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SURVEY OF ICE MANUFACTURE AND DISTRIBUTION
YAMAGUCHI PREFECTURE
JULY - 1948

KINNAMAN

Summary technical data contained herein with attendant conclusions are the resultant of a completed survey of ice production potential in Yamaguchi Prefecture conducted during July 1948 by S/Sgt E. B. Broadstreet of Yamaguchi Military Government Team and the writer.

Since particular emphasis was directed upon that segment of production channeled into fish preservation effort, cognizance of the charges against total ice rproduction as imposed by relevant variables of perishables expediting was considered rather than determined as the result of this survey. Said data having been purposely omitted from this report the introduction of same has been made in only those instances whereby it will best lend support in determination and final analysis of effective ice production tonnages.

Basic production and manufacture variables confronting producers in Yamaguchi Prefecture approximate those singled out for elaboration and submitted on previous report of survey as found in Okayama Prefecture and are thus deleted from this summary.

Attendance in Shimonoseki on 1 July 1948 at a conference called by the investigator included a pepresentative group of plant managers and engineers from the major ice producing facilities in the area. Discussion was directed toward prompting and effecting remedial measures designed to stimulate ice production activity and swell reserve tonnages against the impending demands to be made by acceleration of the fall fishing season. Sincere response was evidenced as conferes entered into the discussions of manufacturing problems and production bottlenecks.

The existing shortages of certain critical materials plus a confused expectancy regarding future procurements highlighted in general the topics for discussion. However, the entire group was visably distracted when pressed for results of action taken to date in order to step up ice production tempo by concerted effort as a manufacturing group. The assembly failed to evidence any qualified spokesman who could authoritatively speak for the industry as a producing group. Individual aggressiveness on the part of producers in general was not lacking as the subsequent inspections and survey of plants revealed. Requests for data and production statistics was supplied with the cooperation of all concerned. However, criticism of serious proportions was directed at the Ice Manufacturers Association of Yamaguchi Prefecture for lack of coordinating effort and apparent indifference toward compiling and maintaining reliable statistical data on production activity of member plants.

Since the finality on recommendations for the dispensing of critical materials made available for allocation is vested with this agency it was felt that a strict administrative accountability be exercised in order to justify said distributing authority. Also, the policy of making equitable distribution available to association members on the basis of plant capacity index rating should be discouraged. Recommendations were made for the establishment of definite priorities within the industry to be given those facilities who on the basis of productive effort are contributing most to the ice economy of said prefecture.

Furthermore, it was revealed that this conference was an occasion for the first collective group meeting of ice manufacturers, engineers, and interested personnel held in Shimonoseki area.

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The statistical section of this report contains relevant tables for comparative analysis on past, current, and tentative production schedules in addition to applied materials and power consumptions.

Class "A" ports of Shimonoseki, Hagi, and Senzaki were singled out for special emphasis with regard to analysis of production potential.

The advisability for exercising the provisions of Agriculture and Forestry Ministerial Ordinance No. 5 in accordance with Cabinet Instruction No. 3 for 1947 has been considered relative to the Materials Demand and Supply Adjustment Law, and the Ice Demand and Supply Adjustment regulations contained therein.

The personal opinion of the investigator thus concluded upon completion of survey is as follows:

Opposed to enactment of any regulatory control measures being placed on the production and distribution of ice.

Review of the articles for proposed enforcement as contained in the regulation indicates that administration within that sector of the industry devoted exclusively to the expediting of marine products are complying therewith.

Since 80% of the total ice producing activity in Yamaguchi Prefecture is concentrated in the Shimonoseki area, and the majority thereof being owned and operated as an integral part of said fishing interests tends to stimulate ice production effort, and at the same time diminishing the necessity for regulatory controls.

Producing facilities thus mentioned require a definite flexibility, readily adjusted to the peculiar demands of the industry. Cognizance for the gyrations of conventional ice production and demand as influenced by seasonal variations are not strictly applicable in said instance.

The months of July and August are normally peak demand and consumption periods on commercial ice production. However, a reversed order of process is effected whereby the temporary recess in fishing activity allows time for depleted ice reserves to be replenished for accelerated September-December demand.

Regulatory control measures would of themselves tend to discourage the individual aggressiveness of those producers who have managed to maintain production schedules by augmenting critical materials allocations from other sources of supply.

Accrued shortages and belated receipt of allocated production materials continues to be the chief source of registered complaints, and established alibis for retarded activity.

Determination of total effective ice production against applied materials and power consumption in Yamaguchi Prefecture was negated in lieu of adequate bookeeping and accounting, reliable statistical data, and competent technical information encountered during the course of this survey.

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Allowances for a 60% productive utility as realized during the early part of 1948, and charged to accrued critical materials shortages, namely ammonia (NH_3), ice machine oil, and calcium chloride ($CaCl_2$), merely accents the heavy producing demand to be exacted for the remainder of this year.

The 1948 production quota of 21,000 tons represents 56% of the rated potential icemaking capacity in Shimane Prefecture.

Shimane ice production January through September 1948 has approximated 13,037 tons or 62% of the planned annual estimate.

The realization of production schedule commitments is quite possible since several activities were operating at efficiencies up to 120% of rated capacity as the resultant of refrigeration tonnage diverted into icemaking effort.

However, the noted increase of 1948 production to date has been accomplished despite the fact that estimated receipts of official ammonia allocations has been less than in 1947 for the corresponding period.

The following reasons are advanced as probable for, and effecting same.

a. Electric power availability during 1948, has for the most part been adequate in support of maximum ice production effort.

b. Belated redemption of official critical materials allocation coupons drawn on the fourth quarterly allotments for 1947, but not honored until first quarter period of 1948.

c. Blackmarket procurements of ammonia, ice machine oil, etc., were definitely employed by the more aggressive producers to supplement official allocations of same, by token of the unsolicited admission of plant owners and operators interviewed.

Space designated as ice storage in Tottori plants aggregated 156,879 cu ft (Approx. 3,500 measurement tons) and Shimane facilities totaled 190,346 cu ft (Approx. 4,300 measurement tons).

Ice reserves at the time of this inspection totaled 95 tons in Tottori Prefecture, and 430 tons in Shimane-ken.

The statistics section of this report contains the reported totals of allocated critical materials applied, against 1947 and 1948 actual and estimated production tonnages for both Shimane and Tottori Prefectures.

Plant capacity index ratings and cold storage facilities detail are also listed in the same section of this report.

In lieu of more refined calculations the following estimate by the investigator will tend to serve as an overall index, relative to the producing sources, demand for, and supply of ice in both Shimane and Tottori Prefectures.

The following listed ports have been designated as Class A by the Japanese Central Government for fresh fish landings.

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Total ice making capacity of the 36 ice plants and cold storage facilities in Yamaguchi Prefecture is estimated at 1,143 tons per 24 hours.

Average daily production as of 1 July 1948 approximated 843 tons or 73% of rated potential. Actual tonnage produced January through June 1948 totaled 111,320 tons, with an estimated schedule of 166,400 tons for the remainder of year July through December 1948. This aggregate tonnage of 277,720 for 1948 represents a gain of 88,100 tons over the 189,620 tons for 1947 or an increase of 31%.

Scheduled production of 29,466 tons for July 1948 was to be channeled into the following sources of distribution.

a.	Occupation Forces use	494	tons
b.	Medical benefits	645	"
c.	Fishing and perishables	20,842	"
d.	General use	3,922	"
e.	Transferred to Other Prefs.	865	"
f.	To be Reserved	2,698	"
	TOTAL	29,466	tons

Ice reserve totals as of 1 July 1948 were estimated at 2,143 tons and if tentative July schedule was realized stored ice would approximate 4,841 tons. However, unless production activity was accelerated, failure to realize scheduled output to the extent of 5,000 tons for July is probable.

August production schedules approximate July estimates for production and distribution percentages.

Continued emphasis on building up depleted reserves will highlight August production activity in the large Shimonoseki facilities.

Inspection of the Nihon Kayaku, Asa Kasei plant revealed that the ice making plant was installed as part of a war supporting industry in the processing of Butyl alcohal, but was never actually used as such. The plant is now engaged in the production of glycerine and ice is not essential in support of same.

The ice producing unit has a rated 5-ton daily capacity with a limit of four tons production, as a result of mechanical efficiency losses. Maximum daily production never exceeds one ton per day during peak demand because said tonnage is sufficient for this locality.

The plant has sufficient ice cans (32) for 2½ tons per day production based on the 14 to 16-can requirement per ton of machine rating.

Subsequent inspection of air conditioning units in the No. 2 chemical plant also located in Asa-gun, and never an ice producing facility.revealed a total of 68 ice cans in non-productive status.

The accumulation being the result of war time shipments of ice received for industrial processing purposes.

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a. Shimane Prefecture

1. Matsue
2. Hamada
3. Seigo

b. Tottori Prefecture

1. Sakai

Furthermore, the demands exacted on ice producing facilities of both prefectures are overlapping, relevant to that segment channeled into fish preservation effort.

Particularly so in the Sakai port sector of Tottori Prefecture where volume fish landings from Oki Island area severely tax local ice production facilities, presently limited to a 28-ton daily potential.

Investigations revealed that prewar potential in Sakai aggregated 38 tons daily, and was more than adequate in support of the local economy.

However, the former Honcho ice plant was destroyed during the war, and rebuilt on another site as of April 1947 at a rated 10 tons, or 50% of its former capacity.

Plans have been formulated to supplement an additional 5 tons potential to the existing 10-ton ice making facility, and construction of a 400-ton storage room.

The present ice storage facilities totaling 6,480 cu ft with accommodation for 150 measurement tons of ice will be converted into cold storage units.

Space designated as ice storage in the two producing facilities located at Sakai totals 48,627 cu ft, and will accommodate approximately 1000 measurement tons of ice.

No ice was in storage at the time of this inspection.

The Nippon Reizo (Sakai Plant) had produced an estimated 3,010 tons, January through August 1948, for an average of 376 tons per month or 69% of rated capacity.

The plant was down for repair during the period 20 August to 7 September which was the first occasion for same in over five years.

Furthermore, requests for ice during this period exceeded productive output of same, with particularly heavy demands exacted for the reicing of fish in refrigerator cars.

The unprecedented volume of fish expedited through this port in September, one month earlier than usual, in addition to the temporary plant shutdown of Nippon Reizo, both contributed to the shortage of ice existing at this time.

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Since November is the month of greatest ice demand, plus the fact that all reserves were depleted as of 22 September 1948 (date of this inspection) definitely indicates the need for accelerating ice production activity in this area.

During the period 15 October to 15 December 1947 it was necessary to import into the Sakai area a total of 750 tons of ice in support of local production.

No doubt exists relative to the expectation that 1948 importations of ice (if available) will far exceed 1947 tonnage for said period. Supplementing sources of supply within Tottori Prefecture will be the new facility of Tohaku Il M. Co. in Tohaku-gun, and Kurayoshi of same.

The Yonago plant of Nippon Reizo had already sent 90 tons of ice to Sakai by this inspection date 25 September 1948 and additional tonnage will be forthcoming during the interim period October-December.

The distribution of ice as produced by the rated 15-ton Nippon Reizo (Yonago plant and who contribute directly to the ice economy of Sakai port area is as follows.

a.	Marine products	55%
b.	Occupation Forces	09%
c.	Hospital use	23%
d.	General use	13%

The plant was producing about 98% of rated capacity at the time of this inspection.

The Kurayoshi Ice Company Ltd is a small facility, presently limited to a potential of 3.5 tons per 24 hours. However, the plant has contributed a substantial portion of its production during critical demand periods in support of marine products preservation.

Also during the water supply shortage in Tottori city this activity shipped on 8th September 1948 about 15 tons of ice, for said emergency period.

This same facility supported 1947 ice production of the Ajiro Fishing Association plant, when Tottori branch of Nippon Reizo was not able to satisfy demands for ice accruing from this sector.

Construction is underway for the following cold storage facilities at this activity.

TYPE OF STORAGE	VOLUME (CU FT)	TEMP RANGE) OC
Class A	1,607	-25° C & above
Class B	1,607	-10° C & above
Class C	1,821	
	(converted ice storage)	- 2°C & above

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In addition to the above construction a former sawdust ice storage room totaling 10,938 cu ft (250 meas. tons) is being equipped with direct expansion piping and insulation. The installation of a rated 6-ton compressor as planned will provide the necessary refrigeration for same in addition to supplying an added icemaking potential of approximately three tons.

The Matsue plant of Nippon Reizo was producing about 16 tons of ice per day at the time of this inspection, 27 September 1948. Only 15 tons was in reserve of a 500-ton 1 September sterage. Distribution of ice reserves outside Matsue area was as follows:

a.	Yunatsu	20 tons
b.	Hamada	160 tons
c.	Isotake	50 tons
d.	Sakai	10 tons
e.	Tottori	10 tons

The management of this plant evidenced a fear of building up a large ice reserve despite impending shortages which accrue annually in this sector. Since the output of this facility can for the most part be absorbed in the Matsue port area any accrued surpluses should be readily demanded by the Oki-Yonago-Sakai sector.

The Etomo Ice Plant located at Kzumi, Etomo-cho, Shimane-ken, with a commercial rating of 15-tons was producing approximately 17 tons daily on inspection date.

Total ice in reserve was estimated at approximately 30 tons.

Plans for expansion include the addition of a 10-ton ammonia compressor in replacement for the installed 2-ton cimpressor now used for storage refrigeration. Also, the conversion of two rooms of a six-room Class C-3°C storage will be reclassified as Class A type - 11°C and below.

This facility was built in 1934 and since 1940 the capacity of plant has been expanded from 7 tons daily to the present rating.

Ice produced at this activity not only supplies the local need existing at the designated Class B fishing port, but also supplies ice for Oki Islands, Hikawa-gun and around the coast to Mihonoseki.

Twenty tons of ice was being loaded for transport to Sakai on the date of this inspection 25 September, and which total represents more than a maximum days output for this facility.

The Saigo ice plant reactivated in June of this year had contributed but 62 tons on 29 September inclusive for said period.

This facility produced no ice during July, August or September due to repairs being made on diesel power plant. A new 50 H.P. diesel engine has been purchased to replace the installed 30 H.P. plant.

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Even though this activity is expected to be producing ice at a reduced output of 3.5 tons daily by 5 October, no substantial contribution can be relied on from this source, on the basis of past performance records.

Over 700 tons of ice have been imported to Oki Island area during September 1948 and said tonnage has not been sufficient to guarantee the preservation of marine products landed.

Accelerated September fishing activity has doubled the normal fish yield with the resultant losses sustained to date on same, being attributed to insufficient ice.

Total September catch is reported at 611,000 kan of which 514,250 kan have been exported to consumer areas.

Fish shipments during September consigned to Okayama, Kobe, Osaka, and Kyoto have reportedly been received in the following status:

a.	Edible	438,250 kan
b.	Semi-decomposed	62,200 "
c.	Decomposed (fertilizer)	13,800 "

From this total 156,000 kan were landed at Saigo of which 136,000 kan were exported to consuming prefectures, and 20,000 kan processed locally.

Total fish catch for 1947 during September in the Oki Island area approximated 250,000 to 300,000 kan at the following estimated percentages:

a.	Cuttle Fish.	45%
b.	Mackerel	15.5%
c.	Horse Mackerel	11. %
d.	Yellow Tail	8. %
e.	Flat Fish	7.5%
f.	Others	13. %

September 1948 totals are more than doubled in approximately the same classification proportions.

Since the port of Saigo was literally full of cuttle fish at the time of this inspection, plus the accompanying ice shortage, made it imperative that any hope for preservation of same was in drying or processing.

Nominal ice demand for Oki Island area is estimated at 7,000 tons per year.

The accrued spoilage of fish to date can be attributed in general to the following factors:

a. Insufficient ice for carrier boats
b. Delay in forwarding from point of dispatch (Sakai) to consuming areas.

The following boats are employed as carrier type from the above mentioned area.

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Tonnage	No. of Boats
20 to 30 tons	14
30 to 40 tons	4
60 tons	1
80 tons	1

The above listed carrier-type craft with attendant fish loadings and the requisite ice was estimated as follows:

For a 20-ton boat carrying an estimated 4,000 kan of fish would require approximately 12 tons of ice, while an 80-ton craft hauling approximately 15,000 kan could use up to 45 tons of ice. The values for intermediate tonnages listed would be correspondingly proportioned.

