

BOX 162. NAVAL AIDE'S FILES (A1-1 to A6)

1. A1-1 Habbakuks (Floating Airdromes for Asia Theatre): September 1 - 9, 1943.

COMINCH FILE

UNITED STATES FLEET

HEADQUARTERS OF THE COMMANDER IN CHIEF

NAVY DEPARTMENT, WASHINGTON, D. C.

FF1/A1-1

Serial: 001917

**SECRET**

9 SEP 1943

MEMORANDUM FOR THE PRESIDENT

Subject: HABBAKUKS.

Reference: (a) Report of Ad Hoc Committee - Enclosure to my  
Letter Serial 001900 of 7 Sept. 1943, to you.  
(b) Comments on Reference (a) sponsored by Mr. Churchill.  
(c) Supplementary Report by Ad Hoc Committee dated  
9 September.

Enclosures: Copies of References (b) and (c).

1. At Mr. Churchill's request, I went to the White House on Wednesday, September 8 at noon, and received from him reference (b) after some discussion of the points raised therein. Upon my return to the Navy Department about 12:20, I orally reconvened the Ad Hoc Committee to deal with reference (b), and submit herewith their supplementary report - reference (c).

*E. J. King*  
E. J. KING

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THE WHITE HOUSE  
WASHINGTON

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HARBAKUKS

Comments on Report of Ad Hoc Committee.

(a) Technical Considerations.

Inadequate examination has been given to the Navy pontoon proposal. The Navy pontoon flight platform assembly is taken as a continuous rigid platform. It is perfectly possible in a number of ways to use the pontoons as floats to support a flying platform, thus employing from half to a quarter the number of pontoons here specified.

(b) It has apparently not been realized that the flight platforms were to be used only in water sheltered from swell by promontories or islands, as is quite feasible in the operations envisaged.

(c) It is stated that the pontoons would be inoperable in moderate seas. No notice appears to have been taken of the proposal to use wave-blocking devices, which was the essence of the Prime Minister's original idea.

(d) No mention is made of the possible high mobility of pontoon assemblies if fitted into suitable carrying ships. Even if a method of using fewer pontoons is not developed, it

ENC. (Ref. (b)) - 710.2

Regraded Unclassified

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is admitted that it could be ready by April 1st with highest priority. It would not require the highest priority to have it ready if say one-third of the number of pontoons were required, and it could not be claimed that this would interfere in any substantial way with existing production schedules.

(e) The use of concrete caissons has been thoroughly studied by the British Admiralty. The type proposed seems very similar to those considered by them and rejected on the grounds that the conditions of waves specified are far too gentle to permit of any ocean towage. The minimum specified by the Admiralty were of waves 26 feet high and 500 feet long, which a pontoon as described here could not be expected to stand. The whole value of the floating pontoon method is that reliance is placed on using a relatively flat water surface as support, and assembling on the spot. Structures of strength between this and a full-scale HABBAKUK capable of standing ocean storm conditions will always be uneconomical.

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Further Comments on Report.

Re Paragraph 4.

Date envisaged for the operation and for the return of carriers for U.S. operations does not fit in with existing plans. The requirement is effectively for May and delivery at the base by April should be sufficient. The return of borrowed carriers to U.S. for operations in May would be of no value for plans at their present stage.

Re Paragraph 5.

The question of length of flight deck for different types of moored carriers has been very carefully gone into in England. The length accepted for HABBAKUK I with Arrestor gear was 1,250 feet. It would not seem technically impossible to fix Arrestor gear on to floating airfields, but in any case the length proposed of 1,800 feet would seem to be adequate in view of the fact that the planes would have a very good run-up over level water??

Re Paragraph 6.

The number of planes operable from such a field was also very carefully considered in England. The Fleet Air Arm authorities maintain that as many as 180 planes could be

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operated from the considerably smaller strip 1,200 feet by 200 feet proposed for HABBAKUK I. It would seem that the number 50 could be considerably improved if special attention were given to studying the operational problems involved.

Re Paragraph 7.

Air Commodore Lydford and Captain John are available for information on the flying possibilities.

There seems to be a serious understatement of this point. It is not sufficient merely that aircraft operations should be possible in this area for a considerable period of each month throughout the year.

Re Paragraph 10.

Although it is possible that the proposed operations could be carried out indicated in index 2 of the table of operations etc. In fact greater surprise might be achieved here than by the use of more conventional and easily recognizable types such as aircraft carriers.

It is to be noted that the use of the use of aircraft carriers is equally possible and that the use of aircraft carriers is equally possible and that the use of aircraft carriers is equally possible.

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Conclusions.

Re Paragraph 10.

While it is true as stated that it would be difficult to get platforms available before April 1944, it should be possible to make them available from that date onwards, which is when the operations are envisaged.

Re Paragraph 11.

There seems to be a serious misapprehension at this point. British authorities consider that aircraft operations should be possible in this area for a considerable period of each month throughout the year.

Re Paragraph 12.

Elements of surprise could be attained if the pontoon assemblies could be packed as indicated in Annex C of my Note of September 4th. In fact greater surprise might be achieved here than by the use of more conventional and easily-recognizable types such as aircraft carriers.

