

*Mail to  
Billy Pionavia*

**KEMS Inc.**

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WUI TELEX 633164

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HONOLULU, HAWAII 96819

April 29, 1980 (Revised 5/1/80)

\*Denotes changes or new

MEMO

To : Steering Committee - PVS and All Parties Concerned

From: Roy J. Yee, Communications Central Sub-Committee

Due to the unexpected crew changes on the Ishka and operational problems encountered with the communication system, the following courses of action were taken from 4-24-80 to date:

1. A limited range SSB radio will be installed on the Hokulea to give her more mobility by allowing her to get beyond sight. This is a major change in shipping orders for both captains. The Steering Committee now wants both vessels to stay out of sight of each other.
2. No direct media contact will be permitted.
3. Will Kyselka and Dixon Stroup have consented to be the official KCCN spokespersons to report the daily progress as it relates to the experiment.
4. Jan Dill and Moku Froiseth will act on behalf of the PVS on an official basis. Marlene Among will continue in her capacity for general information.
5. Due to my planned trips away from Hawaii (from May 18 to May 24), I am appointing Ken Yamada from my staff to report to Marlene in case of any technical questions. Wes Thorsson will also be out of town from May 20 to June 20.
6. I had originally planned to personally install the SSB radio on the canoe but due to business commitments, I will send Mr. Ken Yamada on the 1:00 AM flight, Sunday, May 4 to return sometime on May 9. This will work out real well since both Wes and I will be gone part of the time.
7. Ken Yamada will accomplish the following in Tahiti:
  - a) Install the SSB on the Hokulea and check out all frequencies of operation for range at various hours of the day and night.
  - b) Recheck all the radios on the Ishka.
  - c) Train both Elsa and Alex on the proper operation of the SSB radio.

MARINE • COMMERCIAL • INDUSTRIAL  
DESIGN • SALES • MANUFACTURE • INSTALLATION • SERVICE  
OF ELECTRICAL • ELECTRONIC APPARATUS AND SYSTEMS

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- d) Train Steve Somsen and Kimo Lyman on the proper operation of the SSB radio (all others are invited also).
- e) Conduct classes on expected propagation on the various frequencies at the various times (all others invited).
- f) Physically review the installation of the SSB with the radio operators so that they can take emergency action.
- g) Visit Mahina radio and give them copies of this and the communications plan and review so that there is a clear understanding of our operations plan. (All radio operators to attend.)
- h) Review how to calculate amp hour usage to determine time left on battery.
- \* i) Make sure all batteries are recharged (including the handheld).
- j) One additional 12VDC battery to be purchased in Tahiti for the canoe.

8. Phone numbers:

KMI	- (415) 669-1055
Radio Call	- 521-1424
Marlene	- [REDACTED] - Home
	841-3966 - PVS recording
	845-0545 - PVS office
U.S. C.G.	- 621-6110 - Admn.
	622-1671 - Operations
Jan Dill	- 259-7951 - Office
	[REDACTED] - Home
Dixon Stroup	- 948-7633 - Office
	[REDACTED] - Home

Communications:

Roy Yee	- 845-6403 - Office
	[REDACTED] - Home
Wes Thorsson	- 845-6403 - Office
	[REDACTED] - Home
Ken Yamada	- 845-6403 - Office
	[REDACTED] - Home
	[REDACTED] - Pager

Public Relations:

Tom Coffman	- 531-3139 - Office
	[REDACTED] - Home
Moku Froiseth	- [REDACTED] - Home

9. Tom Coffman will have a press kit ready prior to the early Sunday morning departure for Pinky to deliver to Mike Tongg. Marlene will also have these kits available for the local media. These kits will not be passed out until departure.

10. Marlene will continue to be the central gathering point for all information.

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\*11. We will continue to use the fixed message format for uniformity of reporting. Marlene to make more copies.

12. Major "what if" considerations:

a) Loss of satellite beacon.

Honolulu will inform Ishka to inform Hokulea to start taking their own positions so as to not lose the research data base.

b) Loss of SSB on canoe.

1) Honolulu to inform Ishka on Hokulea's last known position, course, speed, and local winds.

2) Ishka to close gap and take up VHF communications with the canoe.

3) Both vessels to monitor VHF 16 until in sight and both captains agree on an alternate schedule.

c) Loss of SSB on Ishka

1) Hokulea to assume the long range communications job.

2) Hokulea to receive instructions from Honolulu as to next course of action unless captain deems necessary to take other action.

3) Monitor VHF Channel 16.

\*13. Departure from Tahiti will depend on the official "OK" from Dixon Stroup signifying that the satellite beacon is working.

\*14. Steve Somsen to gather all data tapes and give them to Ken Yamada for immediate return to Honolulu for reduction by the Research Committee.

