

Notes from meeting with Superferry officials, 7/5/06.

Attending:

USACE: Nani Shimabuku; Douglas Symes

Superferry: Terry White; Joe Almony; Ken Jujala; \_\_\_\_\_

1. Discussion of barge location and mooring system. Maps provided to show location. Mooring system will be used to move the barge away from the dock when not in use, which should prevent damage except in hurricane level conditions. *Conclusion: there is not benefit of reducing barge damage, since mooring system will be presumed effective in the range of conditions considered in our analysis.*
2. By the time the project comes on line Hawaii Superferry (HSF) plans to have at least three vessels in operation making at least two calls per day at Kawaihae, both during daylight hours. *Ask for tentative schedule to use in wind/wave analysis.*
3. Terry White reaffirmed the litany that all commercial operators adhere to regarding getting moored small boats out of the harbor.
4. The small boat harbor at the mouth of the commercial harbor will be closed while the HSF is in port due to the 100 yard security perimeter required by homeland security.
5. Current users of pier 1 are cattle boats and cement barges. Cattle boats will go to Hilo. Cement barges will share pier 1 with HSF. *Phone up cement operators and DOT Harbors and get their view of whether this is practical.*
6. Alternatives 2b and 3 conflict with current location of HSF operations and are not practical unless an alternative location is arranged.
7. Terry White indicated that operation for HSF is 3 feet waves at dock and 30 knots wind, or a lesser combined criteria, for instance, 25 knot wind and 2 ft or 2.5 ft waves. This is a rough criteria and will be refined through operating experience. They have no good predictors of conditions at this time, and expect to have both unnecessary cancellations and cancellations after the HSF has left Honolulu. *This is the critical issue for the analysis. Tom Smith has been told by DOT that they feel the 3 ft. criteria are completely unrealistic. If we are to use alternative criteria, how do we arrive at it, and how do we evaluate the uncertainty of those criteria? This is an engineering question, not an economic one, and should be evaluated as such.*
8. Terry White affirmed HSF's long term commitment to pier 1 as the site of operations. *However, in evaluating the project from a NED standpoint, are we constrained by the current political decision to locate the HSF at pier 1?*

## Symes, Douglas POH

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**From:** Green, Michael P NWS  
**Sent:** Monday, October 23, 2006 8:06 AM  
**To:** Symes, Douglas POH  
**Subject:** FW: Superferry Questions

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

Douglas -

I hope this is helpful. Let me know if I can of any other help.

Mike

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**From:** Green, Michael P NWS  
**Sent:** Monday, October 23, 2006 11:02 AM  
**To:** 'Mitchell, Kelly'  
**Cc:** Symes, Douglas POH  
**Subject:** RE: Superferry Questions

Capt Mitchell -

Thank you for your input and contacts at other ferry systems operating high speed ferries. I will forward this information to our Honolulu office. Again, thank you for your time and consideration of our questions.

Mike Green  
Economist  
Seattle Dist.  
U.S. Army Corps of Engineers  
206.764.3647

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**From:** Mitchell, Kelly [mailto:[Mitchek@WSDOT.WA.GOV](mailto:Mitchek@WSDOT.WA.GOV)]  
**Sent:** Monday, October 23, 2006 10:13 AM  
**To:** Green, Michael P NWS  
**Subject:** RE: Superferry Questions

Good morning Michael,

I have looked at the questions that you have posed below.

Nothing in our fleet matches the high speed ferry vehicle/pass operation that is identified below, however, based on operations with our mono hull pass/vehicle ferries of the same length, I would say that the docking criteria for wave height is approximately 4-6 feet. Our vessels have be able to operate into and out of our exposed terminals. The wind speed and direction is a more critical factor in that our vessels have high "sail" area influences and have minimal side thrust capabilities with winds on the beam that will push the vessel away from the dock.

The operational transfer of passengers and vehicles will usually be ceased when the wave heights are sustained at about 4 feet whenever a bow on "rolling" wave is encountered. The vehicle transfer has to be timed to the mid-motion of the rise and fall for the transfer span to allow for the vehicle to cross the bridge to vehicle deck point of contact without damage. The walk on passenger transit can be dangerous at this same point.

Since the WSF does not have any high speed vehicle/pass ferries that are similar to the ones described in the link provided, I would recommend that you try to contact the Alaska Marine Highway System operations department (907) 228-7281, Port Captain Pete Gordon (sp?) as they have two high speed catamarans that carry vehicles and operate in very severe wave conditions. Another operator that does operate a vessel built by an Australian firm ( I believe either the same one or a sister company) would be the operator of the Incat that operates for the state Department of Transportation of Maine between Bar Harbor, Maine and Nova Scotia. This would probably be your best source of information based on actual sea going operations.

