House District 26 Oahu-wide

Senate District 13 Oahu-wide

THE TWENTY-SEVENTH LEGISLATURE
APPLICATION FOR GRANTS AND SUBSIDIES
CHAPTER 42F, HAWAII REVISED STATUTES

Log No:

For Legislature's Use Only

Type of Grant or Subsidy Request:

☒ GRANT REQUEST – OPERATING ☐ GRANT REQUEST – CAPITAL ☐ SUBSIDY REQUEST

"Grant" means an award of state funds by the legislature, by an appropriation to a specified recipient, to support the activities of the recipient and permit the community to benefit from those activities.

"Subsidy" means an award of state funds by the legislature, by an appropriation to a recipient specified in the appropriation, to reduce the costs incurred by the organization or individual in providing a service available to some or all members of the public.

"Recipient" means any organization or person receiving a grant or subsidy.

STATE DEPARTMENT OR AGENCY RELATED TO THIS REQUEST (LEAVE BLANK IF UNKNOWN): DLNR - DOBOR

STATE PROGRAM I.D. NO. (LEAVE BLANK IF UNKNOWN):

1. APPLICANT INFORMATION:

Legal Name of Requesting Organization or Individual:
Navatek Ltd.

Dba:

Street Address: 841 Bishop St. Suite 1110

Mailing Address: 841 Bishop St. Suite 1110, Honolulu, HI 96813

2. CONTACT PERSON FOR MATTERS INVOLVING THIS APPLICATION:

Name ANN CHUNG

Title Director of Special Projects

Phone # 808-351-6000

Fax # 808-523-7668

e-mail achung@navatekltd.com

3. TYPE OF BUSINESS ENTITY:

☐ NON PROFIT CORPORATION
☒ FOR PROFIT CORPORATION
☐ LIMITED LIABILITY COMPANY
☐ SOLE PROPRIETORSHIP/INDIVIDUAL

6. DESCRIPTIVE TITLE OF APPLICANT'S REQUEST:

Perform near shore wave data collection in highly utilized coastal zones. The wave data will be used to validate current predictive near shore models and improve wave forecasting for the safety of residents, tourists, and water safety personnel in Hawaii and reduce liability for the State.

4. FEDERAL TAX ID #: [redacted]

5. STATE TAX ID #: [redacted]

7. AMOUNT OF STATE FUNDS REQUESTED:

FISCAL YEAR 2015: $ $467,783.23

8. STATUS OF SERVICE DESCRIBED IN THIS REQUEST:

☒ NEW SERVICE (PRESENTLY DOES NOT EXIST)
☐ EXISTING SERVICE (PRESENTLY IN OPERATION)

SPECIFY THE AMOUNT BY SOURCES OF FUNDS AVAILABLE AT THE TIME OF THIS REQUEST:

STATE $
FEDERAL $
COUNTY $
PRIVATE/OTHER $

TYPE NAME & TITLE OF AUTHORIZED REPRESENTATIVE:

[redacted]

AUTHORIZED SIGNATURE

Brian Kays, Supervisory Engineer/Vessel Operator

NAME & TITLE

1/30/14

DATE SIGNED

Application for Grants and Subsidies

If any item is not applicable to the request, the applicant should enter "not applicable".

I. Background and Summary

This section shall clearly and concisely summarize and highlight the contents of the request in such a way as to provide the State Legislature with a broad understanding of the request. Include the following:

1. A brief description of the applicant's background

Navatek, Ltd. was founded in 1979 and operates out of offices in Honolulu, Hawaii with 49 employees. Navatek is a subsidiary of kama'aina company Pacific Marine, founded in 1944, with 450 employees.

For over 30 years, Navatek has professionally operated a fleet of advanced small craft in Hawaiian waters – including survey vessels capable of conducting sustained, at – sea observations and data collection. The company also employs a staff of local, certified, trained and USCG-licensed boat operators who are familiar with Hawaii waters, and ocean sports activities in those waters. Navatek's staff regularly participates in ocean sports activities in near shore ocean locations, often relying on wave and weather forecasting published by various agencies. The combination of Navatek's stable, seaworthy vessels and their staff of ocean savvy, technically capable employees makes Navatek the ideal entity to conduct the proposed wave height data collection and analysis.