Note:

I am confident that this system will work, remember "flexibility" and "no word is bad word for us awaiting you on land".

COMMUNICATIONS BETWEEN HOKULEA AND ISHKA

Primary communications between Hokulea and Ishka will be on a ship to ship 4 mhz frequency, 4-B, 4, 143.6 mhz. Communications should be effective at any time of the day when both ships are monitoring up to several hundred miles. Since communications are possible only when both ships are on the same frequency at the same time, normally monitor 4-B when warming up the SSB and during emergencies. 8A is the secondary frequency to try if 4-B fails. Hokulea will advise Ishka of the general status and any special messages for Honolulu during the daily contact. Ishka will relay these to PVS via Coast Guard or Tahiti.

Hokulea will contact Ishka on 4-B on SSB daily at sunrise. If this is not successful, Hokulea will call Ishka at noon and after sunset. If no Hokulea-Ishka contact is made during any day (3 schedules) following the next morning schedule, Hokulea and Ishka will assume emergency communications procedures and contact PVS via the Coast Guard, KMI or Tahiti.

MEDIA COMMUNICATIONS

Manpower considerations on Ishka and battery considerations on Hokulea will not permit communications with the media.

BATTERY CONSERVATION

Each 100 amp hour battery when fully charged can furnish about 70 hours of use at 1 amp due to internal losses. A VHF FM uses 1 amp all the time when turned on. A VHF FM when transmitting uses about five times this current and cuts battery power at five times the VHF FM receive use. To estimate battery charge life, multiply the expected number of hours of VHF FM receive use by 1 and the hours of transmit use by 5. When this adds up to over 50, your battery will be low. Similarly when the SSB is on standby or receive, it uses 2 amps so multiply receive hours by 2 and transmit hours by 20. The solar charger will put into the battery daily about 2-1/2 amp hours per day, or about one hour of receive and 2 minutes transmitting on SSB.

POWER CONSUMPTION DATA

1. NC7200 Regency ADF VHF Radio - Ishka
  - 1A - Standby
  - 5A - Transmit
2. MT500 Regency Handheld VHF - Hokulea
  - 0.015A - Receive (squelched)
  - 0.100A - Receive (full audio output)
  - 0.8A - XMT @ 4 watt position
  - 0.4A - XMT @ 1 watt position
  - Battery pack - 0.5 amp hour capacity
  - Recharge rate - 0.11A max

3. M5600 Pace VHF Radio - Hokulea
  - 6A - Transmit (25W)
  - 2A - Transmit (1W)
  - 0.5A - Receive
4. Modar Triton SSB - Ishka
  - 1.7A - Receive (Standby - squelched)
  - 2.1A - Receive (Full audio output)
  - 13A - XMT average
  - 21A - XMT on voice peaks
5. Konel SSB 1022 - Hokulea
  - 1.5A - Receive (Standby squelched)
  - 2.2A - Receive (Full audio output)
  - 11-18.4A - XMT
6. Solarex Solar Panel 1270M - Hokulea
  - output - 0.65A @ 12VDC 19.5 amp hours/week
  - max output - 0.75A @ 13.5 VAC (full sun)

#### EMERGENCY EQUIPMENT

The satellite beacon on Hokulea will provide an exact position to PVS about 4 to 6 times a day. In case of separation of Ishka and Hokulea, Ishka will be given the Hokulea estimated position.

Both Hokulea and Ishka have EPIRBs which will be heard by passing aircraft for 150 to 250 miles.

Both Hokulea and Ishka have high intensity strobe flashing lights which can be seen for long distances at night and will enhance daytime location.

Both Ishka and Hokulea have all channels on VHF FM available. Hokulea will monitor Channel 16 in emergency. Channel 68 after landfall in Hawaii and normal line of sight communications. Ishka has a VHF FM direction finder and a scanning receiver so that it can monitor 16 and 68.

Ishka has SSB capable of fixed Channels 2 to 16 mhz (2182 - emergency; Coast Guard 4, 8, 12 and 16 mhz; KMI - 804 and 1602 (8 and 16 mhz); and 4B (4143.6), 8A (8291.1), 12A (12,429.2) and 16A (16,587.1), and Tahiti 8281.8. Hokulea has ship to ship 4A, 4B, 8A and 8B. 4B and 8A are in common with Ishka. Hokulea also has FJA (Tahiti) 4 and 8, KMI 4 & 8, CG 8, WWVH - 5.

HOKULE'A COMMUNICATIONS PLAN -- TAHITI-HONOLULU VOYAGE 1980VHF FM COMMUNICATIONS

On the return voyage, VHF FM will be used for line of sight communication in emergencies and after visual landfall in Hawaii to prevent possible compromise of the basic Polynesian navigation research. In case of emergency, monitor VHF FM Channel 16 continuously.