The writer observed one shipment of fish aboard a 30-ton carrier craft about to depart from Saigo to Sakai, and, though fish packed in holds were to all appearances properly iced, it was noted that many loaded fish crates poorly iced were stocked on deck, with the only protection afforded being a tarpaulin thrown over same.

Since estimated departure time for this craft was 1:30 p.m. and its arrival in Sakai some 7 or 8 hours later would mean that unloading would not be accomplished until late the following morning.

The fact that Japan Transfer Company who are the sole contractors engaged in the reicing of fish, the loading aboard refrigerator cars and do not work after 5 p.m., would indicate that any decomposition, if present, would tend to accelerate during the interim delay in handling.

A brief inspection of reicing and loading activities was made at Sakai and the fish actually inspected were in good condition as determined by single organoleptic tests made by the investigator.

It was estimated that the refirgerator car being loaded would contain about 340 cases of 6 to 8 kan of fish per container.

The amount of crushed ice being used per case was estimated to be slightly in excess of 1 kan. There was no apparent shortage of refrigerator cars at the time of this inspection as several were noted on rail sidings awaiting loading.

Subsequent inquiry relative to the immediate efforts being undertaken for relief of existing ice shortages in the Oki Islands area were considered too general in scope for prompt materialization.

The proposed construction of small hydro-electric plants by the Oki Island General Development Association will relieve existing power shortages in the future. Contemplated construction of a 40 KW and a 100 KW hydro-electric plant on Dogo and a 30 KW installation on Dozen at Chibu-mura will supplement the following:

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TOTAL ELECTRIC POWER UTILITY OF OKI ISLANDS

TYPE OF PLANT	NUMBER OF PLANTS	PLANT CAPACITY (KW)
Thermal	3	255
Hydro	4	135
Total	7	390

Support for the proposed building of a 10-ton diesel ice making plant on Dozen is recommended by the investigator in lieu of existing electric power deficits. For the use of diesel power and mechanical drive of ammonia compressors, with its corresponding ratio to electrical costs the following approximately correct factor is 2/3, i.e., cost per B. Hp-hr at the engine shaft equals 2/3 X cost per kw-hr generated. This relationship is exactly true for an electrical efficiency of 89.4%.

Comparative cost analysis of diesel power applications in Japanese ice plants was not investigated. However, a similar survey conducted on eight American facilities in 1935 which were diesel driven, and where plant capacities ranged from 12 to 98 tons of ice per day was as follows. Ammonia discharge pressure ranged from 120 to 190 lbs per sq in. Average costs, covering a week or more during the summer were fuel oil per ton of ice, 4.79 gal, delivered, 5.41 c; cost per ton of ice, 25.9 c; lubricating oil, per ton of ice, 0.0533 gal, cost per gal delivered, 50 c; cost per ton of ice, 2.66 c.

Although the fuel oil per ton of ice varied in the eight plants from 3.62 to 6.25 gal, the total cost of fuel and lubricating oil per ton of ice produced varied only from 23.9 to 34.2 cents.

The Kasubuchi Ice Manufacturing Company Ltd is a new ice making facility which began production activity on 2 June 1948.

Maximum ice production total is limited to approximately 2.2 tons per 24 hours because of the necessary refrigeration tons exacted for ice and cold storage purposes from the rated 3-ton ice making capacity of installed compressors. However, a new compressor to be installed upon completion of a new ice storage room under construction totaling 6045 cu ft (135 meas. tons) will furnish the necessary refrigeration for same at -5°C and the present ice storage room 4147 cu ft (93 meas tons) is to be converted into a Class A type -11°C to -25°C storage.

In addition to the above mentioned alterations ice making capacity will be increased to an approximate 5 tons per day.

The ice plant of Tohaku Ice Company Ltd located at Abu, Nangoku-mura, Tohaku-gun is a new production facility which commenced operations on 10 July 1948.

Rated ice producing capacity is six (6) tons per/24 hours and approximated sixty (60%) percent of same during the first two months of operation.

This activity is independent of electric power available since the utilization of a water sluice has been employed to provide the necessary 30 H.P. required for ice manufacture exclusive of the rated 3-ton ice making compressor used for ice storage refrigeration.

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However, it is necessary for and plans have been effected whereby same will be augmented by an alternate power source (estimated 15 k.w. demand) in support of maximum plant utility.

No ice was in reserve at the time of this inspection 24 September, and the plant was producing about four tons of ice daily from the small compressor normally used for storage refrigeration, as the 6-ton compressor was inoperative due to repairs being made on a belt badly in need of replacement.

However, a total of 30 tons of ice was sent to Tottori city during the peak August demand period and when local ice production of Nippon Refrigeration Company could not satisfy the need for same.

Furthermore, in addition to bolstering potential in the Kurayoshi area the productive effort of this plant will be channeled in support of existing ice shortages at the Class A fishing port of Saiki.

The plant of Ajiro Fishing Association with a daily ice making capacity of three (3) tons was producing approximately two (2) tons or 67% of rated potential.

Reduced output was attributed to critical materials shortages of ammonia, calcium chloride and ice machine oil, with additional production variables of machine obsolescence and mechanical breakdowns effecting maximum production totals.

Although the plant was using a rated 5-ton ice making compressor the 54 can limit of the brine tank plus the fact 8 cans were not serviceable also contributed to a reduced output.

Despite the fact that total production to date and tentative schedules for the remainder of 1948 will exceed 1947 production by approximately 19% it will nevertheless be necessary to import ice fro the local fishing industry during October and November to the extent of a minimum 100 tons.

During the period February-May 1948 a total of 312 tons was brought from Tottori city to supplement local ice production.

Further investigation revealed that the existing ice production facility has never been adequate in support of the local economy since its inception about 16 years ago.

Storage facilities are limited to accommodate about 100 measurement tons of ice despite the 6875 cu ft space (indicated 159 measurement tons) the resultant of stockpiling difficulty and kindred space loss.

Consideration of a proposed plan for expansion of the present unit into a 5-ton plant in addition to relocation and building a larger ice storage facility are to be discussed at the next general meeting of the association members.

The following opinions are those of the investigator as concluded upon the completion of this survey, and similar ones conducted in other prefectures of Chugoku Region.

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Furthermore, consideration has been made for similar surveys made on a national level by the Japanese Government, and particularly to that segment thereof, as pertains to the proposed construction of new ice making, and cold storage facilities in Chugoku Region.

Therefore no support for any proposed construction program can be justified in the opinion of this investigater (with exceptions as cited in this report) until definite proof can be established that maximum productive utility is being realized from existing facilities, and critical materials allocations.

Cognizance has been given in this report mainly to that segment of ice production, which is directly channeled into food preservation effort.

Furthermore, consideration must also be given to the gyrations of seasonal consumer demands made annually on the production and distribution of ice accruing from the manufacturers, and dispensers, of such luxury confections as ice candy, and other frozen delights.

The above mentioned fact cannot be minimized when it is recalled that in one prefecture the official quarterly allocation (June-July-August) was only 75 Kg's of NH_3 for approximately 144 ice candy manufacturers.

The obvious answer to this and other similar instances are blackmarket procurements of same.

The investigator in more than one instance was told without solicitation, that so-called (official blackmarket prices) were quoted, and that ammonia was procurable at said listing.

Conservative estimates indicate that 35% of conventional ice manufacturers in Chugoku Region are directly engaged or dabbling in the production of iced confections.

Bans should definitely be placed against any, and all, official allocations of critical ammonia supplies for said purposes, until such time that adequate ice productivity, sufficient to guarantee the support, and preservation of the perishable food economy in Japan has been assured.

The findings of this survey generally indicate a tendency to establish routine alibis rather than to effect remedial measures for increased productivity within the limitations of critical materials availability, and plant capacities.

Admittedly, the annual critical materials allocations as reported have for the most part barely supported a maximum 60% utility from ice production activities.

However, it is the opinion of the investigator as concluded within the brief limitations and scope of this regional survey, that at least a 20% additional productive utility can be realized from existing potential, exclusive of any critical production materials involved.

Many facilities have been producing ice at reduced efficiencies for a

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number of years, and the complacent attitude evidenced by some producers was indicative of culpable indifference, ignorance, and in some instances a combination of both.

Furthermore, the cupidity displayed by certain political pressure groups has been sounded, relative to their efforts to stymie construction of new facilities, or the expansion of strategic ice plants in Chugoku Region.

The overall value of this and kindred surveys conducted throughout Chugoku Region have been definitely handicapped and in some instances completely negated in lieu of competent technical interpreter accompaniment to facilitate same.

The effort expended in determination and appraisal of production bottle-necks, and manufacturing variables has been time consuming and unsatisfactory in many cases from the above mentioned reason.

The following example is typical of the many situations encountered.

Determination of all facts contributing to a reduced production efficiency of a facility which for no apparent reason had been operating a number of years at continued low proficiency levels was attempted.

Other factors having been subsequently considered, the two artesian wells supplying water for condensing purposes were finally declared inadequate by the owner, along with an undersize electric motor driving the ammonia compressor.

Calculation of proper motor size in the absence of any indicator card for the compressor in question made it necessary to estimate the M.E.P. by use of some method for determining the H.P. put into the compressor, and which in this case was taken from the speed of the compressor (botained from data plate) and the mean effective pressure of the gas in the compressor. Determination was made by using the basic variables of low pressure side, high pressure side, and the ratio of the specific heat of constant preasure to the specific heat of constant volume $\frac{Cp}{Cv}$ for the refrigerant NH_3 being used.

$$\text{M.E.P. equals } P_1 X \frac{K}{K-1} \left(\left(\frac{P_2}{P_1} \right)^{\frac{K-1}{K}} - 1 \right)$$

P_1 equals absolute pressure in P.S.I.

P_2 equals absolute condenser pressure in P.S.I.

K equals $\frac{Cp}{Cv}$ (1.31 for NH_3)

$$\text{Ft-Lb-per-MIN. equals M.E.P. X } \pi \frac{D^2}{4} \text{ X SXNXR}$$

$$\text{H.P. equals } \frac{\text{ft\#/MIN}}{33{,}000}$$

Since the above formula as applied gave only theoreticalH.P. and thus neglected friction, starting load drive losses, etc. made it necessary to consider that anything up to 1 ton would require double the H.P. findings while up to 5 tons the ratio would taper off to adding 30% at 5 tons in compensation for said losses. Final determination concluded that a 50 H.P. electric motor

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should replace the installed 30 H.P. motor for maximum plant utility.

Cognizance was also made for the other factor involved whereas a condenser undersigned will cause head pressure to rise in proportion for dispelling the necessary amount of heat, but if too small a condenser is being used the resultant is a decreased compressor efficiency with attendant increase of motor load. The capacities of water cooled condensers being naturally very high as the result of better contact between cooling medium and refrigerant for either the shell and tube or liquid receiver-type with the value of heat removing ability being as high as 90 B.T.U. per sq ft per °F per hour for machines rated at 1 ton or more. In addition to the above facts, calculations as for a water cooled system had to be made where the velocity fof the water if increased would cause a corresponding efficiency increase.

After considerable effort temperature difference between cooling medium and the refrigerant were determined by refrigerant temperature and the saturation temperature from the head pressure obtained.

Since the plant had suggested a desire to supplement the well water supply by pumping water from a nearby stream, prompted immediate consideration for this possibility.

However, since the most economical compression pressures is dependent upon the cost of producing 1 I.Hp in a compressor cylinder, which in turn are contingent upon the cost of water per gallon either from purchase or by pumping.

Prohibitive cost ruled out the first possibility whereas the second consideration was deemed impractical by the M.G. investigator for the following reason.

a. The final temperature of condensing water determines the final temperature of the condensed liquid, and therefore should be as low as practicable. It would be approximately 80° to 85° F with an assumed initial temperature of 70°F which in this instance was estimated initially at 85° to 90° F during hot summer months. An initial temperature of 70°F would make the final temperature of condensed liquid about 95° F and a final compression pressure of 182.6 lb per sq in gage for NH_3.

The cooling water required for condensing purposes per ton of refrigeration for an ammonia condenser operating under a condensing pressure of 182.6 lb gage and temp of 95°F with corresponding suction pressure and temperature of 15.25 p.s.i. gage and 0°F respestively with assumed initial temperature of circulating water of 70°F and a final temperature of 85°F would be as follows where;

The weight of refrigerant circulated per minute per ton of refrigeration equals M equals 200/(h_s - $\frac{1}{2}e$) equals 200/(538.5-71.3) equals 0.428 lb of NH_3 circulated per ton per minute; whereas the heat rejected to the condenser per ton per minute equals M (h-$\frac{1}{2}e$) equals 0.428 X (663-71) equals 253 B.T.U. lb of water per ton per minute equals 253/(85-70 equals 16.8 or 16.8/8.33 equals 2 gal

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equals 2 X 1.75 equals 3.5 gal per minute per ton of ice manufactured per 24 hours. Well supply was estimated at 50 litres per minute thus using reduction factor: 1 liter equals 1.056710 quarts equals 50 x 1.056710 equals 52.836/4 equals 13.209 gals per minute of an estimated need for a minimum 90L equals 95.104/4 equals 23.776 gals per minute.

Furthermore, it has been observed during the cause of this survey on ice making a number of interesting facts relevant to cold storage facilities. However, cognizance was made for the fact that urgent demand and volume turnover on foodstuff does in a sense negate the value or utility of any proposed specialized freezing processes in Japan at present. This possibly accounts for the fact whereas such were in evidence they were allowed to deteriorate and for the most part rendered useless. The mere existence of such quick freeze units indicates a former usage on restricted volumes whereby choice selectivity of fish, etc. could be frozen for premium markets.

The existing "sharp" freezer as found in most of the facilities inspected throughout Chugoku Region are of the older freezing techniques whereas air is maintained at temperatures of about 15°F down to -25°F (-32°C)

Heat being abstracted so slowly for the most part by convection currents that oftentimes a period of 4 to 75 hours being required to freeze a product.

Consideration for the fact that of the several methods of freezing the use of cold air alone is the slowest, and if the air of such a room is rapidly circulated the freezing rate is accelerated. Since microorganisms attack the food from without (improperly cleaned fish boxes and refrigerator cars) and the enzymes decompose from within cognizance must therefore be made for the fact that action of these autolytic processes is retarded at low temperatures, facilitated at moderate temperatures, and destroyed at high temperatures.

Retardation of these microbiological processes are influenced whereby bacterial decomposition is stopped, and enzymic change are markedly reduced at temperatures below 0°F.

Since the colder the temperature, the slower are the deteriorative changes, and as cited above, when fish are frozen rapidly the gelatinous contents of muscle cells solidify as a frozen jelly, whereas if freezing is accomplished slowly (as in cold air convection currents) there is a tendency for the water content to separate forming large ice crystals (maximum formative range 32° to 23°F), and consequent rupturing of cellular structure.

The two fractions formed are a concentrated jell, and a thin liquid phase, which upon defrosting, since the two fractions cannot be recombined as originally, causes the liquid phase to drip away.

Such denaturation control for fish can be reduced by proper salt adjustment and minimized in quick freezing.

Since most of the microorganisms do die off under severe refrigeration temperatures, some manage to survive and multiply at 20°F (-6.5°C) which corresponds to Japanese "B" type storage classification. Fish withdrawn from storage and warming up to atmospheric temperatures afford dormant microorganisms soluble nutriment from drip phase, not only for surface microbic development, but also for invasion of the tissue.

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The investigator is thoroughly cognizant of the fact that fish spoilage may be much greater on withdrawals from frozen storage than from mere chilled refrigeration.

The apparent non-extant of (or non-enforcement) any comparable legislation to our own Sea Food Amendment to the Food and Drug Act, or otherwise official regulatory procedure, for the necessary support of the legal aspects in food control which in turn govern the direct laws and license system, namely in matters of sanitation, and handling factors involved for refrigeration plants set, etc. was notably lacking throughout Chugoku Region.

Where such laws were in evidence the records of ice and storage facilities would be examined regularly for lawful compliance therewith.

Recommendations have been made to Public Health officers for corrective measures of noted violations, and menaces to health.

The investigator has noted throughout this region several conditions of static production equipment, namely ice cans, and since replacement demand is critical the owners of said property should be encouraged to dispose of such for productive usage.