2. The goals and objectives related to the request

i. Perform near shore wave data collection in highly utilized coastal zones. The wave data will be used to validate current predictive near shore models and improve wave forecasting for the safety of residents, tourists, and water safety personnel in Hawaii and reduce liability for the State.

ii. Coordinate with model developers and ocean safety personnel to identify specific near shore locations on Oahu for wave data collection. Factors for location selection will include population density, usage, access to rescue personnel, past incidences, and frequency of dangerous ocean conditions.

iii. Develop and establish experimental methods and procedures for wave data collection in the selected near shore locations.

iv. Conduct the near shore wave data collection program.

v. Compile, organize, and analyze the high fidelity data set of near-shore wave conditions. This data set will allow the State of Hawaii to validate current model performance over a statistically significant range of ocean conditions. The correlations between near shore models and actual real time data will allow for future model improvements and ultimately lead to increased ocean awareness for the residents and visitors of Hawaii. Lifeguards and water safety personnel will be able to utilize the improved near shore model information to better prepare for the fast changing Hawaiian ocean conditions.

3. The public purpose and need to be served

Hawaii near-shore wave forecast models have been developed using wave buoy data from far-field buoys (up to 1000nm offshore). These forecast models are limited in their ability to incorporate complex coastal geography which can lead to inaccurate wave height and ocean condition predictions at Hawaii's beaches. The validation methods currently employed all include human observation which is subject to interpretation as there is no objective measurement tool. Due to the cited issues, the near shore wave models are only used to obtain notional forecasts for ocean conditions, and in the past, the models have either overstated or understated the wave heights at many popular ocean recreation locations. This has led to public distrust of the wave height forecasts and can undermine the effectiveness of the warnings issued by the State of Hawaii.

Lifeguards and other water safety personnel have the difficult task of assigning resources and planning for extreme ocean and weather events to help protect the residents and visitors in Hawaii. The wave height forecast predictions derived from the current near shore models cannot currently be utilized due to the uncertainties involved with their outputs. Ocean users often misinterpret or fail to adhere to wave height advisories and warnings due to prior understatements or overstatements of ocean conditions at Hawaii's beaches.

Under this request, Navatek proposes to conduct on the water studies of current near-shore wave conditions at specific, highly utilized beaches and water sport locations, in order to build a data base of near shore wave data for the selected locations to validate current predictive models in a variety of ocean conditions. This data base will help improve wave forecasting for Hawaii residents, tourists, and water safety personnel.

4. Describe the target population to be served

The target population to be served includes Oahu residents, Oahu tourists, and water safety personnel who rely on wave forecasting models and participate in near shore ocean activities.

5. Describe the geographic coverage

The geographic coverage will be determined during the first phase of this project via coordination with model developers and ocean safety personnel. Possible geographical areas

include high activity surf zones on Oahu, popular beaches (Sandy Beach, Kailua Beach, Lanikai Beach, Makapu'u, Waikiki, Waimea Bay, etc.), and public harbors and channels around Oahu.

II. Service Summary and Outcomes

The Service Summary shall include a detailed discussion of the applicant's approach to the request. The applicant shall clearly and concisely specify the results, outcomes, and measures of effectiveness from this request. The applicant shall:

1. Describe the scope of work, tasks and responsibilities

The scope of work, tasks and responsibilities include coordinating with model developers and ocean safety personnel, developing experimental methods and procedures, conducting the near-shore wave data collection program, compiling and analyzing the data, and managing the overall program.

a. Coordinate with model developers and ocean safety personnel to determine data collection locations

Navatek will coordinate with model developers and ocean safety agency personnel to identify specific locations on Oahu that would benefit from improved wave height forecasting and service a significant number of Hawaii's residents and visitors. The geographic locations will be specifically defined in order to pinpoint exactly where wave measurements should be recorded in order to provide the best data to model developers.

b. Develop and establish experimental methods and procedures

While the basic process for collecting wave data is understood, each of the following items needs to be vetted and analyzed in order to conduct a meaningful study: Population served, near shore geographic locations, wave buoy placement (depth, distance offshore...etc.), duration of buoy deployment, and time of day for buoy deployment. Experimental methods and procedures will be defined to include: Study intervals, study frequency, study weather conditions, and study verification for quality assurance. The data analysis methods will be defined to include statistical data reduction tools and output data formats suitable for a final report.