While it is not maintained that the case for the use of floating airfields as against carriers has been made out, it would seem that the reasons given for their rejection overlook a number of points and would deserve reconsideration.

September 8th, 1943.

Op-12/fhg

**SECRET**

9 September 1943

MEMORANDUM TO ADMIRAL KING:

**Subject:** HABBAKUKS, Report of Ad Hoc Committee.

In accordance with your instructions, the Ad Hoc Committee was reconvened and in consultation with Professor Bernal reconsidered its previous report on HABBAKUKS, having due regard to the effect of change in date and location of the prospective operation.

ENC. (Ref. (C) - no. 2

Regraded Unclassified

SECRET

9 September 1943.

**Subject:** HABBAKUKS.**Supplementary Report by Ad Hoc Committee.****THE PROBLEM.**

1. To reconsider previous report of Ad Hoc Committee regarding the use of HABBAKUKS.

**FACTS BEARING ON THE PROBLEM, AND CONCLUSIONS.**

2. Careful reconsideration of all phases of the problem leads to the conclusions that while the extension of time and the presumed improved operating conditions at a more southerly site would facilitate the use of other means of providing flight platforms, the advantage of using carriers in this instance still remains preponderant.

3. Consideration was given to the fact that, in any movement to the site in contemplation, it is essential that the expedition be provided with carrier protection prior to arrival at the site and until the establishment of flight strips and other services required for the support of local air operations. The logical scheme of operations would be to provide air protection by carrier for the expedition up to and including the time when one or more flight strips could be established on land, at which time the carriers could be relieved for other service. The surety of operations provided by this sequence of operations is considered greater than for any of the other proposed schemes.

4. The Committee gave consideration to the various comments on the previous report of the Committee and these were discussed in detail with Professor Bernal. It appears that such substantial differences as exist between the views expressed in the Committee's previous report and those contained in the comments by Professor Bernal arise primarily from the change in location and time of the proposed action.

**Subject:** HABBAKUKS

**Supplementary Report by Ad Hoc Committee - Cont'd**

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5. The Committee desires to record its views that under certain conditions the use of floating flight strips might have considerable advantages, and for this reason the Committee believes that energetic measures should be continued to develop practicable working designs and to make necessary tests to demonstrate their feasibility with a view to the training of special crews for the handling of such strips. Until such designs have been made and the crews trained, the Committee believes that it would be unwise to place reliance for the success of an important operation on untried measures which will require the diversion of personnel, materiel, and shipping essential from other approved operations.

6. In summary, the Committee is of the opinion that carriers should be relied upon for the establishment of beachheads and flight strips on shore necessary for this operation; the numbers, types and disposition of the carriers to be determined by the C.C.S.

John S. McCain

Ben Moreell

O. C. Badger

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Subject: HYPERBARIC  
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APPENDIX A.

With reference to Paragraphs (a), (b) and (c), Page 1: The Navy pontoon flight platform is feasible, provided the water is smooth. The wave blocking device, if successful in trial, should be useful in keeping the surface dry and assist in maintaining the steadiness of the platform.

With reference to Paragraph (d), Page 1: The carrying of pontoons in reasonable assemblies would require not less than 36 ships. The packing of the pontoons in the holds of ships for assembly at the scene of action would require a minimum of 19 ships but would require a correspondingly greater time for assembly. The design of a special lighter pontoon equipment and ships to carry it might reduce this number, but the necessary preparation and trials would involve time-consuming design and would take too much time in design tests to meet the required date.

With reference to Paragraph (e), Page 2: Concrete caissons may be built to tow in sections and put together at the scene of action, but if made into rigid structures it would take as long as it would to carve out a strip on the beach.

Page 3, Paragraph 4: No comment.

Paragraph 5: The practicability of arresting gear on a pontoon landing strip or a concrete barge landing strip must be studied further before an opinion can be given.

In re Paragraph 6: Four different agencies, each containing officers who have had operating experience at the front, have estimated from a minimum of 32 to a maximum of 50 planes operable from such a strip.

Paragraph 10: Would require a corresponding reduction of pontoon equipment now needed for other approved operations.

In re Paragraph 11: British authorities are correct with reference to weather off the coast of Sumatra.

In re Paragraph 12: From 19 to 36 ships will be required to carry or tow landing strip assemblies. There will be many troop ships with the expedition. A surface fleet will be required to protect the expedition from submarine and surface attack. A fleet of such size can not proceed at a greater estimated speed than 10 knots, and hence will surely be discovered on the third day out and will therefore be subjected to air attack. A sufficient number of carrier-based aircraft must be provided to protect the expedition and to insure air superiority. It is a simple and logical move to extend this carrier-based air protection until a landing strip is completed and land-based planes installed.

THE WHITE HOUSE  
WASHINGTON

HABBAKUKS

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Inadequate examination has been given to the Navy pontoon proposal. The Navy pontoon flight platform assembly is taken as a continuous rigid platform. It is perfectly possible in a number of ways to use the pontoons as floats to support a flying platform, thus employing from half to a quarter the number of pontoons here specified.

