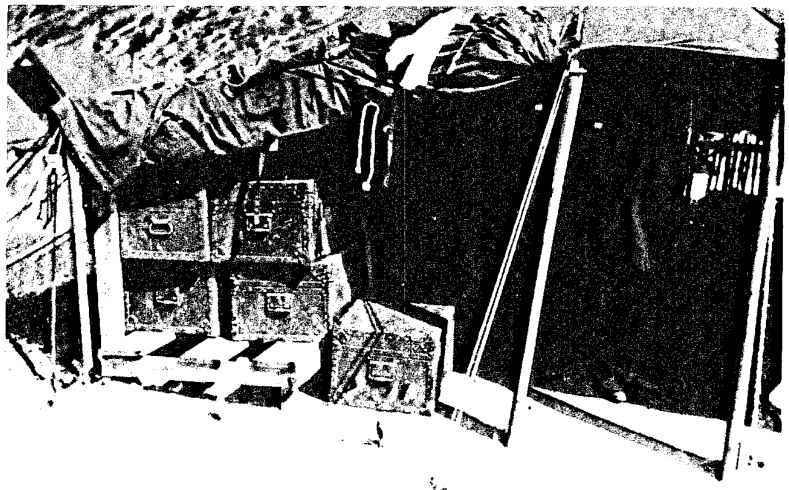
13. A footlocker containing loaded balloons for ship board operation or a suitable substitute should be used to protect balloons in handling.



14. Each footlocker is labeled. The label indicates that the footlocker shown is the third locker to be loaded. It contains 35 balloons with pink leaflet #9 and blue leaflet #12, each balloon has a 2 pound load of leaflets.



15. Footlockers loaded with balloons ready to be put on ship.

16. A down side up version of the foot spreader. This device was improvised when it was necessary to unload 1,100 - 100 balloons.

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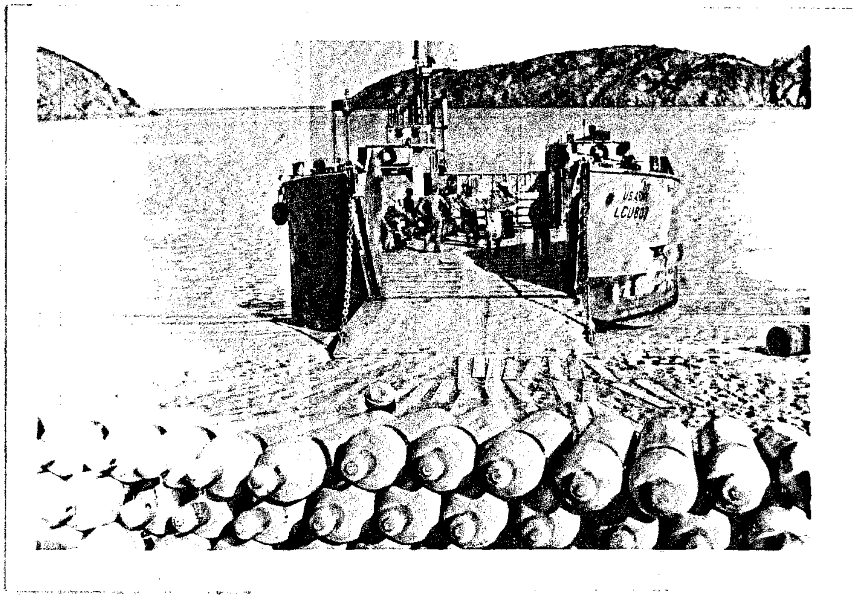
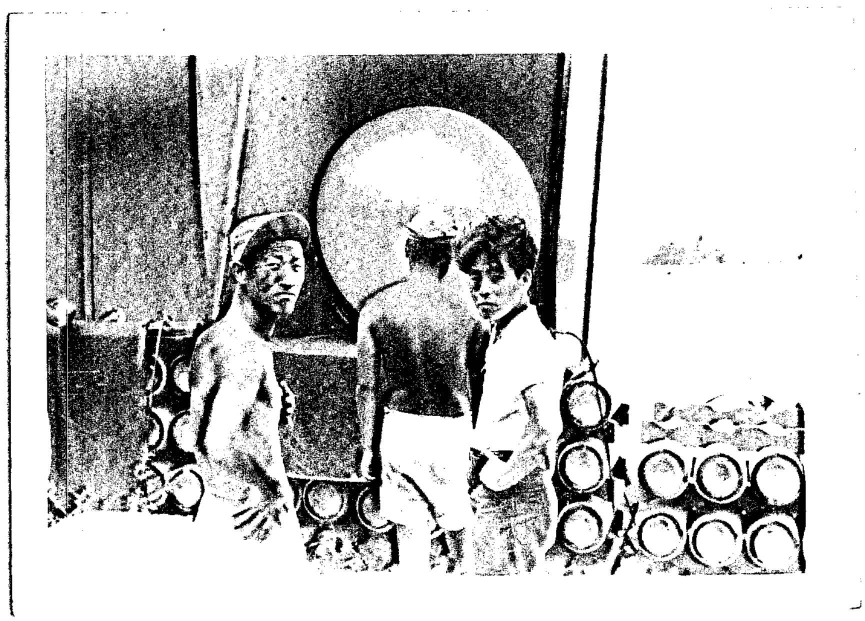