I hope this is of help to you.

Best regards  
Capt Kelly Mitchell

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**From:** Green, Michael P NWS [mailto:Michael.P.Green@nws02.usace.army.mil]  
**Sent:** Thursday, October 19, 2006 5:07 PM  
**To:** Mitchell, Kelly  
**Cc:** Symes, Douglas POH  
**Subject:** Superferry Questions

Captain Mitchell -

We are hoping you could provide a third party point of view and suggestions on assumptions for the economic analysis of the Hawaii Superferry. Our analysis should reflect rational and prudent approach.

Below is a link to the vessel fact sheet.

<http://www.hawaiisuperferry.com/documents/SuperferryDataSheet2-1-06.pdf>

The questions:

1. What is a reasonable wave height safety criteria for docking?

Under current plans, a high speed ferry system will operate out of Kawaihae Harbor on the Island of Hawaii at a pier which is very close to the harbor mouth and is subject to significant winter waves from the northwest. The ferry, a 350 ft high-speed catamaran, will dock side-to and will unload vehicles by ramp from its stern onto a barge permanently tied up at the same dock. Pedestrians will exit from the side of the ferry directly onto the dock. A critical assumption in our analysis will be the criteria used to determine whether it is safe to tie up at the dock to load and unload passengers and cars.

Based on our investigations to date, the docking criteria for this vessel is likely to be somewhere between 1 foot and 3 feet waves (peak to trough) measured at the dock. If waves are higher than the criteria, the ferry will be unable to load or unload passengers and vehicles safely.

State of Hawaii Department of Transportation (DOT) personnel and POH engineer Tom Smith have expressed reservations regarding a 3 ft. wave cancellation criteria for a vessel which will have passengers boarding and disembarking on foot and in vehicles. The Engineer Research and Development Center (ERDC) report on the harbor

mentions a harbor design non-exceedance criteria of 1 ft. waves 90 % of the time, but this is a harbor design criteria, not a vessel operation criteria.

We have been unable to obtain criteria for similar vessels from the manufacturer of the ferries, or from other operators. Is a 3 ft. operating criteria for docking reasonable? A 1 foot criteria? Ideally we would like input from ferry operators or others with relevant experience.

## 2. Operating criteria in practice.

A ferry operator will need to decide whether or not to load passengers for a voyage to Kawaihae from Honolulu about five hours before arriving at Kawaihae. If the decision to cancel is made before the ferry loads passengers in Honolulu, the loss to the company is the fares not collected minus operating costs saved. However, if the ferry leaves Honolulu and is forced to turn back, losses will include operating costs, refunded fares, as well as the loss of time by passengers. The operator will therefore have an incentive to adopt a larger margin of safety and favor cancellations before leaving Honolulu rather than risk the additional costs of a cancellation at sea.

This implies a two-level criteria: (1) a more conservative criteria for cancellation at the dock in Honolulu, before the additional costs have been incurred, and (2) a criteria closer to the limit of acceptable risk once the vessel is in route to Kawaihae. Based on a 3 foot wave safety criteria for loading and unloading passengers and vehicles, this analysis would assume that the criteria will be 2 ft. waves for cancellation at the dock in Honolulu, and 2.5 ft. waves for a vessel reroute. However, the basis for these criteria is really ordinal - because the ERDC data is presented in 0.5 ft. increments, the minimum margin of safety under the 3 foot criteria is a 2.5 ft. wave height, and the next increment is a 2 ft. wave height.

Can the reviewer(s) suggest an approach for operating criteria that is less arbitrary?

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Contact information for the project economist is listed below

Douglas Symes  
Regional Economist  
Honolulu District  
U.S. Army Corps of Engineers  
CEPOH-EC-T  
Bldg. T223  
Fort Shafter, HI 96858  
Phone: (808) 438-1664

email: [douglas.symes@poh01.usace.army.mil](mailto:douglas.symes@poh01.usace.army.mil)

Thank you very much for taking the time to help us out.