(b) It has apparently not been realized that the flight platforms were to be used only in water sheltered from swell by promontories or islands, as is quite feasible in the operations envisaged.

(c) It is stated that the pontoons would be inoperable in moderate seas. No notice appears to have been taken of the proposal to use wave-blocking devices, which was the essence of the Prime Minister's original idea.

(d) No mention is made of the possible high mobility of pontoon assemblies if fitted into suitable carrying ships. Even if a method of using fewer pontoons is not developed, it

File WSC  
From WSC  
Washington  
Sept 1945

ENC. (Ref. b) - no. 1

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† e. The use of concrete caissons has been thoroughly studied by the British Admiralty. The type proposed seems very similar to those considered by them and rejected on the grounds that the conditions of waves specified are far too gentle to permit of any ocean towage. The minimum specified by the Admiralty were of waves 28 feet high and 500 feet long, which a pontoon as described here could not be expected to stand. The whole value of the floating pontoon method is that reliance is placed on using a relatively flat water surface as support, and assembling on the spot. Structures of strength between this and a full-scale HABBAKUK capable of standing ocean storm conditions will always be uneconomical.

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Further Comments on Report.

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XXXXXXXXXX *Re P 7 Airlift J* XXXXXXXXXXXXX

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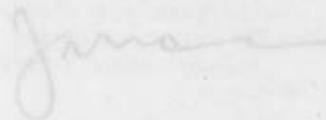
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7 September 1943

MEMORANDUM TO AIRMAIL 5784

Subject: HANNAHES, Report of Ad Hoc Committee.

In accordance with your instructions, the Ad Hoc Committee was reconvened and in consultation with Professor Hernal reconsidered its previous report on HANNAHES, having due regard to the effect of change in date and location of the prospective operation.



September 8th, 1943.

*ENC (info) - [unclear]*

In reply refer to Initials  
and No.

Op-12/fhg

**SECRET**

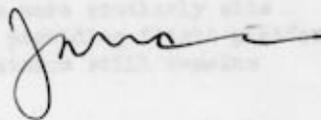
NAVY DEPARTMENT  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON

9 September 1943

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Subject: HABBAKUKS, Report of Ad Hoc Committee.

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ENC. (Ref. c) - No. 1

SECRET

9 September 1943.

Subject: HABBAKUKS.

Supplementary Report by Ad Hoc Committee.

THE PROBLEM.

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2. Careful reconsideration of all phases of the problem leads to the conclusions that while the extension of time and the presumed improved operating conditions at a more southerly site would facilitate the use of other means of providing flight platforms, the advantage of using carriers in this instance still remains preponderant.

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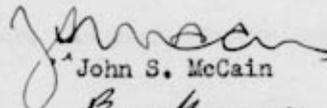
Subject: HABBAKUKS

Supplementary Report by Ad Hoc Committee - Cont'd

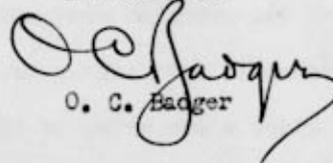
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5. The Committee desires to record its views that under certain conditions the use of floating flight strips might have considerable advantages, and for this reason the Committee believes that energetic measures should be continued to develop practicable working designs and to make necessary tests to demonstrate their feasibility with a view to the training of special crews for the handling of such strips. Until such designs have been made and the crews trained, the Committee believes that it would be unwise to place reliance for the success of an important operation on untried measures which will require the diversion of personnel, materiel, and shipping essential from other approved operations.

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John S. McCain

  
Ben Moreell

  
O. C. Badger

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A16/HABBAKUK/A1

SECRET

COPY NO. \_\_\_\_\_

(LIMITED DISTRIBUTION)

Memorandum for Admiral King:

Subj: HABBAKUK - Report of Ad Hoc Committee.

1. The report of the Ad Hoc Committee appointed to investigate into the practicability and feasibility of providing floating seadromes or the equivalent thereof for certain operations in southeast Asia, is submitted herewith.
2. Recommendations of this committee are:
  - (a) That the British provide by target date, 1 February 1944, the CVE's necessary for this operation.
  - (b) That, in case the British are unable to provide and man the necessary number of CVE's by the target date, 1 February 1944, an over-riding priority be assigned to eight British escort carriers scheduled for completion prior to 15 December 1943, and that these be manned, and equipped with necessary air squadrons, by the United States.
  - (c) That, in the latter case, and after the operation immediately contemplated, these carriers be employed, United States manned, to support operations in the Pacific scheduled for the late spring 1944, upon completion of which they would be taken over, manned, and operated by the British.
  - (d) That, to determine the practicability and effectiveness of the use of HABBAKUK's, one concrete barge HABBAKUK be constructed by the British in India or elsewhere for trial.

*John S. McCain*  
John S. McCain

*Ben Moreell*  
Ben Moreell

*C. G. Barger*  
C. G. Barger

## HARRAKUKS

### Report by Ad Hoc Committee

#### THE PROBLEM

1. To submit recommendations to the Commander in Chief, United States Fleet, and Chief of Naval Operations, regarding the use of HARRAKUKS or alternate means to provide adequate air coverage for certain contemplated operations with emphasis placed on the element of surprise in the early establishment of local air superiority.