17. An Army LCU delivering hydrogen cylinders to the island base of operation.



18. Launching J-100 balloons from the island base of operations.

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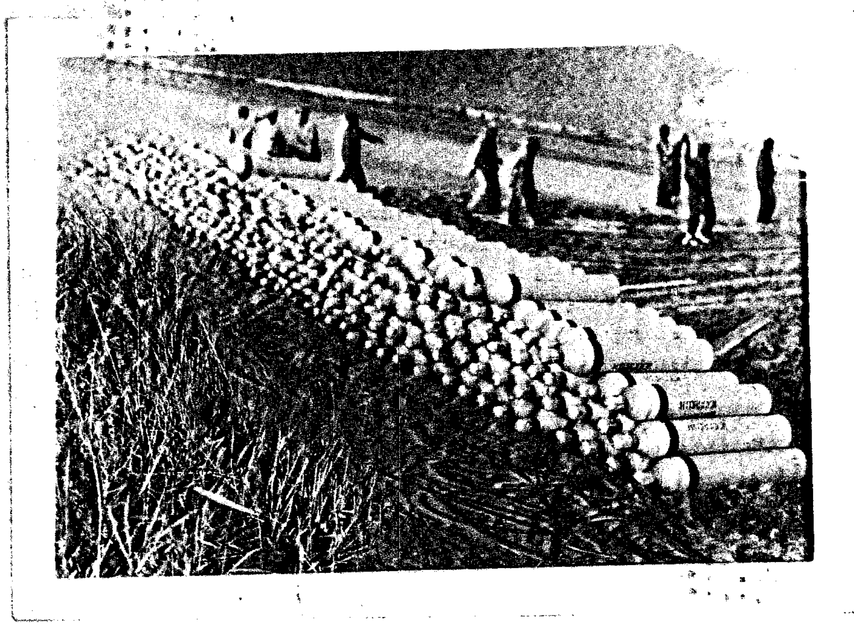