c. Conduct near-shore wave data collection program

Using a portable yet high fidelity wave buoy, Navatek supplied vessels, mooring facilities, and data recording equipment, studies will be conducted in the selected locations around Oahu. The data will be collected by utilizing vessels with the range and endurance required to access all areas of interest and remain on station for the duration of each wave buoy deployment.

d. Compile and analyze the data, prepare the final report, and validate current near-shore models

All of the data collected will be consolidated into a comprehensive report. Wave data will be compiled and organized for analysis and comparison with current near-shore models. Raw data will be available as final report appendix information. Data reduction will be conducted using statistical analysis tools, and a detailed report summarizing the results, analysis, and conclusions will be provided.

e. Program management

Navatek shall maintain the overall program management, which will include overall direction, technical guidance, program schedule, reviews, report production, contracting support, and other programmatics.

2. Provide a projected annual timeline for accomplishing the results or outcomes of the service

		Months After Award											
Task	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	Define Study Locations												
2	Develop Study Methodologies												
3	Conduct Studies												
4	Analyze Data and Produce Report												
5	Program Management												

3. Describe its quality assurance and evaluation plans for the request. Specify how the applicant plans to monitor, evaluate, and improve their results; and

Navatek has conducted numerous at-sea tests and trials with experimental craft, ocean sensing equipment, data collection from electronic sensors for up to 25 channels at rates up to 20,000Hz, and supplemented all data collection with real time observational logging and recording. The processes for the at-sea data collection are established.

For the purposes of the proposed study, data will be recorded electronically with various data collection instruments, but manual observations will also be recorded to supplement and further validate the data. The entries made in the manual log will include date, time, location confirmed with GPS location, observed weather condition, wind speed and direction, tide height, study duration and other notations. The electronic recordings will be primarily done using a portable, high fidelity wave buoy. This buoy will record wave height, direction and swell period. The buoy is capable of recording multiple swells with different directions or periods in one data set. Data collected manually and electronically will be transferred to a computer on board as time allows, or no later than close of business on the day of the observations.

Two persons will be jointly conducting studies and will verify and confirm recordings. Acknowledgement of recordings will be required to establish them for record keeping. All data recording will be signed off daily by the persons conducting the survey.

The data will be evaluated for quality by reviewing logs and raw data streams for missing data components. During data reduction, the data streams will be cleaned of incomplete entries to allow for fully accurate and complete data sets to be used in analysis.

4. List the measure(s) of effectiveness that will be reported to the State agency through which grant funds are appropriated (the expending agency). The measure(s) will provide a standard and objective way for the State to assess the program's achievement or accomplishment. Please note that if the level of appropriation differs from the amount included in this application that the measure(s) of effectiveness will need to be updated and transmitted to the expending agency.

The proposed reporting line will be to the DLNR – Division of Boating and Ocean Recreation (DOBOR). There are also several other agencies that will also benefit from improved near shore wave height forecasting, including: The City and County of Honolulu Ocean Safety Division, the Pacific Islands Ocean Observing System (PacIOOS), USCG, and the University of Hawaii. The data outputs will be listed to include:

- Near shore significant wave height and period
- Time of day
- Distance from shore
- Height of tide
- Weather conditions

- Season
- Current near shore wave forecast

Any differences between Navatek's near shore wave data and current near shore models will be readily apparent upon analysis. The study can be considered effective if it provides the State Legislature with the following:

1) An assessment of major problems or discrepancies in the forecasts derived from existing near shore wave height and ocean condition predictive forecasting models.

2) An evaluation of existing predictive forecasting models. Do they provide Lifeguards and other water safety personnel with sufficient information to properly serve the general public, reliably assign resources and plan for extreme events, at beaches, bays and other coastal locations?

3) A complete set of near shore wave data that the State can use to help improve future wave forecasting models.

III. Financial

Budget

1. **The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.**

Please see attached completed budget forms following this section.

2. **The applicant shall provide its anticipated quarterly funding requests for the fiscal year 2015.**

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Grant
$283,042.49	$75,465.10	$70,333.77	$41,941.87	$467,783.23

3. **The applicant shall provide a listing of all other sources of funding that they are seeking for fiscal year 2015.**

None. No other sources of funding are being requested for FY 2014-2015.