#### FACTS BEARING ON THE PROBLEM

2. The Ad Hoc Committee has considered various schemes for quick establishment and operation of floating fighter strips at any selected point. These schemes include:

- a. The Armstrong seadrome;
- b. Assemblies of standard Navy pontoons;
- c. Assemblies of hull sections of sectional floating drydocks;
- d. Platforms built over and supported by an assembly of LST's;
- e. Assemblies of concrete caissons; and
- f. The employment and availability of carriers and escort carriers.

3. The result of these investigations is set forth in the table, Enclosure (A). The feasibility of operating aircraft from these structures is included therein.

4. The only scheme within the bounds of possibility of use by 1 February 1944 involves the use of carriers. The only additional scheme that comes within the bounds of possibility of use by 1 April 1944 involves the use of large assemblies of Navy pontoons. The latter scheme is not considered practicable for reasons set forth in Enclosure (A). Material required could be made available only at the cost of delaying other programs essential to the success of approved operations.

5. The Prime Minister expressed a desire for a floating landing strip 1,400 feet long and 175 feet wide. He later amended this width to 225 feet. He indicated his intention to operate fighters (Spitfires) designed for land, and not carrier, operations. British air authorities consider such a landing strip insufficient in length for the operation of Spitfires, and state that a length of 1,800 feet is necessary. United States air authorities estimate that 2,200 feet is necessary for safe operation.

6. Patterns to scale indicate that 92 Spitfire 5's or 98 Spitfire 9's can be serviced on a strip 2,200 feet by 225 feet. However, for operation under combat conditions, 40 planes is a desirable number, and in no event can more than 50 be satisfactorily operated under combat conditions.

7. In the area designated for the operation of this floating landing strip, weather conditions preclude planned aircraft operations from mid-April until November, because of heavy rains and prevalent storms. Planned aircraft operations are practicable in this area during the winter months.

8. British CVE's will be completed in the near future on the dates as indicated:

<u>No.</u>	<u>Name</u>	<u>Yard</u>	<u>Date</u>
BCVE40	Speaker	Willamette	9/20/43
BCVE42	Premire	Commercial	11/3/43
BCVE43	Shah	Seattle-Tac	9/27/43
BCVE44	Patroller	"	10/11/43
BCVE45	Rajah	Willamette	12/28/43
BCVE46	Ranee	Seattle-Tac	10/25/43
BCVE47	Trouncer	Commercial	1/15/44
BCVE48	Thane	Seattle-Tac	11/8/43
BCVE49	Queen	"	11/22/43
BCVE50	Ruler	"	12/6/43
BCVE51	Arbiter	"	12/20/43
BCVE52	Smiter	"	1/3/44
BCVE53	Puncher	"	1/17/44
BCVE54	Reaper	"	1/31/44

9. Ten CVE's will be able to operate a total of 300 fighter planes, which is better than twice the operating capacity of any three HARRAKUKS considered above, and provides for multiplicity of flight decks, increased mobility and efficiency of servicing aircraft.

Regraded Unclassified

### CONCLUSIONS

10. That the only feasible method of providing surprise air coverage from sea-borne aircraft platforms prior to mid-April 1944 is by the use of carriers or auxiliary carriers.
11. That from mid-April until November 1944 no planned aircraft operations from sea-borne aircraft platforms are practicable in the specified area.
12. The element of surprise is not feasible by the use of any of the various barge assemblages considered above because of the slow towing speed and approach to the area of operations by the large number of ships and tows required, the resulting probability of detection by enemy scouting forces, and the vulnerability of all of these schemes to bombs, gunfire, and torpedo.

### RECOMMENDATIONS

13. That the British provide by target date, 1 February 1944, the CVE's necessary for this operation.
14. That, in case the British are unable to provide and man the necessary number of CVE's by the target date, 1 February 1944, an over-riding priority be assigned to eight British escort carriers scheduled for completion prior to 15 December 1943, and that these be manned, and equipped with necessary air squadrons, by the United States.
15. That, in the latter case, and after the operation immediately contemplated, these carriers be employed, United States manned, to support operations in the Pacific scheduled for the late spring 1944, upon completion of which they would be taken over, manned, and operated by the British.
16. That, to determine the practicability and effectiveness of the use of HABBAKUK's, one concrete barge HABBAKUK be constructed by the British in India or elsewhere for trial.

COMINCH FILE

UNITED STATES FLEET  
HEADQUARTERS OF THE COMMANDER IN CHIEF  
NAVY DEPARTMENT, WASHINGTON, D. C.

FF1/A1-1

Serial: 001900

**SECRET**  
SECRET

7 SEP 1943

From: Commander in Chief, U.S. Fleet, and  
Chief of Naval Operations.

To : The President.

Subject: Examination of Special HABBAKUKS as directed on  
Friday, 3 Sept. 1943.

Enclosure: Report of Ad hoc Committee on subject (2 copies).