Impossible or remote as the case may be for incorporating the following ammonia compressors into the economy of this region or elsewhere in Japan, nevertheless the potential index of machinery held in storage custody pending reparations claim totals approximately 600 tons per 24 hours making capacity in Class 1 condition, and 255 tons in Class 3 condition. /CE

The above equipment was noted at the Iwakuni Army Fuel Depot, Shozoku, Iwakuni-shi.

Actual construction is in process for two new ice producing facilities in Shimane-ken. The plant at Hamada-shi will upon completion add a 25-ton daily potential to the existing 40-ton capacity. Construction of this facility which began on 20 September 1948 has an estimated completion date for 15 January 1949.

The present mayor of Hamada, Mr. Toshito Okamoto, is the chief sponsor along with nine other investors. The president of said joint stock company is Mr. Sankuro Tahara, a former mayor of this city.

Total plant cost is estimated at 23,000,000 yen, financed as follows:

a. City of Hamada - 1,500,000 yen
b. Shimane Prefecture Government - 2,300,000 yen
c. Local Fishing Interests - 7,700,000 yen

Central Government has been requested to grant approval for an additional loan of 11,500,000 yen from Reconstruction Bank in support of this project.

The completion of designated storage space totaling 43,200 cubic shaku

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will afford ice reserve accommodations for 750 measurement tons.

Production machinery had been 80% procured by this inspection date 26 September 1948.

The plant site chosen is particularly well adapted relative to expediting the landing, reicing, and forwarding of marine products from the Hamada area.

The construction in process on another new ice and cold storage facility located at Iwami-O da-machi, Anno-gun was inspected on 28 September 1948.

Strategically located 50 miles to the north of Hamada-shi, and 30 miles south of Izumo-shi it will lend a much needed support to the intermediatesrea. The nearest producing ice plant to Oda-machi is a small 3-ton facility at Kasubuchi-cho, Ochi-gun.

Capacity of this plant will be rated commercially at 10-tons per 24 hours, and ice storage space will total 30 cubic tsubo or 200 measurement tons.

Despite the construction in process on new facilities which upon completion will increase ice manufacturing capacities from 40 to 65 tons per 24 hours. (Oda inclusive 75 tons per 24 hours) it will not suffice for the Hamada economy and continued periodic importations of ice from other prefectures will be necessary in support of local production.

The following statistic tables contain the produced ice tonnage and estimated 1948 demand made or to be imposed upon Hamada facilities, with the applied tonnage for preservation of marine products.

Comparative analysis of reported statistics indicates that applied ice tonnage to actual fish hauls to date, with the estimated demand for ice and fish catch during the remainder of 1948 will aggregate 24,840 tons of ice for the Hamada area alone.

Tentative local production schedules will supply 8238 tons of the demanded ice which is roughly one-third of the estimated need.

Further comperison reveals that an estimated 24,840 ton demand for the Hamada area alone exceeds a tentative 21,000 ton annual ice production estimate for all of Shimane Prefecture.

Since a 21,000 ton production estimate for 1948 represents an annual 60% realization of productive utility from a rated potential of approximately 37,000 tons within Shimane Prefecture gives rise to the following conclusions.

Preliminary estimation indicates that Hamada area expedites one-third the volume fish handling of Shimane Prefecture, thus exacting 33 1/3% of all ice used in the preservation of marine products.

The estimated demand for Hamada area of 24,840 tons of ice would therefore indicate a need for approximately 72,000 tons for the preservation of marine products credited to Shimane Prefecture.

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Right or wrong the above estimate as concluded and summarized by the military government investigator is the basis for justification as reviewed and approved by prefectural government and other interested personnel for the authorization on new ice plant construction within Shimane Prefecture.

Assumption that reported estimates and totals are correct means that local manufacture of ice for self sufficiency in Shimane Prefecture would be approximately 35,000 tons per annum short of demand, since the existing potential can theoretically supply only 37,000 tons or 51% of the required 72,000 tons.

Furthermore, a 60% utility from theoretical potential would increase per annum shortages of ice to 51,000 tons based on the same calculations.

Therefore, it would seem that optimum choice for accelerating ice production activity in the named prefecture, and all of Chugoku Region are contingent upon two main factors, both of which find their complement in one or all of the following:

a. Increased allocations of critical production materials to activities maintaining consistently high proficiency levels within the sphere of effective end distributions on ice should be made.

b. Authorization for the construction or expansion of new producing facilities should be granted only when verified investigation has determined that maximum utility is being realized from existing potential, and that said capacity indexes are inadequate for support of the local economy.

c. Definite flexibility provisions should be coordinated by all Japanese Government agencies concerned; whereby shunts can be effected immediately from predesignated allocations of critical materials and periodic quota breakdowns of same.

Also the following remedial measures are advanced as positive action which should be taken for initial improvement in the manufacture and distribution of ice on a prefectural basis.

Targets of planned activity should conform in general with provisions of Appendix 80 of the General Program of Perishables Food Control by the Japanese Government, paragraph 5, (1) (a), (b), (c), and (2) contained therein.

Furthermore, the responsibility for exercising and enforcement of provisions as contained in Appendix 83, Agriculture-Foresty Ministerial Ordinance No. 45, in accordance with Cabinet Instruction No. 3 1947, relevant to Regulations of Designated Rationing Material Distribution Procedures, on the basis of the Temporary Material Demand and Supply Adjustment Law, and the the enacted Ice Demand and Supply Adjustment Regulation inclusive are primary functions of prefectural government, exception being as indicated within the context of said appendix.

When such designated lines of authority are employed which establishes functional authority in various prefectural branch offices of Japanese central government (Materials Adjustment Bureau) does not dismiss the responsibility for correlating the activities of all agencies concerned.

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The Materials Adjustment Bureaus in the various prefectural branches throughout Chugoku Region are not exercising the intended and required diligence for effective controls as evidenced by their inability to supply on request any factual information, or reliable accountability for justifying certain critical materials dispositions.

The importance of the above mentioned fact cannot be minimized because the existing status is indicative of a general laxness stemming from indifference, incompetency or even dishonesty.

Furthermore, the gist of the above statements are briefly summed up as follows and listed in the order of importance. However, all possible combinations have been found to exist and have contributed to the reflections cast on the agency cited.

a. Ice plants and cold storage facilities are allocated and receive periodic quotas of critical materials on the strength of plant capacity index ratings only, irrespective of verified production effort.

Acceptance by the M.A.B. of unconfirmed production reports submitted by the various "kumiais" as a basis for making equitable distribution of available critical materials.

c. Ice plants are not required to maintain or submit perpetual inventories of tentative production schedules, manufactured tonnage, reserve totals, nor the channels of effective distribution of ice, in order to qualify for a share in materials availability.

d. Information and statistics of the M.A.B. are for the most part unverified since little or no actual field contacts are made with producing facilities in determination of effective tonnage produced against applied critical materials allocated for the intended purpose.

e. Nor are producing facilities required to maintain and produce on demand any record of allocated quantity, purchased quantity, or quantity in stock of critical production materials used in the manufacture of ice.

Furthermore, the initial efforts made to establish controls over transportation of critical raw materials for insuring distribution through legal channels as outlined in Operational Directive Number 70, dated 9 December 1947, should be reemphasized. Reference Economic Stabilization Board of the Japanese Government, Instruction 14, 3 September 1947, subject: "General Policy of the Certification System of the Transportation of Important Materials (Incl 1)

Particular interest in this case being directed to Appendix 1 to Incl 1 of OD No. 70, Headquarters Eighth Army, 9 December 1947, and list four of "Controlled Materials (effective 1 December 1947) which included such inorganic chemicals as ammonia, ammonia solutions, nitric acid, hydrochloric acid, soda ash and caustic soda.

However, a real weakness as contained in OD No. 70 (unless later appended) whereby in Appendix 2 of the same inclosure the transportation of materials

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over the amount or at the consignment designated below shall be controlled:

Item	Railroad	Truck	Steamboat	Sailboat or Barge
Inorganic Chemicals	Carload	Truckload	Over 5 tons	Over 5 tons

Therefore in conclusion it is felt that until such time that effective accountability controls become mandatory and are enforced for the allocated use, distribution, and transportation of critical materials; any recourse to the technical aspects of ice production hoped for by expansion, reactivating, or the construction of new facilities beclouds the real issue.

The last day of this inspection tour was spent in Matsue, and it was noted that ice candy manufacturers and concessionnaires were busily engaged (for the most part on blackmarket ammonia) to produce the heavy demand for ice candy accruing from hundreds in daily attendance at a fair being held for several weeks duration.

Yet at the same time the recently completed facility of Yasugi Seihyo K.K. (1 Oct 48) located at Yasugi-machi, Nogi-gun, Shimane-ken about midway between Matsue and the Yonago-Sakai port sector was standing idle for lack of expediting the necessary NH_3 for initial charge, and for which the plant management was holding allocation coupons for 600 Kg's.

Existing shortage of ice prevailing in the sector mentioned, plus the fact that basic foodstuff (fish) was spoiling in Oki-island area for lack of same, generally summarizes the situation, and need for corrective measures to be taken, not only here, but in all of Chugoku Region.

MR. G. H. KINNAMAN

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Since an estimated 16% or 1,800 ice cans of an aggregate 11,000 are needed for replacements it was suggested that effort be made to dispose of them to a producing activity in need of cans.

The findings and opinions of the investigator thus concluded upon completion of this survey are as follows:

Ice production capacity throughout Yamaguchi Prefecture is considered adequate in support of the accustomed and existing economy.

Exceptions to this conclusion are as noted in the summary statistics for Senzaki and Hagi.

However, it is felt that a combined lack of foresight and planning by producers continues to be a proportionate evil, equal to that of materials shortages.

Poor utility from existing potential, storage space, and available materials accounts for a large percentage of continued ice shortages in some localities.

Increased production schedules for 1948 have been encouraged by the promised receipt of supplementary allocations of critical production materials.

The availability of electric power has for the most part been adequate in support of ice production January through July 1948.

A total of three ice producing facilities in Hagi is not considered adequate in support of the local economy. The regular importation of ice to augment local production is necessary during peak demand periods.

Combined potentials with a rated capacity of 40 tons per day produced a total of 4,854 tons of ice during the period January 1948 through June 1948.

Monthly production of 809 tons against a potential 1,200 tons for an average of 67% per month was produced during this period.

Storage space for 730 tons of ice was available but only 182 tons was in reserve as of 1 July 1948.

Plans are now effected whereby ice totaling approximately 1000 tons will be imported into the Hagi area during the period September-December 1948 to augment local production. The aggregate tonnage by producing source is as follows:

TONS	NAME OF PLANT	LOCATION
100	Suyo I.M. Plant	81 Mitajira, Bofu
100	Asahi I.M. Plant	Mitajiro, Bofu
250	Bofu plant of Kyowa Industry Co.	1835 Mitajiro-mura, Bofu
200	Kawai I.M. Co.	Kamishinchi-machi, Shimonoseki
100	Ohata I.M. and Cold Storage Co Ltd	Ohata Kojiro-mura Kuka-gun
50	Onoda Provision Industry Co Ltd	Nishimachama, Minato-machi, Onoda
100	Kawashita Ice Co Ltd	85 Mukaizu, Iwakuni
100	Sanwa I.M. Co Ltd	2553 Yanai, Yanai-machi, Kuka-gun
1000		

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On the 16 July 1948 the plant of Hagi Reito and I. M. was visited. According to available records the following 1948 production tonnage with attendant tables for power and materials consumption were recorded

MONTH	NH3 (Kgs) Requested	NH3 (Kgs) Allocated	Ice Machine Oil (Litres) Requested	Ice Machine Oil (Litres) Allocated	CAC/2 (Kgs) Requested	CAC/2 (Kgs) Allocated
Jan	100	50	36	27	700	700
Feb	100	50	36	21	400	350
Mar	100	50	36	14	0	0
April	100	50	42	60	0	0
May	100	50	42	50	1100	1050
June	150	100	42	36	0	0
July	150	75	54	86	0	0
TOTAL	800	425	288	294	2200	2100

MONTH	JAN	FEB	MAR	APR	MAY	JUN
Tons Produced	131	304	317	295	302	260
KWH Used	8100	14800	26300	18900	24400	21000
KWH Allocated	16772	11028	19693	22058	23008	23008

Ice making capacity (per 24 hrs) - 10 tons
Ice storage space (refrigerated) - 20 cubic tsubo
Ice storage (measurement tons) - 80 tons
Ice in reserve - 0 tons
Cold storage space - 58 cubic tsubo
Plant receiving capacity in K.W. - 85 K.W.

During the period January-June 1948 the plant produced a total of 1,609 tons or 89% of rated capacity. During April and May a total of 300 tons of ice was brought in from Kawai I.M. plant in Shimonoseki to augment plant production which approimated full capacity for said period. Departures of fishing boats was delayed for lack of ice oftentimes during this period.

Cold storage facility has been inactive for over one year but was recently activated in order to store 300,000 yen worth of fish. Ice production is reduced to 3½ tons per day as a result of joint operation of both ice and cold storage facility on reduced ammonia volume. Receipt of scheduled ammonia allocations will again allow plant to resume normal production activity.

The Hagi-shi I.M. plant is 20-ton per 24 hour facility and at the time of this survey was producing about 16 tons per day and during period from August 1947 to August 1948 produced the following tonnages.

	1947						1948					
MONTH	8	9	10	11	12	1	2	3	4	5	6	7Est.
Tons Produced	309	426	490	518	345	261	378	299	485	570	519	480
KWH Used	33,610	33,180	32,300	29,170	10,210	15,870	12,040	25,680	30,740	35,600	37,590	37,000
KWH Allocated	36,955				14,168	15,870	30,740			28,000		

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Nippon Cold Storage Co., Table Requested & Allocated Materials, Jan-June, 1948 (cont'd)

April	500	25	26	16	0	0
May	500	50	27	25	0	700
June	600	50	27	18	0	0
July	300	50	18	71	0	0
Total	2200	250	158	158	7000	2450

A total of two ice producing facilities in Senzaki with a combined production total of 19 tons per 24 hours is not considered adequate to meet peak demand tonnage in this Class A fishing port.

The plant of Nippon Cold Storage Co. was producing maximum tonnage of 16 tons per day on 14 July 1948 and were reserving approximately 8 tons of said production daily. Plans are in the offing to add another 10-ton machine to augment existing producing equipment and step up production total. The proposals for same are feasible since the present facility has a brine tank capacity for 540 cans and is using only 420 in production now. Total production tonnages were curtailed during June 1948 resultant of power cutoffs since plant has not completed arrangements for direct power hookup.

The only other plant in Senzuki owned and operated by the Senquki-machi Fishery Association with a 3-ton per 24 hour capacity had been down 10 days prior to date of survey due to loss of system ammonia supply attributed to leak in expansion. pipes. Resumption of activity is dependent upon procurement of replacement pipe and replenishment of system ammonia.

NIPPON COLD STORAGE PLANT (SENZAKI)
1948 PRODUCTION AND DISTRIBUTION (Jan-June)

MONTH	TONS PRODUCED	TONS FOR FISH	HOSPITALS & GENERAL USE	TOTAL TONNAGE SOLD
1	381.99	281.835	15.884	297.719
2	99.332	304.902	22.541	327.443
3	348.	272.904	20.380	293.284
4	539.998	538.032	45.621	583.653
5	626.001	543.373	81.078	624.451
6	497.333	357.405	90.180	447.585
7				
	2,492.663	2,298.451	275.684	2,574.135

TYPE OF PLANT - AMMONIA COMPRESSION - DIRECT EXPANSION

Ice making capacity per 24 hours - 16 tons
420 can capacity - 78 hour freeze
Ice storage space - 125 cubic tsubo
Tons of ice storage space - 250 tons
Tons in storage - 13 July - 86 tons
Tons in storage - 29 January - 210 tons
Present total going into reserve daily - 8 tons
Receiving capacity in K.W. - 70

Cold Storage Space

Total 57 cubic tsubo

A	B
-10° C	-3° C

Started using 5-ton compressor in April, 1948

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REQUESTED AND ALLOCATED MATERIALS
NIPPON COLD STORAGE CO - SENZAKI PLANT
JUNE*JULY 1948

MONTH	NH3 Kgs REQUESTED	NH3 Kgs ALLOCATED	Ice Mach Oil (Litres) REQUESTED	Ice Mach Oil (Litres) ALLOCATED	CACL2 Kgs REQUESTED	CACL2 Kgs ALLOCATED
Jan	580	25	24	23	0	0
Feb	500	25	24	25	2000	1750
Mar	500	25	24	24	5300	5250
April	800	50	72	19	0	0
May	800	50	72	48	1700	1500
June	800	50	72	36	0	0
July	400	0	24	0	670	0
Total	4380	225	312	175	9670	8500

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SURVEY OF ICE PRODUCTION IN TOTTORI AND SHIMANE PREFECTURES-SEPT, OCT 1948

Information and technical data contained herein are the resultant of completed survey inspections of ice producing activities and cold storage facilities in Tottori and Shimane Prefectures conducted during the period 22 September to 3 October 1948.