4. **The applicant shall provide a listing of all state and federal tax credits it has been granted within the prior three years. Additionally, the applicant shall provide a listing of all state and federal tax credits they have applied for or anticipate applying for pertaining to any capital project, if applicable.**

Tax Credits	**2011**	**2012**	**2013**
State of Hawaii	$0	$0	$0
Federal	$0	$0	$0
Research & Development	$125,909	$208,333	$219,022

Capitol Project Tax Credits	**2011**	**2012**	**2013**
State of Hawaii	$0	$0	$0
Federal	$0	$0	$0

5. **The applicant shall provide the balance of its unrestricted current assets as of December 31, 2013.**

Estimated Balance of Unrestricted Current Assets as of December 31, 2013
$9,681,151.00

BUDGET REQUEST BY SOURCE OF FUNDS
(Period: July 1, 2014 to June 30, 2015)

Applicant: Navatek Ltd.

BUDGET CATEGORIES	Total State Funds Requested (a)	Navatek Supplied Funding (b)	(c)	(d)
A. PERSONNEL COST				
1. Salaries	133,822			
2. Payroll Taxes & Assessments	160,586			
3. Fringe Benefits	42,823			
TOTAL PERSONNEL COST	**337,230**			
B. OTHER CURRENT EXPENSES				
1. Airfare, Inter-Island				
2. Insurance				
3. Lease/Rental of Equipment		448,000		
4. Lease/Rental of Space				
5. Staff Training				
6. Supplies				
7. Telecommunication				
8. Utilities				
9. Port Entry Fees	3,851			
10. Data Collection Equipment	47,918			
11. Vessel Consumables	33,985			
12. Fuel	44,800			
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL OTHER CURRENT EXPENSES	**130,553**	**448,000**		
C. EQUIPMENT PURCHASES				
D. MOTOR VEHICLE PURCHASES				
E. CAPITAL				
TOTAL (A+B+C+D+E)	**467,783**	**448,000**		

SOURCES OF FUNDING	
(a) Total State Funds Requested	467,783
(b) Navatek Supplied Funding	448,000
(c)	
(d)	
TOTAL BUDGET	**915,783**

Budget Prepared By:

Brian Kays — 808-221-8791
Name (Please type or print) — Phone

[redacted] — 1/30/14
Signature of Authorized Official — Date

Brian Kays, Supervisory Engineer/Vessel Operator
Name and Title (Please type or print)

BUDGET JUSTIFICATION
PERSONNEL - SALARIES AND WAGES

Applicant: Navatek Ltd.

Period: July 1, 2014 to June 30, 2015

POSITION TITLE	FULL TIME EQUIVALENT	ANNUAL SALARY A	% OF TIME ALLOCATED TO GRANT REQUEST B	TOTAL STATE FUNDS REQUESTED (A x B)
Supervisory Engineer/Vessel Operator		$130,558.48	9.57%	$ 12,500.28
Controller		$111,566.00	8.31%	$ 9,268.56
Mechanical Engineer/Vessel Operator		$60,008.00	29.97%	$ 17,983.07
Hydrodynamicist/Deck Hand		$83,467.80	29.24%	$ 24,403.37
Research Engineer/Vessel Operator		$110,011.20	29.97%	$ 32,967.92
Senior Naval Architect/Hydrodynamicist		$102,229.40	17.51%	$ 17,901.17
Mechanical Engineer/Deck Hand		$62,004.80	17.95%	$ 11,128.97
Marine Mechanic/Deck Hand		$42,723.20	17.95%	$ 7,668.20
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
TOTAL:				133,821.54

JUSTIFICATION/COMMENTS: The budget listed above assumes a planing period of two months which will be primarily staffed by the Engineers, Naval Architects and Hydrodynamicists. The survey portion of the job will consist of four approximately 8 hour trips per week. The surveys will be staffed by vessel operators, deckhands, and engineers. The data reduction and report writing will be completed by the Engineers, Naval Architects and Hydrodynamicists.