1. I transmit herewith - as Enclosures - the report of the ad hoc Committee appointed on Friday 3 September 1943 at a meeting in the White House with the President and Mr. Churchill.
2. A copy is enclosed for your reference to Mr. Churchill.
3. I concur in the recommendations of the Committee.

*E. J. King*  
E. J. KING

CHARACTERISTIC	AMSTROSS DESIGN	BART PORTCOONS	DRY DOCKS	
1. DESCRIPTION	A landing platform, supported above the water surface by riveted plate columns, with enlarged bumper members 34 ft. in diameter, supported in turn on 7 ft. diameter columns which extend 47 ft. below the water surface and terminate in base discs, 48 ft. in diameter, which are ballasted. Total height of structure is 247 ft. with a draft of 377 ft. For a platform 1,200 ft. x 400 ft. about 20,000 tons of steel is required. A strip 2,000 ft. long x 200 ft. would require about 20,000 tons or 41,500 tons for the three platforms.	Made up of standard "beamline" six girders wide (42 ft.) x 30' platform long (375 ft.). Two feet deep with a thickness of 3/4 ft. The transverse connections between successive assemblies would be feasible, to act as articulations. The longitudinal connections between adjacent assemblies would be made rigid to form a platform 200 ft. wide (5-1/2' standard assemblies). The platform would be 120 assemblies long. It would have a flexible transverse joint every 375 ft. of its length, and even in a concrete shell would present an undulating surface which, with a quartering swell or chop would result in a rocking motion of the deck. It would have to be accompanied by rigid or barge to service the planes and house the crew. One platform 2,000 x 400 would require 18,000 tons or 41,000 tons for the three.	These would consist of the hull sections only of the conventional advance base floating dry docks (hull only and cradle docks). These hull sections are about 210 ft. long and 80 ft. wide (hull only) and 120 ft. wide (cradle). They have an overall height of about 45 ft. with a draft of approximately 13 ft. There will be in all 30 hull only sections and 20 cradle sections available. The 2000 sections will be available in December 1943 and the cradle sections some time in January, February, April and July, 1944. To have one platform 2,000 ft. long would require one of 20 sections and a cradle section, leaving 22 cradle sections or enough for a second platform. Such a platform would have about 30,000 tons of steel or 60,000 tons for three. It would take about 8 months to build additional hull sections. If proper design of connections it would be practicable to build a rigid platform 2,000 ft. long.	This scheme would require a draft of about 30 ft. in the bridging between 120' hull only and 120' cradle sections. A rough estimate of the lift, is 20,000 tons.
2. AVAILABILITY ( TIME SCHEDULE )	Unsatisfactory. Cannot be provided in time available (either (a) or (b)). 2 years time of construction.	Schedule (a) cannot be met. Schedule (b) can be met with over-riding priority.	Unsatisfactory. Cannot be made available in full unless required in time available. Could provide one runway only by target date (a).	Unsatisfactory. Cannot be provided in time available but bridges are extremely doubtful.
3. MATERIALS REQUIRED AND EFFECT ON OTHER PROGRAMS	Unsatisfactory. Requires heavy diversion of steel shapes and plates, and other critical materials.	Fair. Requires diversion of considerable steel plate (36,000 tons).	Very poor. Requires fleet of visually good drydocks. Replacement would take 10 months.	Poor. Would require diversion of steel shapes and plates, and other critical materials.
4. SECURITY OF TRANSPORTING AND ESTABLISHING AT SCENE OF OPERATIONS	Uncertain. Towing resistance high; requires great depth (200 ft.). Available promptly on arrival.	Poor. Transportation and assembly at site uncertain and will be difficult and time consuming. Slow tow still eliminate possibility of surprise.	Poor. Transportation by towing is uncertain. Requires assembly into unit at site, under combat conditions.	Fair. Can proceed under certain until connecting is practicable.
5. SECURITY AND FACILITY OF OPERATING UNDER CONDITIONS PREVAILING AT SCENE OF OPERATIONS	Fairly good. Maintains level flight deck in worst seas. Requires tricky control. Improved.	Very poor if not impracticable. Cannot maintain level flight deck even under moderate seas. Serious operating problems. See description.	Good. Can maintain level flight deck under fairly heavy seas.	Poor. Connecting bridges.
CAPACITY IN OPERATING PLACES	Adequate, if made of specified size.	Adequate, if made of specified size.	Adequate.	Adequate if made of specified size.
SUPPORTABILITY OF MAINTENANCE IN OPERATING CONDITION UNDER ATTACK	Fair. Might fail structurally from bombing.	Fairly good. Postcoons highly resistant to damage and easily replaced. Damage at joints might be hard to repair.	Fair. Not quite as resistant to bomb damage as postcoons. Sections might be sunk.	Poor. Damage to bridge structure and possibly deck.
6. DIFFICULTY OF PROTECTING DISBURSION OF RISK	Poor. Requires complete protection and does not provide dispersion of risk.	Fair. Some diversion of risk because of toughness and multiplicity of postcoons.	Poor. Requires complete protection and provides little dispersion of risk.	Poor. Requires complete protection and provides little dispersion of risk.
7. MOBILITY	Poor. Requires towing as complete unit, with very poor towing characteristics.	Fair. Requires disassembly and towing of parts.	Fair. Requires disassembly and towing of sections. Towing characteristics good.	Fair. Requires disassembly and towing of sections.
8. AVAILABILITY FOR LATER USE	Would be suitable for use in other areas or for post-war mid ocean refueling station.	Good. Postcoons can be salvaged and assembled in barges, wharves and other units.	Good. Could be returned to use as floating drydock with modifications requiring return to U.S.	Good. Lifts could be used.
9. ACCOMMODATIONS FOR PLANE AND PERSONNEL	None. Requires tender.	None. Requires tenders.	Good. Could house personnel in postcoons.	Fairly good. Lifts provide personnel and stores. No planes.