Mike Green  
Economist  
Seattle Dist.  
U.S. Army Corps of Engineers  
206.764.3647



## Symes, Douglas POH

---

**From:** Green, Michael P NWS  
**Sent:** Monday, October 23, 2006 8:02 AM  
**To:** 'Mitchell, Kelly'  
**Cc:** Symes, Douglas POH  
**Subject:** RE: Superferry Questions

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

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Mike Green  
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increments, the minimum margin of safety under the 3 foot criteria is a 2.5 ft. wave height, and the next increment is a 2 ft. wave height.

Can the reviewer(s) suggest an approach for operating criteria that is less arbitrary?

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Regional Economist  
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CEPOH-EC-T  
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Fort Shafter, HI 96858  
Phone: (808) 438-1664  
email: [douglas.symes@poh01.usace.army.mil](mailto:douglas.symes@poh01.usace.army.mil)

Thank you very much for taking the time to help us out.

Mike Green  
Economist  
Seattle Dist.  
U.S. Army Corps of Engineers  
206.764.3647

## **Symes, Douglas POH**

---

**From:** Doug Thorn [Doug.Thorn@austalusa.com]  
**Sent:** Friday, July 28, 2006 4:06 AM  
**To:** Symes, Douglas POH  
**Cc:** Dave Growden  
**Subject:** RE: Superferry, Corps of Engineers project at Kawaihae

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

Mr. Symes,

I have made several inquiries and it appears that there are no real similar conditions with which to properly ascertain the reactionary properties you seek in regard to the Hawaiian Superferry within our fleet of builds. I really don't know how we can be of help with your quest at this time.

Regards

DOUG THORN

Project Technical Manager

**AUSTAL**

1 Dunlap Drive

Mobile, Alabama 36602

Tel: 251-434-8000 x1939

Fax: 251-434-8001

Cel: 251-610-3564

[doug.thorn@austalusa.com](mailto:doug.thorn@austalusa.com)

[www.austal.com](http://www.austal.com)

---

**From:** Symes, Douglas POH [mailto:Douglas.Symes@poh01.usace.army.mil]

**Sent:** Thursday, July 20, 2006 2:55 PM

**To:** Doug Thorn

**Subject:** FW: Superferry, Corps of Engineers project at Kawaihae

Mr. Thorn:

The following is my previous communications with Peter Keel.

Douglas Symes

Regional Economist

Honolulu District

U.S. Army Corps of Engineers

CEPOH-EC-T

Fort Shafter, HI 96858

Phone: (808) 438-1664

email: [douglas.symes@poh01.usace.army.mil](mailto:douglas.symes@poh01.usace.army.mil)

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**From:** Peter Keel [mailto:[peter.keel@austalusa.com](mailto:peter.keel@austalusa.com)]  
**Sent:** Tuesday, May 10, 2005 4:27 AM  
**To:** Symes, Douglas POH; [peter.keel@austal.com](mailto:peter.keel@austal.com)  
**Cc:** Terry White  
**Subject:** RE: Superferry, Corps of Engineers project at Kawaihae

Dear Mr. Symes

Thank you, for your time yesterday and the informative website link attached to your email. As discussed yesterday this is really an operational item that HSF will need to decide on with their representatives and vessel captains.

I have however made some enquiries after reviewing the website attached to your email and taken the following action. I feel that it would be of more value to speak directly to someone in the Canary islands on what they would term conditions for canceling the intended voyage. I have made some enquiries and hopefully will be able to provide you with a contact within a few days. I hope this fits your schedule.

It has been some 20 years since I visited Hawaii, however from what I have read and from talking to Mr. White and the other members of the HSF team there is much to be gained by the improvements of the port facilities. I will sent through the contact details for the person to speak to in regard to this issue as soon as I have it, should there be other areas that you feel we may be able to assist in please don't hesitate to call.

Regards

Pete

**Peter Keel**

Project Technical Manager

Austal USA  
Telephone: 251 434 8000  
Fax: 251 434 8080  
[www.austalusa.com](http://www.austalusa.com)

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**From:** Symes, Douglas POH [mailto:Douglas.Symes@poh01.usace.army.mil]  
**Sent:** Friday, May 06, 2005 7:21 PM  
**To:** Peter Keel; peter.keel@austal.com  
**Cc:** Terry White  
**Subject:** Superferry, Corps of Engineers project at Kawaihae

6 May 2005

Peter Keel  
Austal USA  
100 Dunlap Drive  
Mobile , Alabama 36602

Dear Mr. Keel:

The U.S. Army Corps of Engineers is currently undertaking a feasibility study of improvements to Kawaihae Harbor on the Island of Hawaii. As economist for the Honolulu District, I am evaluating the benefits for the various stakeholders, including Hawaii Superferry.