After landfall in Hawaii, Hokulea will assume primary communications responsibility in communicating with the Coast Guard and by marine operator to the PVS. Ishka will then only report her position to the U.S. C. G. for safety purposes at the scheduled times.

Please remember that when the situation on your vessel is at the most confused state and communications are the most difficult, the need to know your situation at PVS is the greatest. In unusual situations update status to PVS frequently (at least every four hours).

SSB COMMUNICATIONS

Primary responsibility for long range communications will rest with Ishka. In an emergency, Hokulea is equipped with SSB and can transmit reliably to about 600 miles and at correct times to 1500 miles.

Ishka will make contact with the Honolulu Coast Guard daily at 0600 and 1800 or the revised time agreed with the Coast Guard on the recommended frequency. Coast Guard will recommend a frequency for the next day each time contact is made. For the first 2/3 of the voyage, the operating frequency will be CG-16 normally. For the last 600 miles from Honolulu calls may be made to the Coast Guard at any time. Try CG-4 at night and early morning. Next try CG-8 and CG-12 followed by CG-16. If requested, shift to another frequency to improve reception.

Ishka will call Tahiti on 8 mhz during the first 500 miles of the voyage and pass information to PVS as to status if calls to Honolulu Coast Guard are not successful. Calls should be possible at any time. For 500 miles to 1000 miles from Tahiti Ishka to call PVS via Tahiti if contact cannot be made with the Honolulu Coast Guard. No word for over a 24-hour period may mean the PVS will take emergency procedures.

Hokulea will follow the above procedures as to frequency selection and contact point in case of emergency and loss of communications with Ishka. 8mhz will be the frequency that will go the greatest range of distances for the greatest part of the day on the canoe. Long range communications are most effective on 8 mhz at night and during daybreak and twilight.

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DAILY COMMUNICATION SCHEDULE

\*1/2 hr. before sunrise - turn on SSB to stabilize (10 mins min)

Sunrise - Hokulea/Ishka communication schedule (VHF if line of sight; if not 4B then 8A) 1/2 hour watch.

0600 - Ishka calls USCG Honolulu on CG-16 until closer or re-assigned (Hokulea to assume this schedule if Ishka fails).

\*0630 - Listening watch on 8A ship to ship, use only when communications link fails, i.e. Ishka/Honolulu, Ishka/Hokulea. This will let the outside world communicate with you in emergencies.

\*1/2 hr. before noon - turn on SSB to stabilize (10 mins min)

Noon - Hokulea/Ishka back up calling time

\*1/2 hr. before sunset - turn on SSB to stabilize (10 mins min)

Sunset - Hokulea/Ishka back up calling time

1800 - Ishka calls USCG Honolulu on CG-16 until closer or reassigned (Hokulea to assume this schedule if Ishka fails).

\*1830 - Listening watch on 8A ship to ship, use only when communications link fails, i.e. Ishka/Honolulu, Ishka/Hokulea. This will let the outside world communicate with you in emergencies.

1. Upon reaching landfall switch to VHF reporting. Call the Maui marine operator Channel 26 to keep the PVS (Marlene) abreast of the progress.

2. Ishka to initiate U.S. Coast Guard communication schedules upon departure on CG-16 or have Tahiti relay to PVS so Marlene can call U.S. Coast Guard Honolulu.

To: Lt. Woody Loveland, U.S.C.G.  
Marine Inspection  
Investigating Officer, HOKULE'A  
Port of Honolulu

24 March, 1978

From: Dave Lyman  
Subject: Equipment List as requested 22 March, 1978

The following is as close an approximation of equipment carried aboard the HOKULE'A as we can come up with at this time.

SAFETY

- 1 EPRIB (Emergency Personal Radio Indicator Beacon)
- 1 Hand generated emergency radio with two antennae balloon attachments
- 1 Raytheon Single Side Band radio
- 1 VHF Radio
- 1 CB hand held three channel radio
- 2 12 volt heavy duty storage batteries
- 12 handheld red parachute flares
- 12 24mm. parachute flares (for Very Pistol)
- 24 24mm. meteor red flares (for Very Pistol)
- 1 Very Pistol
- 2 water dye markers
- 6 hand held smoke flares
- 2 signal mirrors
- 4 hand held strobe lights
- 1 6 volt man overboard strobe light
- 2 airhorns with spare cannisters
- 2 C.G. Approved ring buoys
- 1 man overboard buoy with flag
- 24 C.G. Approved, Type II, Personal Flotation Devices, adult, (life jackets)
- 2 10lb. CO<sub>2</sub> fire extinguishers
- 1 Surfboard, 10 feet
- 6 police type whistles
- 16 life vest lights - waterproof, 1 cell
- 2 sealed beam spotlights, waterproof, 6 volt.
- 1 sealed beam spotlight, waterproof, 12 volt
- 2 waterproof 2 cell D size, flashlights
- 2 sidelights, 1 stern light as required by law
- 2 distress flags
- 1 Avon raft, 6 man
- 5 manual pumps
- 1 Radar Reflector
- 1 case 6 volt batteries
- 1 1/2 case "D" cell batteries
- spare bulbs for all lights

HOKULE'A Equipment List (cont.)