# FLIGHT PLATFORM

TARGET DATE AT SITE

(a) FEB. 1, 1944

(b) APR. 1, 1944

	DEY DOCKS	LIFE'S	CONCRETE CAISSONS	CURTAINS
1. a 30 of 34 ft. could be sections platform be joint could pre- d or ship d have to and lower line or	These would consist of the hull sections only of the conventional airplane base (floating dry docks (Wilmington and cruiser docks) These hull sections are about 120 ft. long and 80 ft. wide (Wilmington) and 100 ft. wide (cruiser). They have an overall height of about 14 ft. with 8' freeboard of approximately 13 ft. There will be 16 in 30 Wilmington sections and 28 cruiser sections available. The 3000 sections will be available in December 1943 and the cruiser sections come ashore in January, February, April and July, 1944. To make one platform 1200 ft. long would require the 12 30 sections and 8 cruiser sections, leaving 22 cruiser sections or enough for a second platform. Each platform would have about 20,000 tons of stores or 50,000 tons for three. It would take about 8 months to make additional hull sections. By proper design of connections it would be practicable to build a rigid platform 1200 ft. long.	This scheme would result in 42 LIFE's for each platform or 84 in all, spaced 30 ft. in the air. Its design has been made for the bridging between LIFE's. The connections between LIFE's would be extremely heavy and it is questionable whether such connections are practicable without major structural changes in the LIFE themselves. A rough approximation of the steel required including the LIFE's, is 20,000 tons per platform, or 50,000 tons for the three.	The design contemplates a rigid reinforced concrete platform 1200 feet long x 220 ft. wide with 11 ft. freeboard. The structure would be divided by longitudinal and cross walls about 20 ft. on centers, thus making watertight compartments about 20 ft. on a side. Each platform would require 70,000 cubic yards of concrete and about 14,000 tons of reinforcing steel, or 200,000 cu. yds. and 42,000 tons of steel for the 3 platforms. The platform is designed to resist a standard wave 15 ft. high x 200 ft. long or wave 10 ft. high x 400 ft. long. It would have to be towed from the place of assembly to the scene of operations. The platform would be rigid throughout its length. Without more information as to local conditions it would appear that the first strip could be built in 7 months, the second and third in 8 and 9 months, respectively.	From information available it would appear reasonable to assume that 10 DUKS carrying 300 fighter planes would be about equivalent in capacity to the three platforms.
is not	Unsatisfactory. Cannot be made available to full extent required in time available. Could provide one runway only by target date (10).	Unsatisfactory. Craft not to be made available under directives but bridges and superstructure alterations extremely doubtful.	Neither (a) nor (b) possible. See Description.	Can be made available from US + British resources, up to capacity of production under directives.
1 plate	Very good. Requires fleet of virtually used drydocks. Replacement would have to be made.	Fair. Would require diverting LIFE's from other other operations. Would use available craft, but alterations and bridges would require heavy diversion of materials.	Good. Requires considerable material but not of critical character.	Good. Material already available. Others would require non-critical material.
will be availability	Fair. Transportation by towing in sections. Requires assembly into units at site, under exact conditions.	Fair. Can proceed under one power. Establishment uncertain until connecting bridges are designed. May be impracticable.	Fair. Requires towing in one place but immediately available upon arrival and mooring. See description. Slow tow will eliminate possibility of surprise.	Excellent. High speed of approach and immediate availability for use.
light Sea	Good. Can withstand level flight deck under fairly heavy seas.	Fair. Connecting bridges would fail in moderate seas.	Very good. Can withstand plane surface of flight deck under heavy seas. Out of service when braced transverse to in severe storms.	Excellent. Can operate in any weather in which planes can fly.
	Adequate.	Adequate if made of specified steel.	Adequate if made of specified steel.	Excellent - Given enough carriers.
1000	Fair. Not quite as resistant to bomb damage as pontoons. Sections might be sunk.	Fair. Damage to bridges from bombing would wreck structure and possibly adjacent LIFE's. Not slight to none.	Good. Can withstand considerable bomb damage without sinking. Damage can be repaired without serious difficulty.	Excellent. High degree of self defense. Vulnerability none.
10000	Fair. Requires complete protection and provides little dispersion of risk.	Fair. Requires complete protection and provides little dispersion of risk.	Fair. Requires complete protection. Some degree of dispersion of risk through multiplicity of compartmentation.	Excellent. High dispersion because of number of carriers required.
14.	Fair. Requires disassembly and towing of sections. Towing characteristics good.	Fair. Requires disassembly. Sealing of connecting bridges uncertain until designed. LIFE's can proceed under one power.	Fair. Requires towing as unit with fair towing characteristics. Requires no disassembly or re-assembly.	Excellent. High speed; limited to weather for movement; self-contained.
16	Good. Could be returned to use as floating drydock with modifications requiring return to D.O.	Good. LIFE's could be returned to original status.	Dubious. Could be towed elsewhere for similar operation if conditions were favorable. No other use foreseen.	Excellent. Available for repair (aircraft) immediately in conclusion of task.
	Good. Could house personnel in positions.	Fairly good. LIFE's provide good accommodations for personnel and stores. Might even be fixed to handle planes.	See description	Excellent. Provide all necessary facilities within themselves.