19. Hydrogen cylinders.

20. Inflation of the J-100 balloon.

SECRET

25X1

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25X1

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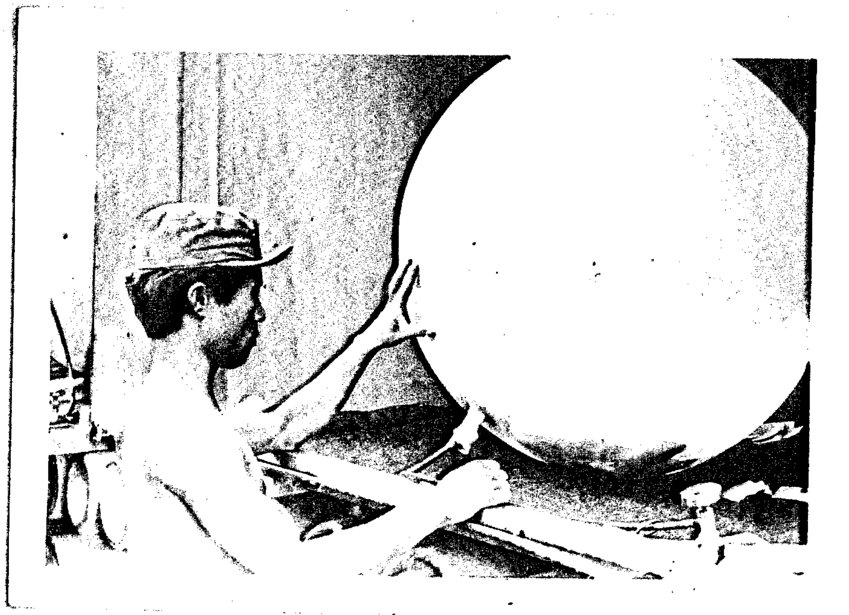
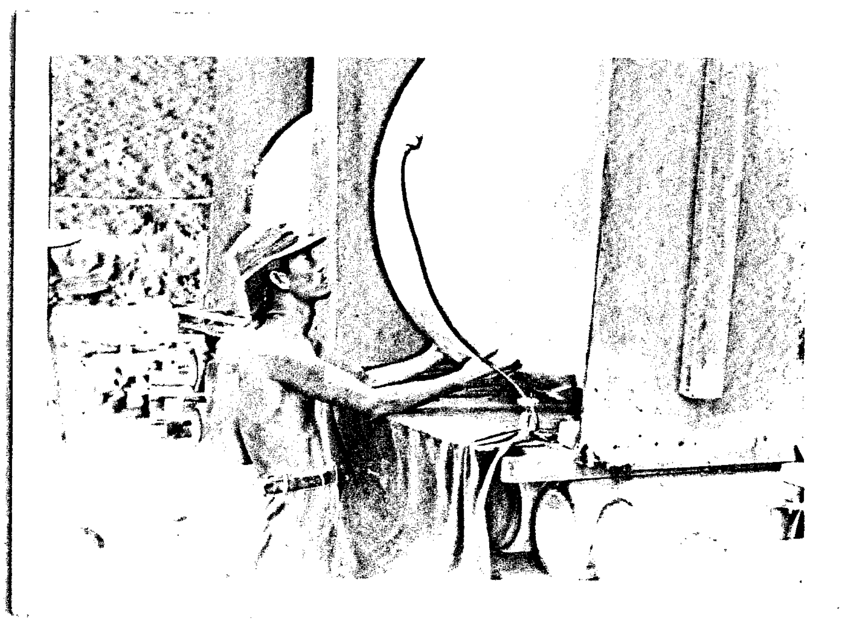
att

25X1



21. Inflation of the J-100 balloon.



22. Inflation of the J-100 balloon.

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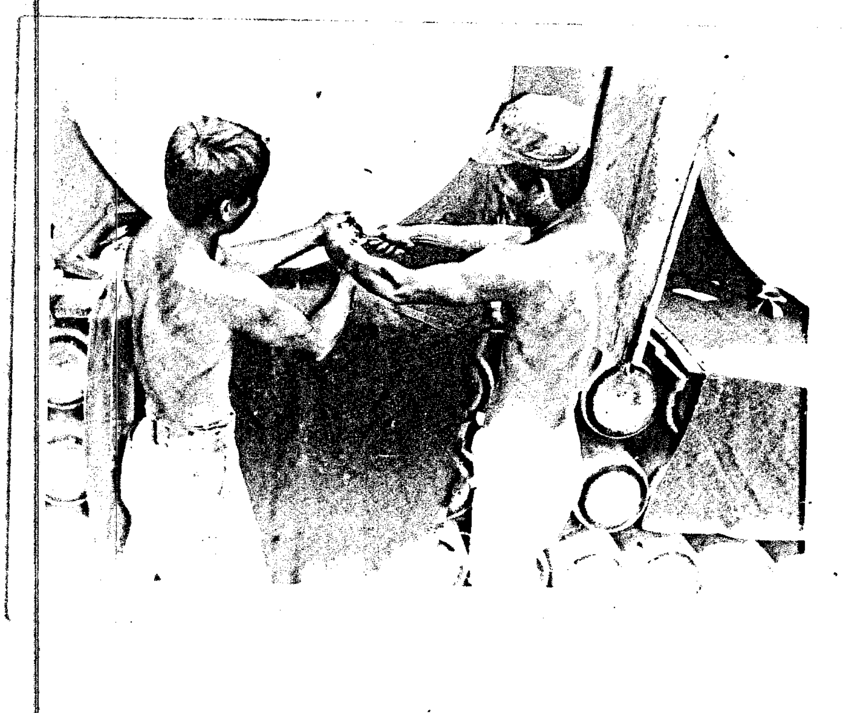
23. Inflation of the J-100 balloons.