Included for basic consideration are general recaps of kindred surveys made throughout Chugoku Region and which copies thereof, have been forwarded to Eighth Army Headquarters under separate cover.

During this period a total of eight icemaking and, or, cold storage facilities in Tottori Prefecture and ten throughout Shimane Prefecture were inspected.

Two production units in process of construction, and a recently completed plant scheduled for mid-October activity were also visited.

Production bottlenecks and problems relevant to the manufacture, storage, and distribution of ice were discussed with plant owners, managers, and engineers.

Particular emphasis was directed throughout this survey toward stimulating production activity within the limitations of existing potential, and critical materials availability.

Basic ice manufacturing and production variables confronting producers in Tottori, and Shimane Prefectures approximate those singled out for special consideration in other reports of survey conducted throughout Chugoku Region, and as such are deleted from this summary.

Daily icemaking capacity in Tottori Prefecture totals 79.5 tons while the aggregate potential of Shimane Prefecture is 104 tons.

Supplementary potential in process of construction are listed in statistics section of this report.

Total ice production in Tottori Prefecture for the year 1947 approximated 11,287 tons, while attendant tonnage produced to date and tentative schedule for the remainder of 1948 will aggregate 17,500 tons for an annual increase of 6,213 tons, or a 36% increase over the preceding year.

Shimane ice plants produced an estimated 12,278 tons for 1947, and 1948 tonnage is expected to reach 21,000 tons for a 42% increase.

During the period of this survey Tottori plants were producing 57 tons of ice daily or 81% of rated potential, while Shimane facilities were aggregating 102 tons daily for a 98% average.

However, in order to realize tentative production schedule commitments of 17,500 tons for 1948, it would be necessary that Tottori plants maintain their current producing tempo over an entire twelve month period.

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The plant of Senzaki Tishery Association has refrigerated storage space for 8 ton of ice, with a maximum 90 tons per month production. The plant is a 64-can freeze with a 14 K.W. receiving capacity. Ice cans are in good condition and power allocations have been adequate. The following tables for materials requested and allocated from January-July 1948:

MONTH	NH3 Kgs REQUESTED	NH3 Kgs ALLOCATED	Ice Mach Oil (Litres) REQUESTED	Ice Mach Oil (Litres) ALLOCATED	CAC/2 Kgs REQUESTED	CAC/2 Kgs ALLOCATED
1	75	0	12	0	1000	700
2	75	0	12	0	1000	700
3	100	25	12	2	1000	0
4	75	0	18	10	0	0
5	75	25	18	12	0	350
6	100	25	18	9	0	350
7	100	25	18	18	0	0
Total	600	100	108	51	3000	2100

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NIPPON COLD STORAGE PLANT (SENZAKI)-1948 PRODUCTION & DISTRIBUTION (JANUARY-JUNE)

MONTH	TONS PRODUCED	TONS FOR FISH	HOSPITALS & GENERAL USE	TOTAL TONNAGE SOLD
1	381.99	281.835	15.884	297.719
2	99.332	304.902	22.541	327.443
3	348.	272.904	20.380	293.284
4	539.998	538.032	45.621	583.653
5	626.001	543.373	81.078	624.451
6	497.333	357.405	90.180	447.585
7	?	?	?	?
	2,492.663	2,298.451	275.684	2,574.135

TYPE OF PLANT - AMMONIA COMPRESSION - DIRECT EXPANSION

Ice making capacity per 24 hrs - 16 tons
420 can capacity - 78 hr freeze
Ice storage space - 125 cubic tsubo
Tons of ice storage space - 250 tons
Tons in storage 13 July - 86 tons
Tons in storage 29 January - 210 tons
Present total going into reserve daily - 8 tons
Receiving capacity in K.W. - 70

Cold Storage Space

Total 57 cubic tsubo

A	B
-10°C	- 3° C

Started using 5-ton compressor in April 1948

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

REQUESTED & ALLOCATED MATERIALS - NIPPON COLD STORAGE CO, Senzaki Plant
June-July 1948

Month	NH_3 Kgs Requested	NH_3 Kgs Allocated	Ice Mach Oil (Litres) Requested	Ice Mach Oil (Litres) Allocated	$CaCl_2$ Kgs Requested	$CaCl_2$ Kgs Allocated
Jan	580	25	24	23	0	0
Feb	500	25	24	25	2000	1750
Mar	500	25	24	24	5300	5250
April	800	50	72	19	0	0
May	800	50	72	48	1700	1500
June	800	50	72	36	0	0
July	400	0	24	0	670	0
Total	4380	225	3.2	175	9670	8500

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The port of Shimonoseki has adequate ice storage and sufficient producing capacity to satisfy imposed peak demand on ice provided materials are made available and power allocations necessary to support tentative production schedules are as indicated in statistical section of this report.

Sharp contrasts for comparative analysis exist between the concentrated potential in the Shimonoseki area and the wide dispersals of residual plants. This fact is magnified when consideration is made for an aggregate daily potential tonnage approximating 1,143 tons in Yamaguchi Prefecture against the 915 ton daily capacity in Shimonoseki, which represents 80% of total.

Deductible from the aggregate 217,520 tons produced in Yamaguchi Prefecture July 1947-June 1948 are the 183,841 tons or 84% produced by six facilities in Shimonoseki.

Since January 1948 the additional facilities, including both the 200-ton unit at Taiyo No. 2 I. M. Plant and the increase from 7 1/3 tons to 50 tons at Kanmon I.M. Plant has boosted total tonnage 243 tons per 24 hours.

Additional storage space is badly needed at the last mentioned plant, where existing ice storage room of 198 cubic feet with accommodations for a maximum 270 tons of ice is inadequate. Available storage facility for 1000 tons of ice, pending materials approval for minor repairs will alleviate this problem in the near future.

The plant of Kawai with a producing potential of 17 tons is using only 10 tons, as per statistics section of this report.

In conclusion it is believed that a reduced demand for ice accruing from sources outside Shimonoseki during 1948 plus the additional potential of enlarged facilities will suffice for the economy of this area.

The following reports are the results of surveys conducted at the six major producing facilities in Shimonoseki.

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1. Name of Plant : Kwanmo[illegible]ce Making & Freezing Co., Ltd.

2. Location : I Hikoshima, Shimonoseki.

3. Capacity :

(1) Type of Plant : Vertical Double Cylinder Single Acting Closed Type Ammonia Compressor ---------- 3

(2) Type of System: Ice-making : Brine Cooler System,
Ammonia Coil System.

Freezer : Direct Expansion Type.

(3) Rating of refrigerating machines (tons of refrigeration per 24 hours) with statement of pressure & temperature range :

Description of Plant	Tons of Refrigeration per 24 hours	Pressure		Temperature
		Delivery	Suction	
10"x10"x30 NH3 Compressor I	64 ton	12½ Kg/Cm2	1.8 Kg/Cm2	-5°c to -15°c
7.5"x7.5"x360 " I	29.8 "	"	"	"
" " I	29.8 "	"	"	"
Total	123.6 ton			

4. Ice-making capacity per 24 hours : 50 ton

5. Ice storage space : 108 cubic feet

6. How many tons of ice will storage space hold : 270 ton

7. How many tons of ice is in storage now : 40 ton as at 1st July, 250 ton as of 23 July

8. Cold storage space : 118 cubic feet

9. Type of storage carried : Fish ---------- 95%
Fruit & Vegetables 5%

10. Brine solution used : CaCl2

11. Average quantity used per year : CACl2 ----- 48 tons

12. Ice machine oil, Liters used per year : 3,240 liters.

13. Ammonia (NH3) kilograms used per year : 2,400 Kg.

14. Total demand or receiving capacity in KW of ice-making plant :

Total demand : 120,000 KWH.
Receiving capacity- : [illegible]180 K.W.

15. Total demand or receiving capacity in K.W. of cold storage plant :

Total demand : 20,000 KWH
Receiving capacity: [illegible]20 K.W.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

16. Is your present output of ice more than demand for ice:

Demand is more than our output.

17. Are surpluses going into reserve ?

Surpluses produced over demand are being stored in reserve

18. Is ice storage space adequate ?

No, it is necessary for us to have 1000 tons' capacity.

19. Is plant operating 24 hours per day (if not why) :

Yes.

20. Are you forced to supplement official allocations of ammonia, ice machine oil, etc., from other sources? Can it be obtained that way ?

We are being allocated 70% of ammonia and 30% of ice machine oil required. Therefore, we are forced to get it from black-marketeers, but it recently became almost impossible to find it from this source.

21. How do you sell ice ?

Sell it wholesale only.

22. Population of town or city in which ice plant is located :

Population of Shimonoseki : 180,000

23. List all other problems regarding manufacturing or obtaining materials, not mentioned before :

We are desirous of having the under-mentioned materials necessary for expanding our ice storage capacity as shown on item No. 8 of this report. Expansion is being planned for using the existing cold storage space by connecting it with the former.

Name of material	Quantity
Ammonia pipe	5 ton
Cement	7 "
Angle	2 "
Cork board	1,000 Sheets
Plank	50 Pcs

24. List all shortage of power & materials now existing or liable to develop in near future, and what you are about it :

As for power, we are trying to do our best to rationalize its consumption, besides, we are applying to the government for the increased distribution. And, as to the materials, we are economizing the use of them as best as we can, besides, we are applying to the authorities concerned for the increase of its allocation.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

5. Are you aware of channels of appeal when shortages, delay in receipt, or refusals, prevent or retard your production effort :

We are not aware of it.

26. How old is your plant equipment :

12 years

27. Do you loose muchttime from mechanical break down ?

We do not loose much time, because we usually have minor mechanical break down only once or twice a month.

28. Are present power allocation enough to permit maximum ice production. List by month from Jan. to June with attendant shortage per month. :

As our plant has been under repair-work during June this year, we have not been short of power.

29. Has any disparity existed in distribution of critical material such as ammonia, ice machine oil, etc. Did each plant get its share on schedule :

Quantity of ice machine oil and ammonia allocated has been less than the total requested. Besides, it takes a long time for us to procure these materials after we are given the coupons.

30. Do you have sufficient materials on hand, or promissed to permit full scale ice production June through October. If power is available. ?

We are short of materials as stated below:-

Name of Materials	Quantity
a. Freezing machine oil	120 liter per month
b. CaCl2	10 ton
c. Ice-can	100 piece

If above-stated quantity of shortages are fully supplied, and also power is available, we shall be able to promise under-mentioned ice production.

June - Sept. 90% of capacity

Oct. - Dec. 100% " "

31. What percent of ice production goes for fish, hospitals, and occupation forces use :

Comparison of percentage of total ice production in May '48.

99.7% or 580 tons for fishery use
0.3% or 3 tons for general use (including hospital use)
Total 100% or 583 tons

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77801

32. Does ice, or cold storage plant have procurement demand number - if so give number :

33. None.

33. Who is the largest single consumer of ice produced in your plant (give name of consumer):

Junyo Marine Products Co., Ltd.----------30%

34. Has any expansion or additions to plant have been made in the last year, or now being or planned - if so, give full detail :

Our plant suffered damages by tempest and flood occured Sept. 1940. Since then the plant has been under repair work, and it recently has resumed the former condition. However, some expansion or reformation are required for the ice storage space, and equipment for crushing and loading ice, etc.

May reached 50 ton capacity
May reached 7.33

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 778018

REQUESTED AND ALLOCATED MATERIALS
KANNON I. M. PLANT JAN-JULY '48

Month	NH_3 (Kg's) Requested	NH_3 (Kg's) Allocated	Ice Machine Oil(Litres) Requested	Ice Machine Oil(Litres) Allocated	$CaCl_2$ (Kg's) Requested	$CaCl_2$ (Kg's) Allocated
Jan	500	60	396-	36	3000	0
Feb	500	60	414	31	3000	0
Mar	500	80	432	31	4000	0
April	650	100	42	74	6600	10000
May	650	100	42	90	6600	0
June	700	100	42	54	6800	0
July	700	100	360	173	3330	0
TOTAL	4,200	600	1,728	489	33,330	10,000

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

Name of Plant : Kwanmon Ice Making & Cold Storage Co., Ltd

Location : I Hikoshima-machi, Shimonoseki

Output from June to November in 1947:

Month	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Output (ton)	124	147	128	114	441	582	363

The scheduled output of the period from Jan. to Dec. 1948 (figures from Jan. to June showing the actual output):

Month	Jan.	Feb.	Mar.	Apr.	May	June	July
Output (ton)	305	268	243	200	521	665	1,350

Month	Aug.	Sept.	Oct.	Nov.	Dec.
Output (ton)	1,350	1,350	1,500	1,500	1,500

To attain the scheduled output above shortages of things stated below during period from July to September this year exist.

Month	Freezing machine Oil	Machine Oil	Liquid ammonia	Electric power
July	270 litre	60 litre	200 Kg.	8,000 KW.
Aug.	270 "	60 "	200 "	12,000 "
Sept.	270 "	60 "	200 "	7,000 "
TOTAL	810 Litre	180 Litre	600 Kg.	27,000 KW.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

1. Name of Plant : Shimonoseki No. I Refrigerating Plant of Taiyo Fishing Co., Ltd.

2. Location : I-4198 Oimachi, Hikoshima, Shimonoseki

3. Capacity :

(1) Type of Plant : (a) Vertical Single Acting Closed Type Ammonia Compressor, -----manufactures of York & Co., U.S.A.---------- I

(b) Ditto, manufacture of Hayashikane Shipyard Co., Ltd. 5

(2) Type of System :

Ice Making : Cooler Type.

Refrigeration : Ammonia Direct Expansion Type

Cold Storage : Brine Indirect Type.

(3) Rating of refrigerating machine (tons of refrigeration per 24 hours) With statement of pressure & temperature range.

Type of plant	Tons of refrigeration per 24 hours	Number of plant	Total
(a)	100 ton	I	100 ton
(b)	50 "	5	250 "
TOTAL			350 ton

Pressure & Temperature Range

Kind	Delivery pressure	Suction pressure	Temperature
Ice making	13**16 Kg/cm2	0.7 **I Kg/cm2	-4'c.** 10'c.
Cold Storage			-5'c.**20'c.

4. Ice making capacity per 24 hours : 180 ton

5. Ice storage space (cubic feet or cubic metres) :

a. One-storied warehouse ---------- 2,349 cubic metres

b. New ice storage ---------- 2,520 " "

Total 4,879 cubic metres

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770301

6. Total ice storage space(refrigerated).....3.000 tons

7. Ice reserves in storage as of 1 July 1948 --211 tons
   " " " recheck " " 24 " " --262 "
   " " " gain " " " " " -- 51 "

8. Total demand exceeded production at this facility up to and including the first part of July. having been alleviated by decreased activity of fishing fleet.

9. This activity is operating at about 58% of its rated potential as of 23 July 1948. due to the fact that routine maintenance on two of the 5 plants are being effected. The obsolesence of production equipment with the aggregate of 25 years. plus the delay in procurement of replacement parts is detracting from the total summation of ice reserve which could nominally be built up during the recess in fishing activity. The replacement of two (2) 50 ton machines is in process and completion dates for same are scheduled for 15 August 1948.

10. Cold storage space totaling 7.146 cubic meters employing a brine circulating system and data as included in items 2 & 3 of this report were considered in materials estimates

11. Brine solution used CaCl2 (Calcium Chloride) per year averages thirty (30) tons.

12. Refrigerant Ammonia (NH3)(Kg's per year) total 18.325 avg. Present allocations of ammonia are not sufficient to support full scale production or the tentative 15.000 ton schedule July/September. which will require an estimated 7.500 Kg's (NH3).

13. A total of 4.500 liters of ice machine oil will be required to augment July / September production segment of an average yearly consumption of 17.826 liters

14. The receiving capacity of facility in kilowatts is 550 KW The accompanying power allocations with attendant applications. and existing shortages from January 1948 to June 1948 are shown as follows in K.W.H.