INSTRUMENTAL NAVIGATION

2 sextants (Plath & Tanaya)  
2 H.O. 9 (Bowditch)  
Volumes I and II, H.O. 229, Lat. 0°-30°  
1 H.O. 249, Volume III, Stars  
1 1978 Nautical Almanac  
1 full set of all applicable charts  
Plotting equipment as required  
1 RDF  
1 Anemometer

MEDICAL

One extensive medical kit, stowed in several waterproof plastic buckets, assembled by the ship's physician, DR. Charman Akina of the Honolulu Medical Group

OTHER GEAR

4 flags, 1 each: American, Hawaiian, Tahitian, French  
1 bucket containing crewlist, crew passports, vessel document  
1 sea anchor  
3 40lb. danforth anchors, 20 feet chain for each anchor, 1,000 feet 5/8" nylon anchor line  
Food and water for 40 days  
1 3 burner propane stove  
3 bottles propane for stove  
6 stainless steel pots and pans  
16 individual mess kits  
miscellaneous galley equipment  
12 paddles  
Towing bridle with 1,000 feet line  
4 Waterproof Nikonos Cameras  
3 Movie cameras: 1 waterproof, 1 with sound and waterproof housing  
4 cassette tape recorders  
2 1/2 sets sails  
Spare cordage, cleats, deadeyes as required  
16 sleeping bags  
Personal gear brought by individual crewmembers, limited to one standard size seabag/man  
1 extensive tool set

Move to conduct appropriate repairs not in  
conflict w/ any investigation activities related to  
recent swamping. Guidelines for repairs will be in  
conjunction w/ canoe committee.

*Mc Kays Hardware*

		QTY PER UNIT		COST TOTAL		CATALOG NUMBER
	Life Vest	6	34			087215
8	Safety Harness	16	07	123	56	085238
1	Ring Buoy	39	71	39	71	086586
1	Man over board pte.	69	42	69	42	080252
1	Man over board light - SIRENE	82	18	82	18	085213
8	Hand held strobe light	40	81	321	68	990104
8	" " " batteries	7	42	59	36	082778
2	Aqua lung light	29	95	59	90	051217
2	Aqua flask light	15	50	31	00	051207
12	25 MM Parachute flares	10	25	123	00	083519
24	" " Motor flares	3	34	80	16	083517
6	Smoke Distress signal	33	73	202	38	990821
6	Dye marker	3	25	19	50	083522
2	Fire Extinguisher	33	25	66	50	083644
2	Guzzler Pump	103	41	206	82	083000
25	Hose for pump	2	14	53	50	083001
8	Hatch fasteners	8	00	64	00	080970
4	Port hole	71	14	284	56	087211
1	Stove & burner propane	141	75	141	75	991138
1	" " " Alcohol	152	25	152	25	084138
12	Sleeping bags	44	15	529	80	070876
24				1,059	60	"
	Water pump					082860
	Knives set					081866
						67
						60
						61
						62
						63

				COST PER UNIT	TOTAL COST	CAT NO.
1800	ROPE	NYLON	$\frac{1}{4}$	19	342 00	085162
1200	"	"	$\frac{1}{2}$	32	348 00	085165
600	"	"	$\frac{1}{2}$	54	324 00	085169
1800	"	"	$\frac{1}{4}$	94	1,692 00	085171
1800	ROPE	DACRON	$\frac{1}{4}$	11	198 00	082455
1200	"	"	$\frac{1}{2}$	24	288 00	082460
600	"	"	$\frac{1}{2}$	42	252 00	082462
1800	"	"	$\frac{1}{4}$	67	1162 00	085165
2	DACRON	ROPE				085165
2	N. K. R. R.					085165
6	Tines	ROPE				085165
16	Witch	hold down				081070
6	BUMPERS					085165
20	lashing	hooks				086744
20	Eye	Straps				086745
2	Anchor					087253
2	Anchor	line & hook				089579
100'	Shock	cable				088907
1	Meshol	St...		193 55	193 55	082458
	Alcohol	tank		63 00	63 00	083571