The project includes additional breakwaters to reduce wave action inside the harbor. Because current plans call for the Superferry to dock near the harbor entrance -- the area most prone to wave action -- the project may yield significant benefits for the Superferry by reducing the number of cancellations due to very rough docking conditions at Kawaihae.

In order to quantify these benefits, I need to know what conditions (height of waves at the dock) would be likely to cause cancellation of Superferry calls at Kawaihae. I appreciate any assistance you can give us with this question.

I have been in contact with Terry White at Hawaii Superferry, and have asked him to email you, confirming his cooperation with the Corps of Engineers in this matter. Details of the Kawaihae Deep Draft Harbor project may be found on the Honolulu District web site, <http://www.poh.usace.army.mil/cw/Kawaihae%20DDH.html> .

Sincerely yours,

Douglas Symes  
Regional Economist  
Honolulu District  
U.S. Army Corps of Engineers  
CEPOH-EC-T  
Bldg. T223  
Fort Shafter, HI 96858  
Phone: (808) 438-1664  
email: [douglas.symes@poh01.usace.army.mil](mailto:douglas.symes@poh01.usace.army.mil)

Do you have a dimensions and draft for the barge?

Thanks,  
Douglas

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**From:** Glenn.Soma@hawaii.gov [mailto:Glenn.Soma@hawaii.gov]  
**Sent:** Tuesday, May 17, 2005 3:14 PM  
**To:** Symes, Douglas POH  
**Cc:** Iris.Thompson@hawaii.gov; Dean.Watase@hawaii.gov  
**Subject:** RE: Kawaihae - Superferry docking facilities

Aloha Again Douglas,

This is from the "Wave Climate and Wave Response, 2025 Plan, Kahului Harbor, Maui, Hawaii", June 2002, by the Corps of Engineers:

"Standard criteria for wind waves and swell in *deep draft* harbors, such as Kahului Harbor, are not so well established. However, the criteria for shallow draft harbors can provide a useful basis for comparing alternative plans at Kahului Harbor. Experience with the Alaska ferry system (vessel lengths up to 300 ft) suggests that the USACE 1-ft criterion in berthing areas is a meaningful threshold for that application (personal communication from Harvey Smith, Department of Transportation and Public Facilities, State of Alaska, 2002)." Page 38.

"A second operational guideline takes into account the actual long wave climate at Kahului Harbor, as represented by the array gage, as well as amplification factors inside the harbor. The percent of observations with  $H(s, long)$  greater than 10 cm was computed along existing and proposed piers. A 10-cm long wave height is an approximate threshold for operational use, as discussed by Thompson, Boc and Nunes (1998) and Thompson, et al. (1996). The calculation procedure was similar to that used in the previous study. For each frequency in the long wave spectrum, amplification factor at each point along the piers was divided by amplification factor at the array gage. These factors were then applied to incident long wave spectra from the gage for data at 3-hr intervals over a 12-month time period. For each gage record, long wave significant height was computed from two segments of the long wave spectrum: one representing wave periods between 100 and 400 sec and the other for wave periods of 30-100 sec. The choice of 100 sec as the dividing point was based on an expected sensitivity of barges in the shorter period range and a lower confidence in that range because of the concern that  $K(r)$  may be slightly high." Page 48.

"The third operational guideline relates to long wave velocity along the piers. PIANC (1995) gives criteria for maximum horizontal translational motions of moored vessels in terms of distance and velocity. Since horizontal motions are highly constrained by mooring lines, the velocity criteria seem more useful for present purposes (though they are stated to be applicable only for fishing vessels, maximum velocity vary with size of ship, but they can be summarized as: maximum horizontal velocity less than 1-2 ft/sec (0.3-0.6 m/s). Maximum velocity decreases as ship size increases, with 1 ft/sec (0.3 m/s) representing an 8,000 DWT ship and 2 ft/sec (0.6 m/s) representing a 1,000 DWT ship." page 48.

Now what this all means and how it all relates to the scenarios at Kawaihae Pier 1 once again depends on the historical records of the wave conditions and contingency operations there. And, of course, we'll need someone technical and smart, like Nani or Tom, to decipher all the above gobbledegook.

The programmed maintenance and repair costs include Structural Repairs of Sheet Piles, \$50,000, & Repair Concrete Apron at Pier 1, \$30,000. These costs would not be reduced by the deepening/breakwater project.