Month	Jan.	Feb.	Mar.	Apr.	May
Applied for	400,000	400,000	400,000	520,000	520,000
Allocated	298,900	252,900	309,800	348,000	440,000
Shortage	101,100	147,100	90,200	172,000	80,000

The plant estimate of 1,480,000 kwh for said period based on a 550 KW receiving capacity is to high to the extent of 265,600 kwh. considering a maximum production of 16,560 tons instead of the scheduled 15,000 tons to be produced.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 178013

TABLE OF REQUEST & ALLOCATED MATERIALS 1948 JAN - JULY
Taiyo Noi Fishing Co.,Lt.
Shimonoseki

Month	NH3 Requested	Kg's Allocated	Ice Machine Oil(Litres) Requested	Allocated	CaCl Requested	Kg's Allocated
Jan	2000	600	2300	252	20,000	5,000
Feb	2000	600	2500	252	20,000	3,000
March	2000	800	2500	254	20,000	0
April	2000	1800	2500	470	20,000	28,000
May	2000	1800	2500	600	20,000	3,000
June	2000	1900	2300	450	20,000	45,000
July	2500	900	2500	1,037	20,000	0
TOTAL	14,500	8400	17,100	3365	140,000	84,000

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

The ice production of this facility was diverted to the following sources July 1947 - June 1948.

Fish preservation	75%
General Use	25%

The largest single consumer of ice is the Natao Pelagic Fishery Cooperative - 10%. Facility does not have any PD Nos.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770870

Name of Plant :
Shimonoseki No. 1 Refrigerating plant of Taiyo Fishing Co., Ltd.

Location:
1 - 4198 Oimachi, Hiroshima, Shimonoseki

Output from June to Nov. in 1947:

Month :	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	ton	ton	ton	ton	ton	ton	ton
Output :	5.590	4.370	2.605	2.559	3.917	3.954	3.632

The scheduled output of the period from Jan. to Dec. 1948 (figures from Jan. to June showing the actual output):

Month :	Jan.	Feb.	Mar.	Apr.	May	June
	ton	ton	ton	ton	ton	ton
Output :	3.315	3.004	3.388	2.502	3.502	3.094

Month :	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
	ton	ton	ton	ton	ton	ton
Output :	5.000	5.000	5.000	5.000	5.000	5.000

To attain the scheduled output above, shortages of materials as listed below during the period from July to Sept. this year exist:

Month	Freezing Machine Oil	Machine Oil	Liquid Ammonia	Electric Power
July	1,500 litre	150 Litre	2,500 kg	485,000 kw
August	1,500 "	150 "	2,500 "	500,000 "
Sept.	1,500 "	150 "	2,500 "	495,000 "
Total	4,500 litre	450 litre	7,500 kg	1,480,000 kw

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

1. Name of Plant: Shimonoseki No. 2 Refrigeration Plant of Taiyo Fishing Co. Ltd.

2. Location. : 19 Yamato- cho, Shimonoseki City

3. Capacity.

(a) Type of Plant: Vertical Single Action Closed Type Ammonia Compression

(b) Type of System:

Ice making: Cooler type

Refrigeration: Ammonia Direct Expansion Type Multiplate (Taubin) type, inactive

Cold Storage : Brine Indirect

(c) Rating of Plant (with accompanying statement
Tons of refrigeration per /24 hours (pressure and temp.) (range)

1. Refrigeration (tons per 24 hrs)

Name	No. of Machines	Tons/24 hrs	Total/per 24 hrs
Hayashikane Ammonia compressor	6	144	864
"	2	111	222
"	2	144	1288
Total			2374 tons

Pressure and Temperature Range

Plant	Delivery press.	Suction press.	Temperature
Ice Making	8-16Kg/cm2	0-2.4Kg/cm2	-4° C to -11° C
Cold Storage	8-14	0-1.0	-5° C " -30° C

Ice Making Capacity per /24 hours 34 tons

Ice Storage Space (Refrigerated) 146,880 cubic ft.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770021

4. Ice storage space will hold : 3,000 tons

5. Total ice reserves as of 1 July 1948 843 tons
" " " " 24 July " recheck 1500 "
" " " " " Gain 657 "

6. Can capacity total 3,536 (300 lb type 2,472)
(200 lb type 1,064)

7. Cold storage space (cubic feet) :

Type	No of rooms	Capacity
Freezer	4	65,146.72 cu.ft.
Cold Storage	3 4	957,409.23 " "

8. Type of storage : Brine Indirect

9. Brine solution used :

Ice Making (No 1 : 140 tons) CaCl2 Calcium Chloride
(No 2 : 240 ") Mg Cl2 Magnesium "

Cold Storage : Ca Cl 2

Amount used per year: tons CA Cl2 Calcium chloride 260 tons

MgCl2 Magnesium Chloride 100 tons

10. Ice Machine Oil liters used per year : 35,848
" " " requested allocation : 33,020
" " " received allocation : 9,593

The above totals were for the period of July 1947 to June 1948.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

13. Ammonia (NH3) Kg's used per year during the period July 1947 to June 1948

Total k'gs use	20,040
Requested allocation	33,020
Allocation received	9,593

14. Total demand or receiving capacity in K.W. for :

Ice Plant	Demand	900 Kw	Receiving Cap.	950 kw
Cold Storage	"	500 Kw	" "	550 "

Power allocations with attendant consumption for period January through June 1948

	Jan.	Feb.	Mar.	April	May	June
Allocation :	728,840	624,450	712,900	689,000	746,000	709.332
Consumed	502,030	363,080	477,640	650,460	739,610	709,020
Shortage	None	None	None	None	None	None

July allocation was 829,000 KWH

15. Materials allocations Jan - July 1948

Month	NH3(Kg's)		Ice Mach Oil (Litres)		CaO/2	
	Requested	Allocated	Requested	Allocated	Requested	Allocated
1.	2500	600	2500	486	150,000	10,000
2.	2500	600	2500	611	15,000	11,000
3.	2500	800	2500	639	10,000	35,000
4.	2000	800	3100	830	15,000	0
5.	2000	800	3300	1000	15,000	19,000
6.	2000	900	3100	798	20,000	25,000
7.	2500	900	2000	2562	15,000	0
Total	16000	5400	19000	6926	105,000	10,000

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77-3-2

16. This facility during the first six months of 1948 averaged 61% of its maximum monthly potential of 10,300 tons, and during the months of April and May produced 90% of rated capacity.

Sufficient materials are stockpiled, or in promised procurement to sustain 90% of maximum production through October. However, the quoted percentages are dependent upon continued power availability.

17. The following breakdown of ice production is channeled into the following with 60% of all manufactured ice going to the parent companys fishing interests.

1948 MONTH	FOR FISHING	FOR OCCUPATION HOSPITAL AND GENERAL USE
May	99%	1%
June	98%	2%

See statistical Section of this Report for Further Detail

18. The procurement numbers of ice plant and cold storage facility on demand are as follows:

JFNZ - 5419 - B - Ice Plant
HF3C - 614)
HF3B - 1987)- Cold Storage Rooms
HF3G - 1929)

19. The total potential of this plant has been increased from 140 tons/per 24 hrs to 340 tons/per 24 hrs as of Oct 1947 with an aggreate potential of 6000 tons/per month increase.

20. This facility has not suffered production losses from utility absolescence or replacement procurements, etc., other than routine maintenance variables.

Freezing and Cold Storage -----7 years
No.1(140 ton) Ice Making Plant -1 year
No.2(200 ton) Ice Making Plant -1 year

21. The nominal off peak demand periods of January, February, March, July and August allow this facility to buildup marginal ice reserves and accounts for a rebalanced demand and supply as revealed on 1 July 1948 survey. However, on a recheck of ice reserve on 23 July 1948 with a total gain of 657 tons over 1 July inventory of 843 tons against a scheduled 7,500 tons, production for July was very disappointing dispite seasonal and enforced restrictions on certain types of fishing. No satisfactory reason was advanced for same.

22. Total and estimated production totals for 1948 with corresponding 1947 schedule and attendant power and materials consumption for said periods are included in statistics section of this report.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

Shimonoseki No. 2 Refrigeration Plant of Taiyo Fishing Co.

Result of Demand & Supply of Ammonia

From July, 1947 to June, 1948.

1. Each month (or each term) applied quantity (Unit KG.):

	July, Aug. & Sept.	Oct., Nov. & Dec.	Jan., Feb. & Mar.	Apr., May & June	Total
Quantity applied for :	6,950	5,500	5,000	6,000	23,450

2. Each month (or each term) allocation total:

	July, Aug. & Sept.	Oct., Nov. & Dec.	Jan., Feb. & Mar.	Apr., May & June	Total
Allocation quantity :	1,600	2,000 *(6,000)	2,000	2,500	21,500

Remark : * ( ) is being requisitioned on special allocation.

3. Each month use quantity :

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Result of use :	1,100	800	1,850	6,500	550	1,500	1,000	1,000	1,000	890

	May	June	Total
Result of use :	850	3,000	20,040

4. Result of each month purchasing besides allocation for shortage :

	July, Aug. & Sept.	Oct., Nov. & Dec.	Jan., Feb. & Mar.	April & May June	Total
Shortage	2,150	550	1,000	Plus 5,160	Plus 1,460

Result of Supply & Demand of Refrigerator Oil

From July 1947 to June, 1948.

1. Each month (or each term) applied quantity : (Unit:Litre)

	July, Aug. & Sept.	Oct., Nov. & Dec.	Jan., Feb. & March	April	May	June	Total
Quantity applied for	8,100	7,920	7,500	3,000	3,000	3,500	33,020
				9,500			

2. Each month (or each term) allocation quantity :

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

2. Each month (or each term) allocation quantity : Unit : Litre

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Allocation quantity:	461	925	850	540	461 •1,500	492	492	611	633

	April	May	June	Total
Allocation quantity:	830	1,000	798	2,523

•Special allocation

3. Each month use quantity:

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Quantity of use :	1,699	2,484	4,788	5,231	3,559	3,106	1,796	1,746	1,654

	April	May	June	Total
Quantity of use :	2,545	3,675	3,565	35,848

4. Shortage (use of reproduced oil) :

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Shortage :	1,238	1,559	3,938	4,691	1,598	2,614	1,304	1,135	1,021

	April	May	June	Total
Shortage :	1,715	2,675	2,767	26,255

POTASSIUM CHLORIDE

from July, 1947 to June, 1948.

1. Each month (or each term) applied quantity : Unit:ton

July, Aug. & Sept.	Oct., Nov. & Dec.	Jan., Feb., & Mar.	Apr., May & June	Total
10, 10, 10	130,10,10	10, 10, 10	10, 30, 10	260

3. Each month (or each term) result of use : not designated productive material

July, Aug. Sept.	Oct., Nov. Dec.	Jan., Feb. Mar.	Apr. May June	Total
0 29, 0	130, 50, 24	10, 1, 35	0, 18,2 5.1	252.8

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

Amount of Transaction of Frozen & Cold-storage Goods

Transaction from June, 1947 to July, 1948

Total output	6,312.7 ton	
Marine products	2,373.7	38%
Fruits & Vegetables	858.9	14%
Whales	1,725.1	27%
Others	1,355.0	21%

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78013

Name of Plant : Shimonoseki No. 2 Refrigeration Plant of Taiyo Fishing Co., Ltd.

Location: 19 Yamato-cho, Shimonoseki

Out put from June to November 1947:

Month	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Output (ton)	4.095	3.908	3.239	3.613	4.939	6.118	6.534

The scheduled output of the period from Jan. to Dec.1948 (figures from Jan. to June showing the actual output):

Month	Jan.	Feb.	Mar.	Apr.	May	June	July
Output (ton)	6.048	3.427	5.868	9.022	9.142	7.558	7.500

Month	Aug.	Sept.	Oct.	Nov.	Dec.
Output (ton)	7.500	8.500	9.000	9.000	8.500

To attain the scheduled output above, shortages of materials as listed below during period from July to September this year.

Month	Freezing Machine Oil	Machine Oil	Liquid ammonia	Electric power
July	1,600 litres	216 litres	1,200 kg.	35,000 KW
August	1,600 "	216 "	1,600 "	42,000 "
Sept.	1,600 "	216 "	1,700 "	28,000 "
TOTAL	4,800 Litres	648 Litres	4,500 Kg.	105,000 KW

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78019

Ice storage capacity 180.3 cubic tsubos
Ice in reserve 15 July 1948 - 182 tons
Ice storage space for - 650 tons
Cold storage space - 21.7 cubic tsubos
Plant receiving capacity in K.W. - 70
Can capacity - 286
Percent production going for fish preservation - 92%
" " " General Use - 8%

TABLE OF REQUESTED & ALLOCATED MATERIALS
For Hagi-shi I.M. Plant Jan-Jul, 1948

MONTH	NH3 Kgs Requested	NH3 Kgs Allocated	Ice Machine Oil (Litres) Requested	Ice Machine Oil (Litres) Allocated	CACL, KG's Requested	CACL, KG's Allocated
Jan	150	25	18	23	3000	700
Feb	150	25	18	23	3000	0
Mar	150	50	18	16	4000	0
April	150	60	36	56	660	0
May	100	60	36	50	660	1050
June	100	110	36	54	680	700
July	150	50	36	117	0	0
TOTAL	950	380	198	339	12,000	2,450

The Hagi plant of Nippon Cold Storage Co produced a total of 734 tons of ice during period of Jan-June 1948. Rated producing capacity per 24 hours of plant is 10 tons. This total production for said period represents 40% of rated potential. This facility has produced on a demand basis as a result of inadequate storage space. A refrigerated storage room to store about 12 tons of ice was nearing completion at the time of this survey. A former 300-ton sawdust storage building had been abandoned as impractical due to building deterioration. No ice was in storage during the inspection of this facility.

MONTH	JAN	FEB	MAR	APR	MAY	JUNE
Total Produced	17	75	117	169	202	154
Tonnage Sold	17	75	117	169	202	154
Tons in Reserve	0	0	0	0	0	0

NIPPON COLD STORAGE COMPANY
Table of Requested & Allocated Materials
January-June 1948

MONTH	NH3 (Kgs) Requested	NH3 (Kgs) Allocated	ICE MACH OIL (Litres) Requested	ICE MACH OIL (Litres) Allocated	CAC/2 (Kgs) Requested	CAC/2 (Kgs) Allocated
Jan	100	25	20	9	2000	0
Feb	100	25	20	13	2000	0
Mar	100	25	20	6	3000	1750

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78-018

1. Name of Plant : Nippon Cold Storage Co., Ltd., Hikoshima, Honmura Plant

2. Location : 365 Shimonoda, Hikoshima, Shimonoseki

3. Capacity :

(1) Type of Plant : Horizontal Double Cylinder Double Acting Center Crank Type---------- 2

Vertical Double Cylinder Double Acting Center Crank Type---------- 2

(a) Ice-making : Ammonia Direct Expansion Type.

(b) Cold storage : - Ditto -

(2) Type of System :

(a)	Ice-making :	208 ton	2	416 ton
(b)	Cold storage:	20 ton	1	20 "
	" "	9.44 "	1	9.44 "
	TOTAL ----------			445.44 ton

(3) Rating of refrigerating machines (tons of refrigeration per 24 hours) with statement of pressure & temperature range):

Type of Plant	Tons of Refrigeration per 24 hours	Number of plant	Total
(a)	208	2	416 ton
(b)	(20	1	20 "
	(9.44	1	9.44 "
TOTAL	237.44		445.44 ton

Pressure and Temperature Range

Kind	Delivery Pressure	Suction Pressure	Temperature
Ice-making :	13 - 15 Kg/cm2	1 - 1.4 Kg/cm2	-5'c to -10'c
Cold storage:	- Do -	0.7 - 1 Kg/cm2	-3'c to -5'c

4. Ice-making capacity per 24 hours : 220 tons

5. Ice storage space cubic feet or cubic metres : 239.314 cft.

6. How many tons of ice will storage space hold : 3,925 ton

7. How much ice is in the storage now (tons) : 150 tons (as of 7 July).
How much ice is in recheck now (tons) 23 July : 1800 tons

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

8. Cold storage space cubic feet or cubic metres :

We have no cold storage space

9. Type of storage carried:

Not applicable

10. Brine solution used : CaCl2

11. Average quantity used per year (tons) CaCl2 : 229 ton

12. Ice machine oil. Liters used per year : 2,308 liter.

13. Ammonia (NH3) Kilograms used per year : 12,400 Kg.

14. Total demand or receiving capacity in K.W. of ice-making plant :

Total demand	Receiving Capacity
3,800,000 KWH	4,000,000 KWH

R.C.W. EAP 600 K.W.