Regraded Unclassified

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(1) CCS 315  
(2) CCS 315/1

COMBINED CHIEFS OF STAFF

"HABBAKUKS"

Reference: C.C.S. 112th Mtg.,  
Item 3.

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29 August 1943

COMBINED CHIEFS OF STAFF

"HABBAKUKS"

Reference: C.C.S. 112th Mtg.,  
Item 3.

Note by the Secretaries

The Combined Chiefs of Staff have taken note of paragraphs a, b and c below, which were presented by the United States Chiefs of Staff in C.C.S. 315/1. They have agreed to the provisions of paragraph d below.

a. By the expenditure of extraordinary effort and consequent stoppage of other essential war projects, the construction of HABBAKUK II and an erecting plant therefor is feasible and might be completed as early as the end of 1945.

b. Construction of HABBAKUK III could possibly be accomplished by the end of 1945. Claims for invulnerability of HABBAKUK III to hull damage may be somewhat justified, but they are outweighed by the operating advantages inherent in conventional carrier types by virtue of speed, maneuverability, and operating refinements.

c. Due to the relatively small value of the HABBAKUKS in increasing the effectiveness of aircraft operation, and in view of the existing aircraft carrier program, the diversion of manpower and critical materials involved in their construction is not warranted.

d. The Combined Chiefs of Staff agree to the construction of a section of HABBAKUK II, the continuation of design, and the study of the construction and of the facilities

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necessary for a full-size ship. They have further agreed that the appropriate United States, British, and Canadian authorities should be invited to set up a board forthwith to press on with the action agreed to above and to report progress monthly to the Combined Chiefs of Staff.

H. REDMAN,  
J. R. DEANE,  
Combined Secretariat.

(AI)

BUREAU OF YARDS AND DOCKS

MEMORANDUM

FROM CHIEF OF BUREAU

File  
WJ  
43

TO: Admiral Nelson Brown

Herewith joint letter by  
Budochs and Buships on  
Habbakuk designs.

Complete information on  
Habbakuks is contained in  
(CCS 315/2) dated 29  
August 1943.

The recommendation of  
the joint staff planners  
is contained in memos  
of 20 August to US Joint  
Chiefs of Staff.

I assume you can  
obtain these documents.

We are making a

BUREAU OF YARDS AND DOCKS

MEMORANDUM  
FROM CHIEF OF BUREAU

To: .....

search of all available -  
ble data on floating  
airdromes -

So far we have re-  
ceived no directive to  
take any positive action  
toward accomplishing  
any of the Habbakuk  
projects -

Ben Moreell

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( (SC) A1-1  
( Y&D Serial 01210

14 August 1943

JOINT LETTER

From: Chief of the Bureau of Yards and Docks.  
Chief of the Bureau of Ships.

To: Vice Chief of Naval Operations.

Subj: Habbakuk Designs.

1. The signatory Bureaus were requested informally on 13 August to submit within two days a technical study of the practicability of Habbakuk schemes I, II, and III, submitted by the Joint Planning Staff. The complexity of the problem is such that it is not practicable to prepare a complete and detailed technical analysis of the structures within this time, particularly in view of the almost total lack of detailed technical information on the respective schemes. The comments submitted below are therefore general in character and based upon the more or less fragmentary information available.
2. The Habbakuk program in essence contemplates floating airdromes for various types of air operation, differing from aircraft carriers primarily in their great size and limited mobility. The three types described as of wood, pycrete and composite steel and wood construction, respectively, may therefore be considered as variants of one single problem. The large size of such airdromes would permit improved protection against sinking by virtue of their greater subdivision and the possible development of improved protective systems. Such airdromes would, however be subject to increased probability of damage to the flight deck and exposed aircraft by bomb attack because of the extremely limited mobility and enormous size of the target. This disadvantage could be overcome only by the increased use of fighter planes and by extensive anti-aircraft defense.
3. It can be stated definitely that the construction of airdromes of these general characteristics is possible. Whether such construction is practicable would have to be determined by intensive investigation of the many technical problems involved. Even if the practicability

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is taken for granted, the detailed engineering development of the project would involve a vast amount of pioneering design and probably a considerable amount of original research. Preparation of working drawings, development of construction plants and organization and the solution of the construction problems, particularly with respect to selection of site, determination of launching methods and provision of access to deep water are all matters which would require considerable time for their solution. It seems apparent that the time required to develop and execute this project has been underestimated in the reports available to the Bureaus and it is considered that structures of this type could not possibly be completed and commissioned within many months after the dates estimated there in.