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Applicant: Navatek Ltd. Period: July 1, 2014 to June 30, 2015

DESCRIPTION EQUIPMENT	NO. OF ITEMS	COST PER ITEM	TOTAL COST		TOTAL BUDGETED
			$ -		
			$ -		
			$ -		
			$ -		
			$ -		
TOTAL:					
JUSTIFICATION/COMMENTS:					

DESCRIPTION OF MOTOR VEHICLE	NO. OF VEHICLES	COST PER VEHICLE	TOTAL COST	NO. OF DAYS UTILIZED	TOTAL BUDGETED
BLB-65 (Navatek Supplied Asset)	1.00	$4,500.00	$ 4,500.00	56	252000
TLB-CAT (Navatek Supplied Asset)	1.00	$3,500.00	$ 3,500.00	56	196000
			$ -		0
			$ -		0
			$ -		
TOTAL:	2		$ 8,000.00		448,000

JUSTIFICATION/COMMENTS: All of the assets listed above are supplied and funded by Navatek. See attached reference titled Navatek Charter Rates.doc for cost basis. The budget assumes One Hundred Twelve survey trips equally distributed between the two suitable boats in Navatek's fleet.

NAVATEK

Navatek Charter Rates

TLB-CAT:

Vessel Day Rate: **$3,500/day**

- Includes: Vessel, crew, fuel, food for crew for day operations in local waters not exceeding 12 hours.
- Applies to days vessel is restricted from any other operations at the request of the charterer or due to handling charterer equipment (mob/demob).
    - Exclusive access by charterer.
    - Crew on board for support of at-sea operations if required.

Vessel Day Rate; 24 hour operations: **$5,000.00/day**

- Includes: Vessel, two crews, fuel, food for crew for 24 hour operations in local waters.

Additional Days will be charged at the following rates:

- Underway Day $3,500.00
    - Any day vessel is made underway at charterer's request.
- Manned Lay Day $2,000.00
    - Any pier side day vessel is for exclusive use of charterer with crew requested on board for possible underway or support.
- Lay Day $1,000.00
    - Any pier side Business Weekday vessel is for exclusive use/access of charterer without crew. OWNER may have crew or other personnel on board for maintenance activity.

Other Services:

- Crane - lifts to 10,000# $150.00/hr
- Crane - heavy or long reach lifts Price on request
- Trade services: $60.00/hr
    - Welding, Electrical, Mechanical, Machining, Labor, Rigging

BLB-65:

Vessel Day Rate: $4,500.00/day

- Includes: Vessel, crew, fuel, food for crew for day operations in local waters not exceeding 12 hours.
- Applies to days vessel is restricted from any other operations at the request of the charterer or due to handling charterer equipment (mob/demob).
    - Exclusive access by charterer.
    - Crew on board for support of at-sea operations if required.

Vessel Day Rate; 24 hour operations: $6,500.00/day

- Includes: Vessel, two crews, fuel, food for crew for 24 hour operations in local waters.

Additional Days will be charged at the following rates:

- Underway Day $4,500.00
    - Any day vessel is made underway at charterer's request.
- Manned Lay Day $2,000.00
    - Any pier side day vessel is for exclusive use of charterer with crew requested on board for possible underway or support.
- Lay Day $1,000.00
    - Any pier side Business Weekday vessel is for exclusive use/access of charterer without crew. OWNER may have crew or other personnel on board for maintenance activity.

Other Services:

- Crane - lifts to 10,000# $150.00/hr
- Crane - heavy or long reach lifts Price on request
- Trade services: $60.00/hr
    - Welding, Electrical, Mechanical, Machining, Labor, Rigging

BUDGET JUSTIFICATION
CAPITAL PROJECT DETAILS

Applicant: Navatek Ltd.

Period: July 1, 2014 to June 30, 2015

FUNDING AMOUNT REQUESTED						
TOTAL PROJECT COST	ALL SOURCES OF FUNDS RECEIVED IN PRIOR YEARS		STATE FUNDS REQUESTED	OF FUNDS REQUESTED	FUNDING REQUIRED IN SUCCEEDING YEARS	
	FY: 2012-2013	FY: 2013-2014	FY:2014-2015	FY:2014-2015	FY:2015-2016	FY:2016-2017
PLANS	0	0	$467,783.23	0	0	0
LAND ACQUISITION	0	0	0	0	0	0
DESIGN	0	0	0	0	0	0
CONSTRUCTION	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
TOTAL:	0	0	0	0	0	0

JUSTIFICATION/COMMENTS: Funding requested for 2014-2015 is per this Grants in Aid application.