"Symes, Douglas POH" <Douglas.Symes@poh01.usace.army.mil>

05/17/2005 02:00 PM

<Glenn.Soma@hawaii.gov>

To

cc  
Subject

RE: Kawaihae - Superferry docking facilities

Glenn:

Lazy bureaucrat - PERISH THE THOUGHT! I aspire to such an exalted position myself.

We can figure out the frequency of waves of different magnitude from our computer models. What we don't know is what kind of waves would force DOT to hire a tug or two and drag the barge out to sea or to a safer location. Since this is presumably part of the DOT's planning criteria, I thought I'd ask a DOT planner...

We can go at this from the other direction. What maintenance and repair costs have you planned for? Would these costs be reduced by our project?

Best regards,  
Douglas Symes

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**From:** Glenn.Soma@hawaii.gov [mailto:Glenn.Soma@hawaii.gov]  
**Sent:** Tuesday, May 17, 2005 1:41 PM  
**To:** Symes, Douglas POH  
**Cc:** Iris.Thompson@hawaii.gov; Dean.Watase@hawaii.gov  
**Subject:** Re: Kawaihae - Superferry docking facilities



Aloha Douglas,

Wow, interesting thoughts from Mr. Birnie!!!

And more interestingly, i can't help you.....sorry about that! Mr. Birnie's suggestions that a barge tied up to Pier 1 may result in added costs to the DOT must have some historical basis. Do you think Mr. Birnie would be a better source than me for answers to your questions? I honestly don't have the historical background for frequency or severity of debilitating harbor waves. I have tried (unsuccessfully) to gather information regarding these winter waves, and can't even get ahold of any documentation of the number of times vessels were turned away from Pier 1, or had to relocate their operations from Pier 1 to Pier 2 because of the wave action. I've tried the Kawaihae Harbor Agent, Sause Bros, Hawaiian Tug & Barge, to no avail.

I apologize for not being of much help to you. Hope i don't sound like a lazy bureaucrat!

"Symes, Douglas POH" <Douglas.Symes@poh01.usace.army.mil>

05/17/2005 11:32 AM

"Glenn Soma (E-mail)" <Glenn.Soma@hawaii.gov>

Kawaihae - Superferry docking facilities

To

cc

Subject

Hi Glenn:

I spoke with Ian Birnie this morning, and he suggested that the current plans for docking the Superferry at a barge tied up to Pier 1 may result in extra cost to DOT when wave conditions in the harbor are particularly rough. Ian believes that it may be necessary to bring tugs in when conditions are particularly rough, and either tow the barge out of the harbor, or to a calmer place within the harbor until calmer conditions return.

In addition, under rough conditions, the barge or the dock may be subject to damage or additional maintenance, which would be prevented or reduced by the project.

In order to quantify these potential benefits of the project, I need the following information:

1. What wave heights at Pier 1 would require the barge to be towed out of the harbor, or to a safer location within the harbor? If you have a working assumption of how many days per year this will take place, I would like to know that too, but if not, we can estimate the frequency of these conditions from the modeling data we are receiving from ERDC.
2. How much annual damage to the barge will be caused by rough wave conditions, resulting in additional maintenance or repairs? Assuming that the breakwaters can reduce wave action by 50% or 75%, how much annual savings will result?

3. How much additional annual damage will be caused to Pier 1 by the barge during rough wave conditions, resulting in additional maintenance or repairs? Assuming that the breakwaters can reduce wave action by 50% or 75%, how much annual savings will result?
4. Has any consideration been given to the possibility that unloading the Superferry via a barge may make it more sensitive to wave action than unloading directly onto a dock? The barge may not move in sync with the Superferry, and depending on the wave conditions and the sizes of the two vessels, they could be completely out of sync at times, doubling the relative motion of a ramp connecting them.

Please give me a call if you have any insights that would be helpful for this line of inquiry.

Best regards,

Douglas Symes  
Regional Economist  
Honolulu District  
U.S. Army Corps of Engineers  
CEPOH-EC-T  
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## Symes, Douglas POH

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**Sent:** Wednesday, May 18, 2005 2:55 AM  
**To:** Symes, Douglas POH  
**Subject:** RE: Superferry, Corps of Engineers project at Kawaihae

**Follow Up Flag:** Follow up  
**Flag Status:** Yellow

Dear Douglas

I have followed up with my colleague in Australia for the contact details. He has had no reply as yet but will make another call this evening and send a reminder email. The best that I can offer at this stage is to contact you again tomorrow and provide you with a further update.

Sorry the news was not more positive or informative.

Regards

Pete