4. Regardless of the material selected for the hull structure, a very considerable quantity of highly critical material would be required for the main machinery and other mechanical installations, equipment and fittings of such airdromes. The diversion of such critical materials would necessarily interfere appreciably with other programs essential to the prosecution of the war. If the Habbakuk project were authorized, decision would have to be made as to the other programs to be correspondingly curtailed or sacrificed.

5. Habbakuk I

This project contemplates a wood vessel having a length of 1500 feet, a breadth of 250 feet and a speed of two to four knots in tow. No wood structure of comparable size subjected to the stresses incident to high seas operation has ever been constructed or designed. Great difficulties are anticipated in providing connections of adequate strength for the stresses developed by wave motion or by towing. There is at present an extreme shortage of heavy timber in this country and Canada and the material which is available is of extremely poor quality and unseasoned. Experience in other structures has indicated serious maintenance difficulties resulting from the use of the types of wood now available. Wood construction presents serious fire hazards, particularly in conjunction with gasoline and explosives, which would only be partially offset by fireproofing. It is doubtful whether sufficient capacity exists for fireproofing the quantities of wood involved. The requirement that this structure be towed presents a serious military handicap since it involves either the continuous diversion of a considerable number of large vessels for maintaining headway, or anchorage in relatively shallow protected waters with increased exposure to attack.

6. Habbakuk II

This scheme contemplates a self-propelled seadrome from 1700 to 2200 feet long developing a speed of about seven knots and constructed of pycrete,

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a mixture of pulp and water frozen during construction and maintaining its integrity by continuous artificial refrigeration. The Bureaus consider that it is fundamentally unsound to utilize a material which is dependent on the continuous operation of mechanical equipment for its structural integrity and durability and consider that this scheme is prima facie beyond the realm of practicability, both as regards construction and operation.

7. Habbakuk III

This scheme contemplates a seadrome of composite steel and timber construction from 1000 to 1200 feet long and self-propelled, developing a speed of about twelve knots. No description of the proposed composite construction is available and it is not clear whether the combination is developed for strength or whether the wood is used primarily as packing to provide inherent buoyancy. This scheme most nearly approaches conventional construction and would involve the least amount of pioneering design, development and research. It is considered to be the most practicable of the three schemes submitted. It is noted, however, that the United States Joint Planning Staff has recommended that this scheme be eliminated from further consideration as a weapon for use by the United States. X

8. Each of the three schemes presented for consideration is based on a specific type of hull construction. It appears to the Bureaus that the material found best suited for one hull might easily be applicable also to any other hull in the size range under consideration. Moreover, there are other possibilities worthy of consideration both for hull material and for the basic type of hull construction. For example, the use of reinforced concrete could be studied, or some other material might be found which would have some of the properties of pycrete but would be inherently durable without refrigeration. Similarly an entirely different type of hull structure, such as that proposed for the Armstrong Seadrome, might offer a solution.

9. In any case the desired basic military characteristics -- approximate size, speed, endurance, plane complement, armament, protection -- would have to be established. It would then be technically possible to arrive at a solution which would meet any reasonable combination of characteristics within the approximate range under consideration in the Habbakuk schemes. This design would then permit a firm estimate of the productive effort involved in time, labor and materials. Such an estimate would, of course, have an influence on the determination of the justifiability of building one or more of these craft.

10. Summarizing, the Bureaus consider that

- (a) Habbakuk I and II, of materials as proposed, are not

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acceptable solutions to the problem of designing a large floating airdrome.

(b) Habbakuk III appears to be feasible along the general lines proposed, but insufficient information has been furnished to permit a firm technical evaluation of this scheme. Extensive engineering development would be necessary even for this, the simplest of the three schemes.

(c) The design, construction and operation of a large floating airdrome, within the range described but with adequate materials, is technically possible.

(d) The design and construction of any floating airdrome would present many technical difficulties, which although not insuperable, would require considerable time and large-scale effort for solution.

(e) The construction of even one large floating airdrome would divert appreciable quantities of critical materials from some other part of the war program. The material diversion for additional craft of such type would soon accumulate to significant proportions.

(f) No scheme of the general character under consideration offers sufficient certainty of early development and completion to warrant its inclusion in present strategic planning for any specific date.

11. Finally, the Bureaus recommend that no further development of the specific schemes designed as Habbakuk I, II, and III be undertaken, for the reasons stated above, and that no other floating airdrome of these general characteristics be undertaken unless the military value of such a project is found to be greater than indicated by the surveys so far made, and of sufficient importance to warrant corresponding sacrifice in other parts of the war program.

1st B. Moreell  
Chief Bureau Yards & Docks.

/s/ E.L. COCHRANE  
CHIEF OF BUREAU OF SHIPS.