15. Total demand or receiving capacity in K.W. of cold storage plant :

Not applicable.

16. Is your present output of ice more than demand for ice:

It has been properly balanced.

17. Are surpluses going into reserve ?

Yes, they are going into reserves.

18. Is ice storage space adequate ?

Yes, it is adequate

19. Is plant operating 24 hours per day (if not why?) :

Yes, it is operating 24 hours per day.

20. Are you forced to supplement official allocations of ammonia, ice machine oil, etc. from other sources? Can it be obtained that way :

We are forced to purchase them at the blackmarket. But, it recently becsme very hard to get even in the blackmarket.

21. How do you sell ice ? Whole-sale.- Retail.- Both :

Both the wholesale and the retail.

22. Population of town or city in which ice plant is located :

180,000

23. List all other problems regarding manufacturing or obtaining materials, not mentioned before :

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12. The following materials were requested and allocated during period January - July 1948 as per table:

Month	NH3 (Kg's) Requested	NH3 (Kg's) Allocated	Ice Machine Oil(Litres) Requested	Ice Machine Oil(Litres) Allocated	CaCl2 (Kg's) Requested	CaCl2 (Kg's) Allocated
1	750	300	240	252	0	0
2	750	300	240	243	0	0
3	1000	400	240	251	0	0
4	2000	1100	680	460	40,000	35,000
5	2000	1100	680	177	10,000	6,000
6	2000	1100	680	434	20,000	10,000
7	1500	500	400	855	0	0
TOTAL	10,000	4800	3160	2672	70,000	51,000

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77801

Quantity of materials required or applied for and amount received are as follows :-

Material	Period	Quantity Applied or For	Quantity Received
Ammonia (from July, 1947 to June, 1948		27,000 Kg.	655 Kg.
Ice machine oil	- Do-	9,520 liter	2736 liter
CaCl2	- Do-	229 ton	229 ton
Iron & steel	- Do-	43.9 ton	1.5 ton
Cement	- Do-	3,500 Kg.	150 Kg.
Carbite	- Do-	6,500 Kg.	225 Kg.

Other necessary materials, not shown above, are not allocated at all, therefore, this hampering our production desire. Working-dress 160 suit and rubber soled tabi (sock) are required, besides, additional allocation of main food and other materials required for the labor are desired.

24. List all shortages of power & materials are now existing or liable to develop in near future, and what you are about it :

(a) Power :

We are being allocated quarterly a fixed amount of power by applying to Commerce and Industry Dept. by way of Agriculture & Forestry Dept. We are now being allocated by category b. 1 for which we are applying to the authorities concerned to be altered to a. I.

(b) Materials:

(a) Ammonia
(b) Ice machine oil
(c) Iron & steel
(d) Carbide

For the above-mentioned materials, we apply to Transportation Bureau of Agricultural & Forestry Dept. for allocation, besides, we apply for special allocation in case we are short of them. To get materials after given the quarterly allocation is very hard for us at present. We are trying very hard to get these materials by telling them our situation.

(c) CaCl2(Calcium Chloride)

We can get this by free sale from producer. But, as it usually takes a long time for price negotiation, therefore, we are forced to buy it at a higher price.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 77803

25. Are you aware of channels of appeal when shortages, delay in rece... refusals, prevent or retard your production effort :

Yes, we know it.

26. How old is your plant equipment ?

27 year and 9 month.

27. Do you lose much time from mechanical break down ?

We are losing much time because it takes a long time to repair the plant due to the shortage of repairing materials.

28. Are present power allocations enough to permit maximum ice production. List by month from Jan. to June with attendant shortages per month:

Not enough, and the shortage of power since Jan. this year are as follows:-

Month	Shortage of power
Jan.	56,800 KWH
Feb.	32,550 "
Mar.	79,800 "
Apr.	37,000 "
May	43,000 "
June	60,400 "

29. Has any disparity existed in distribution of critical materials such as ammonia, ice machine oil etc. Did each plant get its share on schedule :

No disparity has existed, but we have been allocated much less than totals applied for.

30. Do you have sufficient materials on hand, or promised to permit full scale ice production June through October. If power is available.

Not sufficient materials on hand. We can not promise to permit full scale ice production unless we are given the materials for which we have applied.

31. What percent of ice production goes for fish, hospitals, occupation forces use :

Total May Production	For fishery use	Re-ice	General
5,328 ton	3,005 ton 57%	2,230 ton 42%	93 ton 1%

32. Does ice, or cold storage plant have procurement demand number - if so give number :

Not applicable.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

33. Who is the largest single consumer of ice produced in your plant (give name of company) :

Nichiro Fishing Co., Ltd. ------ 13%

34. Has any expansion or additions to plant been made in the last year, or now being built or planned - if so, give full details:

We did not make any expansion or addition to our plant except some repair works during last year.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 178013

Name of Plant : Nippon Cold Storage Co., Ltd. Honmura Plant.

Location : 365 Shimonoda, Hikoshima, Shimonoseki

Output from June to November in 1947:

Month	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Output(ton)	5,064	4,662	3,906	4,282	5,086	4,713	3,860

The scheduled output of the period from Jan. to Dec. 1948 (figures from Jan. to June showing the actual output):

Month	Jan.	Feb.	Mar.	Apr.	May	June	July
Output(ton)	4,167	3,771	-----	626	5,582	5,340	6,820

Month	Aug.	Sept.	Oct.	Nov.	Dec.
Output(ton)	6,820	6,600	6,820	6,600	6,820

To attain the scheduled output above, shortages of materials as listed below during period from July to September this year exist.

Month	Freezing machine oil	Machine oil	Liquid ammonia	Electric power
July	100 litre	150 litre	-----	28,000 kw
Aug.	100 "	150 "	1,000 kg.	25,000 "
Sept.	100 "	150 "	1,000	19,100 "
TOTAL	300 litre	450 litre	2,000 Kg	72,600 KW

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

ICE PRODUCTION TOTALS FOR YAMAGUCHI PREFECTURE

MONTH	1947 PRODUCTION (TONS)	MONTH	1948 PRODUCTION (TONS)	
January	9,330	January	11,460)	
February	7,170	February	13,600)	
March	12,150	March	15,090)	--Actual
April	16,550	April	20,780)	
May	18,940	May	25,590)	
June	19,280	June	24,920)	
			Total	111,320
July	16,160	July	29,000)	
August	16,570	August	28,800)	
September	17,350	September	27,600)	--Estimated
October	20,220	October	27,600)	
November	20,000	November	27,300)	
December	15,900	December	26,100)	
			Total	166,400
TOTAL	189,620	TOTAL	277,720	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

COMPARATIVE TABLE FOR ESTIMATED, REQUESTED AND ALLOCATED MATERIALS APRIL-JUNE 1948 FOR YAMAGUCHI PREFECTURE

Month	Scheduled Production	Actually Produced	Estimated NH_3(Kg's)	NH_3(Kg's) Requested	Allocated NH_3 for Use (Kg's)	Estimated Ice Machine Oil (Litres)
April	24.850	20,780	6.640	132.15	5.040	4.560
May	27.300	25.530	6.645	132.65	5.435	4.510
June	27.540	27.540	7.010	143.70	6.300	4.850
TOTAL	79.690	71.230	20.295	41.850	16.775	13.920

Month	Ice Machine Oil Requested (Litres)	Ice Machine Oil Received (Litres)	Estimated $CaCl_2$ (Kg's)	Requested $CaCl_2$ (Kg's)	Received $CaCl_2$ (Kg's)
April	8192	2400	59.300	92,820	76,000
May	8416	2692	53.400	65,470	50,300
June	7998	2560	53.900	91,710	86,600
TOTAL	24.606	7,652	166,600	250,000	212,900

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

STATISTICS OF DEMAND & SUPPLY OF ICE
(From July 1, 1947 to June 30, 1948)

Name of Plant : Shimonoseki No. I Refrigerating Plant of Taiyo Fishing Co., Ltd.
Location : I-4198 Oimachi, Hikoshima, Shimonoseki.

Month	Output	For Fishery Use	DESCRIPTION Re-ice	General Use	Total	Stocks on hand	
July '47	4.370 ton	3.597 ton	239.5ton	0	3,836.5 ton	1,167 ton	(633.5 tons being carried forward from June)
Aug.	2,605 "	2,232 "	255 "	276 ton	2,763 "	1,009 "	
Sept.	2.559.5"	2,737 "	602 "	116.2 "	3.455.2 "	113.3"	
Oct.	3.917 "	4,013.3"	13 "	0	4,026.3	4 "	
Nov.	3.954.5"	3.458 "	105 "	188 "	3.751 "	207.5"	
Dec.	3,692.5"	2,889 "	87 "	99 "	3,075 "	765 "	
TOTAL	21,038.5"	18,926.3"	1,301.5"	679.2 "	20,907 "	131.5"	
Jan. '48	3,315.5ton	2,803 ton	0	27 ton	2,830 ton	1.250.5 ton	
Feb.	3,004 "	2,008 "	100.5ton	29 "	2,137.5 "	2,117 "	
Mar.	3,388 "	3,513.5"	82.5 "	47 "	3,643 "	1,862 "	
Apr.	2,502 "	3,166.5"	156.5 "	122 "	3,445 "	919 "	
May	3,502 "	3,859 "	6.5 "	56 "	3,921.5 "	499.5 "	
June	3,094.5"	3,410.5"	0.5 "	51.3"	3,462.3	131.7"	30th June
TOTAL	18,806 "	18,760.5"	346.5 "	1332.3"	19,439.3 "		
Grand Total	39,844.5"	37,686.8"	1,648 "	1,011.5"	40,346.3 "		

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

STATISTICS OF DEMAND & SUPPLY OF ICE
(From July 1, 1947 to June 30, 1948)

Name of Plant : No. 2 Refrigeration Plant of Taiyo -Fishing Co., Ltd.
Location : 19 Yamato-cho, Shimonoseki City

Month	Output	For fishery use	Re-ice	General Use	Total	Stocks on hand
July '47.	3.907.8 ton	3.504 ton	441 ton	42.5 ton	3.987.5ton	197 ton (276.7 tons being carried forwarded from June).
Aug. "	3,239.4 "	2,709.2 "	263.6 "	187.5 "	3,160.3	276.1 ton
Sept. "	3,612.9	3,494.3	350.8	16.9	3,862	27
Oct. "	4,939	4,860.5	92	3.5	4,956	10
Nov. "	6,118	5,148	975	5.	6,128	0
Dec. "	6,534	5,074	408	2	5,484	1,050
Total	21,351.1 ton	24,790 ton	2,530.4 ton	257.4 ton	27,577.8 ton	
Jan. '48	6,048	3,091	542	3	3,636	3,462
Feb. "	3,427	3,912.5	588	10.5	4,511	2,378
Mar. "	5,867.5	4,908	877.5	20	5,805.5	2,440
Apr. "	9,022.5	8,500	990.5	8 (5)	9,498.5	1,964
May "	9,142	8,681.5	1,715.5	127 (77)	10,524	582
June "	7,557.5	5,893	1,376.3	128.2(64.5)	7,397.5	742
Total	41,064.5 ton	34,986 ton	6,089.8 ton	296.7 ton	41,372.5 ton	
Grand Total	69,415.6 ton	59,776 ton	8,620.2 ton	554.1 ton	68,950.3 ton	

NOTE: Figures in () show the quantity of ice for Occupation Forces

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

STATISTICS OF DEMAND & SUPPLY OF ICE
(From July 1, 1947 to June 30, 1948)

Name of Plant : Kwanmon Ice Making & Cold Storage Co., Ltd.
Location : Hikoshima-machi, Shimonoseki

Month	Output	For Fishery Use	Re-ice	General Use	Total	Stocks on Hand
July '47	147 ton	123.7 ton		12.3 ton	136 ton	0 (1st July)
Aug. "	128 "	111 "		28 "	139 "	11 ton
Sept. "	114 "	58 "		35 "	93 "	21 "
Oct. "	441 "	323.7 "		6.3 "	330 "	132 "
Nov. "	582 "	618 "		2 "	620 "	94 "
Dec. "	363 "	454.5 "		2.5 "	457 "	0 "
Total	1,775 "	1,688.9 "		86.1 "	1,775 "	
Jan. '48	305 "	290 "		1 "	291 "	74 "
Feb. "	268 "	322.5 "		0.5 "	323 "	19 "
Mar. "	243 "	233.5		0.5	234 "	28 "
Apr. "	200 "	206. "		2 "	208 "	20 "
May "	521 "	508.5 "		2.5 "	511 "	30 "
June "	665 "	650 "		5 "	655 "	40
Total	2,202 "	2,159.5 "		11.5 "	2,162 "	
GRAND TOTAL	3,977 ton	3,839.4 ton		97.6 ton	3,937 ton	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

STATISTICS OF DEMAND & SUPPLY OF ICE
(From July 1, 1947 to June 30, 1948)

Name of Plant : Kawai Ice Making Shimonoseki Plant

Location: Kamishinchi-machi, Shimonoseki

Month	Produced	Occupation Force Use	Hospital	For Fishery Use	General Use	Total
July '47	180	None	49 ton	247 ton	Reserve 84 ton	570 380 ton
Aug. "	162	"	79 "	286 "	75 "	440 "
Sept. "	174	"	26 "	130 "	64	220 "
Oct. "	226	"	4 "	24	62	90 "
Nov. "	122	"	9	49	23	81 "
Dec. "	12	"	8	41	30	79 "
Jan. '48	99	None	5	26	19	50 "
Feb. "	111	"	7	32	33	72 "
Mar. "	242	"	8	45	27	80 "
Apr. "	340	"	16	56	53	125 "
May "	171	"	30	87	183	300 "
June "	36	"	51	144	105	300 "
TOTAL	1,875		292 ton	1,167 ton	758 ton	2,217 ton

Loss - melting, etc. 93 tons
Total in reserve 1 July 1948 - 7 tons

	Ice Making Capacity (tons per 24 hrs)	Ice Storage Space (cubage)	Ice in Storage (tons)	Tons per Day Now Making (Inspection Date)	Cold Storage Space (cubage)
1.	115	136,241 cu ft	37 - 1 Jul	95	Cold Storage 63,730 cu ft Freezing 8,982 "
2.	220	239,314 cu ft	150 - 7 Jul	170	0
3.	180	4,879 cu mtrs	211 - 1 Jul	106	7,146 cu mtrs
4.	340	146,880 cu ft	843 - 1 Jul	300	10,2255.95 cu ft
5.	50	108 cu ft	40 - 1 Jul	40	118 cu ft
6.	10	47,800 cu ft	7 - 1 Jul	6	0
7.	0	0	0 "	0	1,690
8.	10	20 cu tsubo	0 "	3	58 cu tsubo
9.	20	180 cu tsubo	182 "	16	21.7 cu tsubo
10.	3	17.22 cu tsubo	63 "	1	0
11.	8	600 cu ft	0 "	3	0
12.	3	960 cu ft	0 "	0	0
13.	15	125 cu tsubo	86	15 - 1 Jul	57 cu tsubo
14.	5	67 cu tsubo	20	4 "	0
15.	12	4500 cu ft	0	0-X "	0
16.	5	1500 cu ft	50	4 "	0
17.	0	0	0	0 "	38 cu tsubo
18.	5	24 cu mtrs	61	2½ "	0
19.	8	30 cu mtrs	2	5 "	5 cu tsubo

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20.	7.5	15 cu tsubo	100	5	"	0
21.	3	1400 cu ft	10	2	"	0
22.	9½	48 cu tsubo	50	7	"	0
23.	5	400 cu ft	0	3	"	0
24.	0	0	0	0	"	7,280 cu ft
25.	5	36 cu tsubo	0	1½	"	0
26.	8	600 cu ft	15	6	"	0
27.	20	14 cu tsubo	40	15	1 Jul	0
28.	8	66 cu tsubo	120	8	"	0
29.	5	750 cu ft	2	3½	"	0
30.	10	15 cu tsubo	0	4	"	98 cu tsubo
31.	10	300 cu mtrs	100	2½	"	1500 cu mtrs
32.	10	24 cu tsubo	40	8	"	0
33.	5	1200 cu ft	1	1	"	0
34.	3	1800 cu ft	10	2	"	20 cu tsubo
35.	0	0	0	0	"	1000 cu ft
36.	5	67 cu tsubo	160	4	"	0
Total	1,143		2,143	843		