24. Tying off J-100 balloons using a vac-tie hand tool and sterile clamps. The hand tool greatly expidete tying off and is very simple to use.

SECRET 25X1

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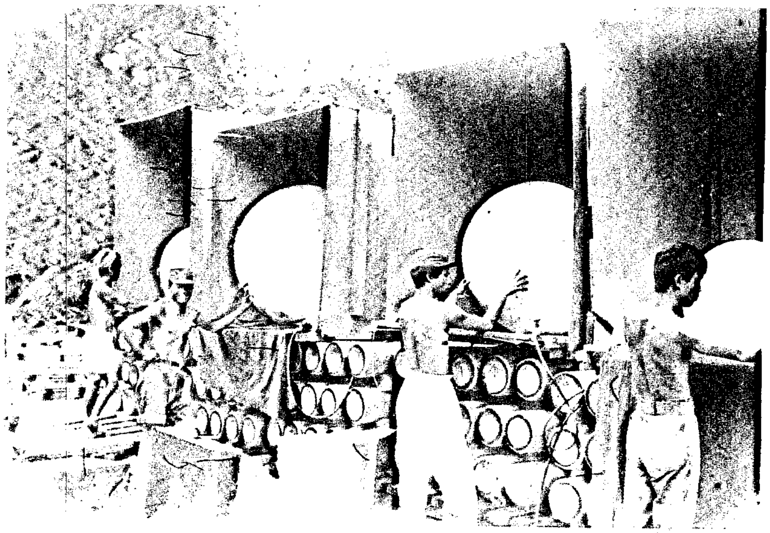
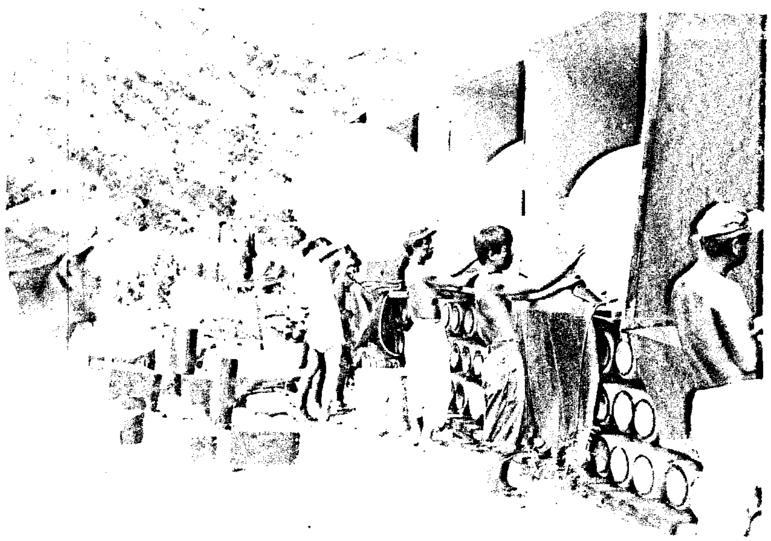


25. Four inflation shields during a launching period from the island base.



26. Releasing J-100 balloons. SECRET