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DECLASSIFIED E.O. 12065 SECTION 3-402/NNDC

INDEX OF ICE PLANTS LOCATED IN YAMAGUCHI PREFECTURE

Shimonoseki Area Name of Plant	Name of Representative	Location
1. Nippon Cold Storage Co.,Chimonoseki Plant	Hideo Oshio	57 Imaura - cho, Shimonoseki
2. Nippon Cold Storage Co.,Hiekoshima,Honmura Pl	Yurio Murata	365 Shimonota-Hiekoshima, Shimonoseki
3. #1 Refrigerating Pl of Taiyo Fishing Co. Ltd.	Katsumi Oguna	1-4198 Hiekoshima machi, Shimonoseki
4. Shimonoseki #2 Refrigerating Pl of Taiyo Fishing Co., Ltd.	Harumi Soyima	19 Yamato-cho, Shimonoseki
5. Kanmon Ice Making & Cold Storage Co.Ltd.	Seii Kusunose	1 Hiekoshima-machi, Shimonoseki
6. Kawai Ice Making Co.,Shimonoseki Pl	Hiroji Kawai	Kamishinchi-machi, Shimonoseki
7. Shimonoseki Marine Product Selling Co.Ltd.	Sadakichi Yoshinaga	7-81 Kannonzaki-cho, Shimonoseki
Hagi Area **Name of Plant**		
8. Hagi Marine Product Refrigerating & Ice Making Plant of Fishery Association of Yamaguchi Prefecture	Seiji Okayama	Hamasaki-cho, Hagi
9. Ice Manufacturing Plant of Hagi City	Shigeo Izumiya	1-137 Hamasaki-machi, Hagi
10. Ice Making Pl of Nako Fishery Association	Kiyoguma Ono	2747 Nako-machi, Obu-gun
11. Nippon Cold Storage Co, Hagi Plant	Fukusuke Sawai	3035 Tsubakito, Hagi
12. Ice Making & Cold Storage Pl of Senzaki-machi Fishery Association	Toraichi Nishimura	2016 Minami-machi,Senjaki-machi,Osu-gun
13. Nippon Cold Storage Co Senjaki Pl	Shozo Nakano	1082 Minamibara Senzaki Otsu-gun
14. Ogushi I.M.Pl of Fishery Association of Yamaguchi Prefecture		Nakakoji, Koguchi-machi, Toyoura-gun
15. Suetake Pl of Matsubara, I.M.	Yusuke Hironaga	Hirata, Shitamatsu City
16. Ube United I.M. Association	Kuranosuke Matsubara	7-chome, Kaigan-dori, Higashi-ku,Ube
17. Bocho Marine Product Co., Ltd.	Shigenosuke Yoshimatsu	Tokonami, Nishikiwaku, Ube
18. Tsunemiya I.M.Pl	Iwao Kametani	1149 Ozuki-machi, Shimonoseki
19. Ogori I.M.Co.Ltd.	Shizuji Tsuneshige	Shimogo Ogori-machi, Yamaguchi
20. Yamaguchi I.M.&Cold Storage Co.	Yasuji Veda	Shinmichi, Yamaguchi
21. Tsunoda I.M.Pl	Hikosaburo Ariyoshi	513 Kamiunorei, Yamaguchi
22. Suyo I.M. Pl	Yoshiichi Tsunoda	81 Mitajiri, Bofu
23. Tokuyama I.M.Co.Ltd.	Kenaichi Sajika	Kaisaku-cho Eguchi, Tokuyama
24. Onoda Provision Industry Co.Ltd.	Yutaka Motomura	Nishimohama, Minato-machi Onoda
25. Sanwa I.M.Co.Ltd.	Hirosuke Shimizu	2553 Yanai, Yanai-machi,Kuka-gun
26. Ohata I.M. and Cold Storage Co.Ltd.	Yoshisuke Somaki	Ohata Kojiro-mura, Kuka-gun
27. Asahi I.M. Plant	Kiyoshi Takao	Mitajiri, Bofu
28. Kawashita I.M.Co.Ltd	Yutaka Motomura	85 Mukaizu, Iwakuni
29. Morishige I.M.Pl	Tatsu Ryuzaki	3278 Nishikimi, Iwakuni
	Bobukichi Morishige	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDC NO.

INDEX OF ICE PLANTS LOCATED IN YAMAGUCHI PREFECTURE CONT'D

Name of Plant	Name of Representative	Location
Cont'd		
30. Nippatsu Industry Co.Ltd.	Torao Kuniyoshi	3-chome, Kaigandori, Higashi-ku,Ube
31. Bofu Plant of Kyowa Industry Co.Ltd.	Hiroshi Watanabe	1835 Mitojiri-mura, Bofu
32. Murai I.M. and Cold Storage	Junro Murai	547 Yokohama, Tokuyama,Tokuyama City
33. Ase Metamorphosis Pl of Nippon Chemical Co.Ltd.	Shotaro Gensho	Asa-machi, Asa-gun
34. Marvachi Marine Industry Co.,Ltd	Fumeijiro Harada	2-6036 Aio-machi, Yoshiki-gun
35. Ube Marine Food Co.Ltd.	Motosuke Yanagiya	2-chome Kaigandori, Ube
36. Fish Receiving Association of Nishiichi Area	Toyosuke Kimoto	Nishiichi-machi, Toyoura-gun

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDS NO.

DEMAND AND SUPPLY OF ICE BY NIPPON COLD STORAGE LTD
HONMURA PLANT (Metric Tons)

1947 MONTH	PRODUCED	SHIPPED	PURCHASED	TOTAL	FOR FISHING	RE-ICING
July	4662			4662	3105	722
August	3906	1		3907	1872	566
September	4282	191	12	4485	4120	195
October	5086	513		5599	4577	1000
November	4713	595		5308	3778	1525
December	4860	40		4900	2826	1011
TOTAL	27509	1340	12		20278	5019
1948						
January	4166			4166	1374	1048
February	3771			3771	2166	1446
March		333	828	828	1890	1787
April	626	60	1025	1984	494	1573
May	5582			5642	3174	2424
June	5340		23	5363	2923	2230
Total	19,485	393	1876		12021	10508
Grand Total	46,994	1733	1888		32299	15527

(Continued)

1947

MONTH	TRANSFERRED (TONS)	TOTAL	LOSS FROM MELTING	BALANCE OF ICE IN RESERVE
July		4254		531
August	72	4167		271
September		4736		20
October		5601		18
November		5321		5
December		3847		1050
TOTAL	72	27,926		

1948

January		2432		2792
February		3623		2910
February		3690		98
March		2079		3
April		5628		17
May		5257		123
June		22,709	70	
TOTAL		50,635	70	146 tons
GRAND TOTAL				

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDS NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 1

DEMAND AND SUPPLY OF ICE BY NIPPON COLD STORAGE PLANT LTD
(SHIMONOSEKI)
Period 1 July 1947 - June 1948 (Metric Tons)

MONTH	OUTPUT	TRANSFERRED FROM HONMURA PLANT	purchased	AVAILABLE FOR DISTRIBUTION	% ALLOCATED FOR FISHING	% TO OCCUPATION FORCES USE
1947						
July	1891		44	1935	847 tons	105 tons
August	1514	72 tons	12	1598	43	101
September	1265		292	1557	724	95
October	1571		1873	3444	2806	61
November	2368		1097	3465	2738	19
December	2716		58	2773	2201	21
	11,325	72	3376	14,772	9359	402
1948						
January	2850			2850	1450	7
February	307			307	1350	
March	358			358	869	
April	2183			2183	1789	
May	2725			2725	2474	
June	1987	5	0	1992	1627	7
Total	10,410	77	0	10,415	9559	
Grand Total	21,735	77	3376	25,187	18,918	409

Cont'd - 1947

MONTH	GENERAL USE	SHIPPED TO BRANCH PLANT	TOTAL	ICE STORAGE BALANCE ON HAND
July	852		1804	290
August	1583	1	1728	160
September	638	191	1648	69
October	127	513	3507	6
November	86	595	3543	33
December	84	40	2346	460
Total	3370	1340	14576	
January	51		1508	1802
February	62		1412	697
March	101		970	85
April	138	333	2260	8
May	187	60	2742	13
June	341		1968	37
Total	880	393	10860	37 tons reserve as of July 1948
GRAND TOTAL	4250	1733	25436	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 1

ACTUAL AND ESTIMATED

PRODUCTION DEMAND AND DISTRIBUTION OF ICE FOR MARINE PRODUCTS IN HAMADA AREA

1948 MONTH	Estimated Demand (Ice)		Production of Ice		Ice For Fishing Boats		Reicing of Marine Products		Transportation of Fish Etc	
January	1197	ACTUAL	210	ACTUAL	1010	ACTUAL	103	ACTUAL	86	ACTUAL
February	1216		393		980		151		85	
March	1624		465		1306		203		115	
April	2290		412		1850		311		130	
May	3182		519		2611		411		160	
June	1267		519		655		391		225	
July	950	ESTIMATED	294	ESTIMATED	538	ESTIMATED	144	ESTIMATED	270	ESTIMATED
August	870		526		534		24		310	
September	2565		1200		2099		194		270	
October	3770		1250		3352		245		190	
November	3228		1250		2745		233		150	
December	2681		1200		2397		164		120	
Total	24840		8238		20072		2574		2110	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [redacted]

ESTIMATED AND APPLIED ICE FOR MARINE PRODUCTS IN HAMADA-SHI

MONTH	FRESH FISH (Kan)		ICE (tons)	TONS OF ICE Per 100 Kan Fish
January	128,200	ACTUAL	102,560	0.08
February	189,000		151,200	0.08
March	203,100		203,100	0.10
April	259,000		310,800	0.12
May	257,000		411,200	0.16
June	217,000		390,600	0.18
July	72,000	ESTIMATED	144,000	0.20
August	12,000		24,000	0.20
September	108,000		194,000	0.18
October	175,000		245,000	0.14
November	259,000		233,100	0.09
December	205,000		164,000	0.08
Total	2,084,300		2573,960	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 79013

THE FOOLOWING LIST INCLUDES PLANTS
THAT WERE BUILT, REACTIVATED OR
ACTUAL CONSTRUCTION STARTED DURING 1948

NAME OF PLANT	LOCATION	ICE MAKING CAPACITY	ICE STORAGE (MEAS TONS)	COMPLETION (DATE)
SHIMANE PREFECTURE				
Yasugi Seihyo, K.K.	Yasugi machi Nogi-gun Shimane-Ken	10	100	1 Oct 1948 (NEW)
Oda Seihyoo K.K.	Oda machi Anno-gun	10	200	15 Jan 1949 (NEW)
Hamada Swihyo, K.K.	Ashai Hama	25	750	April 1949 (NEW)
Kasubuchi-Seihyo Yugen Kaisha	Kasubuchi-machi Ochi-gun	3	93	May 1948 (NEW)
Saigo Seihyojo	Saigo-machi Shukichi-gun	5	40	June 1948 (Reactivated)
Nippon Reizo K.K. (Inchiba Plant)	Hamaura Hamada-city	25	200	May 1948 Rebuilt
Total		78	1383	
TOTTORI PREFECTURE				
Tohaku tcs	Abu Nangoku mura Tohaku-gun	6	450	June 1948
Total		6	450	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

NIPPON REFRIGERATION CO. (SAIKI PLANT)

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
									99	18
JAN.	323	322								
							200	100	99	18
FEB.	449	257								
							SPECIAL ALLOCATION	(200)	99	58
MAR.	283	366								
									99	0
APRIL	193	504								
									90	54
MAY	455	485	400	150						
									99	40
JUNE	340	391								
									90	75
JULY	321	380					54			
									99	90
AUG.	329	305	450	150	320		108			
									90	90
SEPT.	372	255					44			
									90	?
OCT.	236	500								
									90	?
NOV.	187	510	450	90	300		12	300	?	
									90	?
DEC.	225	539					22			
TOTAL	3713	4805	1300	390	620	240	500	300	1134	443

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

NIPPON REFRIGERATION CO. (MATSUE PLANT)

1947 Ice Production Month	Tons	1948 Ice production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN.	215	170			0	54				26
FEB.	321	124	0	0	0	90	1000	150	270	27
MAR.	180	0			0					26
APRIL	190	193								33
MAY	207	408	200	230	360		400	225	320	44
JUNE	343	394				126		175		40
JULY	317	449		200		121		25		45
AUG.	533	469	400		360	98	400	?	333	90
SEPT.	446	450					200	?	120	?
OCT.	477	450		150		31	0	?	120	?
NOV.	505	400	450		400	16	100	?	120	?
DEC.	370	400				25	0	?	100	?
TOTAL	4104	3907	1050	580	1120	417	2100	575	1383	331

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

Nippon Refrigeration Co (Hamada Ichiba Plant)

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 NH_3 Kg's Request	1947 NH_3 Kg's Allocated	1947 Ice Machine Oil Liters Request	1947 Ice Machine Oil Liters Allocated	1948 NH_3 Kg's Request	1948 NH_3 Kg's Allocated	1948 Ice Machine Oil Liters Request	1948 Ice Machine Oil Liters Allocated
Jan	156	Rebuilt	0	0	54	18				
Feb	297	Ready	0	0	90	18				
Mar	523	For	0	0	90	20				
April		Operation					1500			
May	Destroyed	June 1948	N							
June		189	o	t				1265	100	0
July	by Fire	95		A				0	100	60
Aug		304		p				60	120	60
Sept	in April	800		P	l		250	?	80	?
Oct		800			i		100	?	80	?
Nov	1947	800			c		0	?	80	?
Dec		750			a		50	?	80	?
Total	876	3738			b 1 e 234	56	1900	1325	640	120

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

As of Aug

Measurement Ton's Ice Storage	Cold Storage (Cubic feet) Type A	B	C	Ice Production Total Tons 1947	Ice Production Total Tons 1948	
23	Ref. narrative report ↑			Not Applicable	127	
550	See Narrative reference ↑		12,655	3270	1991	
1000	10,582	16,196	5626	4104	2207	
110	0	29,800	0	920	545	
871	0	0	0	Nov-Dec 289	2753	
40	0	0	0	253	194	
200	0	0	0	876	Since June 48 588	
40	0	0	0	?	531	
590	0	0	7040	1865	1397	
40	-	-	-	Not applicable	62	

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

HASEGAWA ICE CO

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 NH_3 KG's Request	Allocated	1948 Ice Machine Oil Liters Request	Allocated	1948 NH_3 KG's Request	Allocated	1948 Ice Machine Oil Request	Allocated
Jan	30	20	0	0	0	54	0	20	0	11
Feb	30	20	"	"	"	36	"	95	"	12
Mar	50	75	"	"	"	54	"	0	"	10
April	80	90	"	"	"	54	"	0	"	16
May	80	120	"	"	"	54	"	50	"	25
June	80	100	"	25	"	18	"	25	"	25
July	120	40	"	25	"	44	"	0	"	50
Aug	60	80	100	205	"	61	"	30	"	45
Sept	30	120	0	0	"	46	150	0	"	45
Oct	120	120	"	"	"	11	100	?	54	?
Nov	120	120	"	"	"	8	100	?	54	?
Dec	120	120	"	"	"	9	100	?	54	?
Total	920	1025	100	255		449	450	220	162	239

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

Index of Ice Plants in Shimane Prefecture

Name of Plant	Location	Plant Representative	Ice Making Capacity Tons per 24 hrs	Ice Storage Space Cubic feet
1. Kasubuchi Ice Mfg Co. Ltd	Kasubuchi-cho Ochi-gun	Kyuichi Okina	3	4147
2. Etomo Ice Plant	Ezumi, Etomo-cho Shimane-ken	Shinzo Aoyama	15	24,412
3. Nippon Refrigeration Co. (Matsue Plant)	Asahi-machi Matsue-shi, Shimane-ken	Sada Takeuchi	20	68,432
4. Hasegawa Ice Co.	Higashi Hon-machi Matsue-shi	Atsuo Hasegawa	6	5,600
5. Nippon Refrigeration Co. (Hamada Plant)	Harai, Hamada-shi	Yasuji Ofuka	15	41,130
6. Hamada Cannery Co.	Hamadaura, Hamada-shi	Feukichi Totsugawa	2	2,160
7. Nippon Refrigeration Co. (Hamada Ichiba Plant)	Hamadaura, Hamada-shi	Yasuji Ofuka	25	138.00
8. Marine Products Association of Shimane Prefecture Masuda Works	Kami Yoshida, Masuda-cho, Minc-gun	Muraji Yamamoto	5	2,028
9. Nippon Refrigeration Co. (Imaichi Plant)	Imaichi-cho Izumo-shi		8	26,657
10. Saigo Ice Co.	Saigo-machi, Shukichi-gun	Yoshindo Hirai	5	1,980

Nippon Refrigerating Co (Harai Hamada-shi)

Ice Production 1948 Month	Ice Production 1948 Tons	Request NH_3 Kg's 1947	Allocated NH_3 Kg's 1947	Request Ice Machine Oil 1948 Liters	Allocated Ice Machine Oil 1947 Liters	Request NH_3 Kg's 1948	Allocated NH_3 Kg's 1948	Request Ice Machine Oil 1948 Liters	Allocated Ice Machine Oil 1948 Liters
Jan	210					0	0	50	17
Feb	393						50	50	12
Mar	465						50	50	11
April	412							50	17
May	519					300	200	50	30
June	330							50	30
July	199							50	72
Aug	222					200	150	75	70
Sept	400					90	?	50	?
Oct	450	1300	800	150	143	0	?	50	?
Nov 104	450		0	50	20	0	?	50	?
Dec 185	450		30	50	0	90	?	50	?
Total 289	4500	1300	830	250	163	680	450	625	259

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDS NO.

KASUBUCHI ICE MFG CO LTD

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 NH_3 Kgs Requested	1947 NH_3 Kgs Allocated	1947 Ice Machine Oil Liters Requested	1947 Ice Machine Oil Liters Allocated	1948 NH_3 Kgs Requested	1948 NH_3 Kgs Allocated	1948 Ice Machine Oil Liters Requested	1948 Ice Machine Oil Liters Allocated
Jan	N	N								
Feb	o	o								
Mar	t	t								
Apr	A	A								
May	p	p								
Jun	p	35						80		
Jul	i	43					Initial Allocation			
Aug	i	49								20
Sep	c	45					0	?		
Oct	a	"								
Nov	b	"								
Dec	l	"								
	e									

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

NIPPON REFRIGERATION CO. (IMAICHI PLANT)

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 NH3 Kgs Requested	Allocated	1947 Ice Machine Oil Liters Requested	Allocated	1948 NH3 Kgs Requested	Allocated	1948 Ice Machine Oil Liters Requested	Allocated
JAN.	0	0								8
FEB.	0	86	100	70	100	0	100	50	100	8
MAR.	136	141								8
APRIL	194	221								15
MAY	225	198	150	50	100	0	150	105	142	26
JUNE	174	228								26
JULY	182	261				36		40		63
AUG.	218	262	150	100	150	68	150		200	50
SEPT.	219	300				46				
OCT.	235	300				11				
NOV.	233	260	300	300	150	10	80	?	180	?
DEC.	49	0				10				
TOTAL	1865	2257	700	520	500	181	480	195	622	204

SAIGO ICE WORKS

Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 NH_3 Kgs Requested	1947 NH_3 Kgs Allocated	1947 Ice Machine Oil Liters Requested	1947 Ice Machine Oil Liters Allocated	1948 NH_3 Kgs Requested	1948 NH_3 Kgs Allocated	1948 Ice Machine Oil Liters Requested	1948 Ice Machine Oil Liters Allocated
Jan										
Feb										
Mar										
Apr										
May							300	150	20	20
Jun	1	62							20	20
Jul	9	0							20	20
Aug	4	0							20	20
Sep	7	0								
Oct		?								
Nov		?								
Dec		?								
Total										

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDC NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDS NO.

ETOMO ICE CO LTD

1947 Ice Production		1948 Ice Production	1947 NH_3 Kgs		1947 Ice Machine oil Liters		1948 NH_3 kgs		1948 Ice Machine oil Liters	
Month	Tons	Tons	Requested	Allocated	Requested	Allocated	Requested	Allocated	Requested	Allocated
Jan	128	120			100	36			100	19
Feb	70	65	180	120	"	45	180	125	"	20
Mar	153	280			"	18			"	18
Apr	169	418			"	45			"	25
May	310	162	180	170	"	24	180	100	"	35
June	226	301			"	18			"	35
Jul	399	239			"	72			"	85
Aug	373	406	180	300	"	95	460	400	"	75
Sep	351	a) 500			"	71	60	80	"	75
Oct	469	b) 500			"	15			"	?
Nov	379	c) 500	180	80	"	12	300	?	150	?
Dec	243	d) 500			"	17			"	?
Total	3270	3991	720	670	1200	468	1180	705	1300	387

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO.

HAMADA CANNERY CO

1947 Ice Production		1948 Ice Production	1947 NH_3 Kgs		1947 Ice Machine Oil Liters		1948 NH_3 Kgs		1948 Ice Machine Oil Liters	
Month	Tons	Tons	Requested	Allocated	Requested	Allocated	Requested	Allocated	Requested	Allocated
Jan	0	4	25	0	50	0	25	0	50	0
Feb	0	7	"	"	"	"	"	"	"	"
Mar	0	15	"	"	"	"	"	"	"	"
Apr	0	20	"	"	"	"	"	"	"	"
May	44	61	"	"	"	"	"	100	"	"
Jun	44	37	"	"	"	"	"	0	"	"
Jul	43	30	"	"	"	18	"	0	"	"
Aug	37	20	"	"	"	36	"	0	"	"
Sep	42	10	"	"	"	0	"	?	"	"
Oct	28	?	"	25	"	"	"	?	"	"
Nov	8	?	"	0	"	"	"	?	"	"
Dec	7	?	"	"	"	"	"	?	"	"
Total	253		300	25	600	54	300		600	

MAINE PRODUCTS ASSOCIATION OF SHIMANE PREF.

MASUDA PLANT

Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 NH_3 Kgs Requested	1947 NH_3 Kgs Allocated	1947 Ice Machine Oil Liters Requested	1947 Ice Machine Oil Liters Allocated	1948 NH_3 Kgs Requested	1948 NH_3 Kgs Allocated	1948 Ice Machine Oil Liters Requested	1948 Ice Machine Oil Liters Allocated
Jan	N A	25								
Feb	O T	0								
Mar	T A	25								
Apr	L	55								
May		106								
Jun		90								
Jul	70	110								
Aug	75	120								
Sep	60	120								
Oct	60									
Nov	75									
Dec	75									
Total										

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDS NO.

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. [illegible]

TOHAKU SEIHYO K.K.

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Litres	1947 Ice Machine Oil Allocated Litres	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Litres	1948 Allocated Ice Machine Oil Litres
JAN.							-	-	-	-
FEB.							-	-	-	-
MAR.							-	-	-	-
APRIL							-	-	-	-
MAY							INITIAL ALLOCATION 300		-	-
JUNE							-	-	90	60
JULY		120							90	30
AUG.		100					360	0	90	44
SEPT.		120							90	41
OCT.		180							18	
NOV.		180					50	?	18	?
DEC.		180							18	
TOTAL		880					410	300	414	195

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 78018

NIPPON REFRIGERATION CO. (TOTTORI PLANT)

Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN	133	0	50	0	72	72	100	0	36	15
FEB.	134	153	50	0	72	0	150	0	54	16
MAR.	286	379	150	0	72	72	0	125	54	15
APRIL	113	359	200	0	72	72	200	0	54	38
MAY	243	369	100	25	72	54	150	0	90	0
JUNE	320	341	200	100	72	59	100	50	100	84
JULY	199	362	100	0	54	75	100	90	100	175
AUG.	351	361	100	150	72	0	150	0	75	81
SEPT.	295	360	100	0	54	0	250	?	72	?
OCT.	298	420	0	0	54	24	0	?	72	?
NOV.	362	420	100	0	36	15	50	?	72	?
DEC.	194	420	100	0	36	31	50	?	72	?
TOTAL	2928	3944	1250	275	738	474	1300	265	851	424
TOTALS AUGUST INCLUSIVE	1779	2314	950	275	558	404	950	265	563	424

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 778018

NIPPON REFRIGERATION CO. (YOKOGO PLANT)

1947 Ice Production Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN.	184	289								
FEB.	76	0					300	125	0	53
MAR.	0	195								
APRIL	197	367								
MAY	262	405	300	150	260	0	250	170	216	100
JUNE	240	358								
JULY	276	406								
AUG.	309	347	350	150	260	234	250	90	216	219
SEPT.	328	350								
OCT.	374	350								
NOV.	391	350	200	30	162	45	200	300	216	216
DEC.	349	350								
TOTAL	2986	3767	850	330	582	279	1000	685	648	596

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 776018

KURAYOSHI SEIHYO K. K.

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN.	85	21								10
FEB.	42	2	250	0	250	0	150	50	108	8
MAR.	98	25								8
APRIL	81	59								18
MAY	82	95	250	100	200	0	150	55	108	18
JUNE	48	77								15
JULY	29	78				36				28
AUG.	55	86	300	75	280	54	100	35	72	25
SEPT.		100				19	10			
OCT.		100								
NOV.		100	200	25	230	30	200	0	198	?
DEC.		100								
TOTAL	520	843	1000	200	960	103	600	140	486	130

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770012

HANCHO ICE & COLD STORAGE CO.

1947 Ice Production Month	Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN	NO PRODUCTION	72	RECEIVED 800 Kgs						108	10
FEB		235	INITIAL ALLOCATION				1000	100	36	12
MAR.		252						400 SPECIAL ALLOCATION	36	75
APRIL	175	252					1500	105	108	0
MAY	57	200	300	150					108	50
JUNE	79	225							108	40
JULY	61	155				54			90	80
AUG.	44	204	800	150	450	90	1000	90	90	74
SEPT.	59	210				50			90	72
OCT.		230				17			90	?
NOV.		240	1300	135	450	14	800		90	?
DEC.		260							90	?
TOTAL	475	2535	2400	435	900	225	4300	695	1044	413

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770018

AJIRO FISHING ASSOCIATION

Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN.	56	65	25	0	54	36			54	7
FEB.	53	60	-		54	36	50	25	54	8
MAR.	50	62			54	36			54	9
APRIL	55	60			54	36			36	18
MAY	55	55	50	40	54	36	50	50	36	10
JUNE	50	60			54	20			36	15
JULY	60	70			54	12			36	35
AUG	58	70	50	25	54	18	50	25	36	28
SEPT.	50	75			54	10			36	31
OCT.	53	75			54	9				
NOV.	56	75	50	25	54	3	50	?	54	?
DEC.	60	75			54	6				
TOTAL	656	802	175	90	648	258	200	100	432	161

DECLASSIFIED E.O. 12065 SECTION 3-402/NNDG NO. 770012

TAJIKI FISHING ASSOCIATION
ICE STORAGE ONLY

1947 Ice Production Month	1947 Ice Production Tons	1948 Ice Production Tons	1947 Requested NH3 Kgs	1947 Allocated NH3 Kgs	1947 Ice Machine Oil Requested Liters	1947 Ice Machine Oil Allocated Liters	1948 Requested NH3 Kgs	1948 Allocated NH3 Kgs	1948 Requested Ice Machine Oil Liters	1948 Allocated Ice Machine Oil Liters
JAN									36	5
FEB									36	5
MAR									36	18
APRIL	NOT APPLICABLE	NOT APPLICABLE	45	35			45	25	36	8
MAY									36	10
JUNE									36	10
JULY					10				36	10
AUG.					26	40		20	36	15
SEPT.					23				36	?
OCT.					6				36	?
NOV.			100		3	40		?	36	?
DEC.									36	?
TOTAL	———	———	45	35	216	68	125	45	432	81

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INDEX OF ICE PLANTS IN TOTTORI PREFECTURE

NAME OF PLANT	LOCATION	PLANT REPRESENTATIVE	ICE MAKING CAPACITY TONS PER 24 HOURS	ICE STORAGE SPACE CUBIC FEET
1 Nippon Refrigerating Company L't'd (Tottori Plant)	No 79 Kajigawa-cho Tottori-city	Kishimoto,Eitavo	15	Room 1 12,667 2 12,596 3 14,458 39,721
2 Nippon Refrigeration Company L't'd (Yonago Plant)	No 150 3 Chome Nada-machi Yonago city	Shirane,toroo	15	Room 1 6626 2 7419 3 10165 4 8190 5 1704 34104
3 Nippon Refrigeration Company L't'd Sakai, Plant	No22 Yafune-cho Sakai-cho Saihaku-gun	Masuno,Hiroshi	18	Room 1 23,341 2 18,806 42,147
4 Hancho Ice and Refrigeration Co. L.T.D.	No 68 Meiji-cho Sakai-cho Saihaka-gun	Shirnizu,Rinzo	10	6,480
5 Tohaku Ice Company L't'd	Abu Nangoku-mura Tohaku-gun	Kasahara,Koichi	6	21,600

Measurement TONS Ice Storage SPACE	COLD STORAGE (CUBIC FEET) TYPE A	B	C	ICE Produced 1947 TOTAL TONS	ICE Produced 1948 TOTAL TONS Estimated	
1 215tons 2 214tons 3 245tons Total 1674tons	–	–	1 5,415 2 7,262 12,677	2928	3944	
660tons	No 1 2697 No 2 2612 5,309	–	No 3 3906 No 4 5223 9129	2995	3767	
895	–	1,921	–	3713	4726	
150	Room 1 3,888	Room 1 6480 2 6480 12960	Room 1 3,888	475	2535	
450	–	–	–	0	880	

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6	Kurayoshi Ice Company L'T.D.	Higashi-Iwakura-cho Kurayoshi-cho, Tohaku-gun	Tamura, Kochi	3.5	3648
7	Ajiro Fishing Assoclation Ice Plant.	No 118 Ajiro-mura. Iwani-gun	Sakakura Shigeichi	3	Room 1 1250 2 5625 6875
8	Cold Atorage Plant of the Tajiri Fishing Association	No 67 Tajiri-mura Iwami-gun	Yamana Tsumegu	0	2304

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80	–	–	1821	520	843	
Room 1 26tons 2 124tons Total 150tons	–	–	–	656	805	
40	–	Ice Storage can be used as a Class"P" Facility	–	Not Applicable		

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Report of Survey on Ice Production in Okayama Prefecture

Summary data completed to date during a survey of ice production potential in Chugoku Region and that segment thereof within Okayama Prefecture declared essential in support of perishables distribution, hospital use, and Occupation Forces consumption during periods of peak demand on producing facilities is herewith outlined.

Preparatory to any suggested measures for accelerating production activity cognizance of attendant and impending shortages of critical materials and power cutbacks were reviewed relative to a restricted production during 1947 from said causes, and the probability for realization of tentative 1948 production schedules.

Potential survey reveals twenty-nine (29) ice producing facilities with a maximum production total of approximately 139 tons per day or slightly in excess of 4,000 tons per month. During the month of April plants in Okayama Prefecture produced a total of 1,319 tons of ice or 32% of full rated capacity. This figure was expected to be doubled for May but on the basis of production totals thus gathered during survey about 56% of the 3,000 ton estimate was realized. Prospects for stepping up production tempo June through September are contingent upon proportional increases of power allocations, which on the basis of present distribution 1 June 1948 will permit approximately 70% of full rated capacity. Since 15 June 1948 additional power rationing has been effected whereby plants not having direct connection to highline outlets are cut off completely on Wednesday and Saturday from 0800 until 1600 in addition to one hour each evening.

However, it might be added that producers have failed to take seasonal advantage of power availability in order to build up ice reserves which on 1 June 1948 totaled approximately 1,007 tons for the entire prefecture. Examination of industrial index lead factors by kinds of industry in first category demand group relative to the amount of power to be consumed during a month per K.W. of receiving capacity reveals that ice manufacturing enjoys the highest availability priority as follows: Lead factor over 50 K.W. of receiving capacity (240); less than 50 K.W. (170). Furthermore, a review of bi monthly reports on supply and demand of electric power in Chugoku Region shows that an average of 91% of required demand 1 January 1948 through 31 May 1948 was satisfied.

Less than 10% of all producers contacted during this survey took advantage of off season demand to build up maximum ice reserves. The reasons advanced included one or all of the following:

a. Belated receipt of periodic allotments of critical materials such as ammonia (NH_3) and ice machine oil, etc.