DECLARATION STATEMENT OF APPLICANTS FOR GRANTS AND SUBSIDIES PURSUANT TO CHAPTER 42F, HAWAI'I REVISED STATUTES

The undersigned authorized representative of the applicant certifies the following:

1) The applicant meets and will comply with all of the following standards for the award of grants and subsidies pursuant to Section 42F-103, Hawai'i Revised Statutes:

   a) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant or subsidy is awarded;

   b) Complies with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;

   c) Agrees not to use state funds for entertainment or lobbying activities; and

   d) Allows the state agency to which funds for the grant or subsidy were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and ensuring the proper expenditure of the grant or subsidy.

2) The applicant meets the following requirements pursuant to Section 42F-103, Hawai'i Revised Statutes:

   a) Is incorporated under the laws of the State; and

   b) Has bylaws or policies that describe the manner in which the activities or services for which a grant or subsidy is awarded shall be conducted or provided.

3) If the applicant is a non-profit organization, it meets the following requirements pursuant to Section 42F-103, Hawai'i Revised Statutes:

   a) Is determined and designated to be a non-profit organization by the Internal Revenue Service; and

   b) Has a governing board whose members have no material conflict of interest and serve without compensation.

Pursuant to Section 42F-103, Hawai'i Revised Statutes, for grants or subsidies used for the acquisition of land, when the organization discontinues the activities or services on the land acquired for which the grant or subsidy was awarded and disposes of the land in fee simple or by lease, the organization shall negotiate with the expending agency for a lump sum or installment repayment to the State of the amount of the grant or subsidy used for the acquisition of the land.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

Navatek Ltd.
(Typed Name of Individual or Organization)

[redacted] 1/30/14
(Signature) (Date)

Brian Kays — Supervisory Engineer/Vessel Operator
(Typed Name) (Title)

IV. Experience and Capability

A. Necessary Skills and Experience

The applicant shall demonstrate that it has the necessary skills, abilities, knowledge of, and experience relating to the request. State your experience and appropriateness for providing the service proposed in this application. The applicant shall also provide a listing of verifiable experience of related projects or contracts for the most recent three years that are pertinent to the request.

Navatek's vessels have logged thousands of hours in the waters of Oahu. All of the testing for Navatek's Hawaii-built prototypes is primarily conducted between Makapuu and Kaena Point, but has extended to all shorelines around Oahu and other outer islands. The employees that will be used for this survey have qualifications that include the following:

- USCG Captain's License,
- USCG Duty Designated Engineer,
- PADI dive certifications,
- First aid,
- CPR certifications.

In addition to these formal qualifications and work experience in these waters, many of the employees also spend their free time, canoe paddling, surfing, fishing, spearfishing, wind surfing, kite surfing, or kayaking. Navatek employees also have a lot of experience utilizing current wave height forecasting methods. The intimate knowledge of the waters and coastline greatly enhance Navatek's ability to perform meaningful studies.

The engineers scheduled to support this effort also have a multitude of experience involving complex data acquisition programs. Hardware and software already owned by Navatek will be utilized to assist in the data collection, and laptop computers will be taken on each survey to log and store the collected data in real time. Navatek also possesses a number of data reduction tools and algorithms that will be employed after the data has been collected.

Previous Projects with Relevant Experience:

1. Combatant Craft, Medium (CCM) Mk 1 RFP: Sea Blade 40 Model Testing
    a. Utilized Datawell Waverider Buoy to collect sea state statistics during Sea Blade 40 sea trials.

2. Naval Special Warfare (NSW) Rigid Hull Inflatable (RIB) Testing
    a. Utilized Datawell Waverider Buoy to collect sea state statistics during NSW RIB sea trials.

3. Pacific Missile Range Charters
    a. Utilized the BLB-65 to support missile recovery mission on Kauai

4. Data Acquisition Programs Conducted off of the South Shore of Oahu
    a. Include operations at various speeds in a wide range of sea states

    b. Also include wave height and frequency measurements

    c. Vessels Tested
        i. HDV-100
        ii. BLB-65
        iii. BR-51
        iv. TLB-CAT
        v. Sea Flyer
        vi. Foilcat
        vii. NSW RIBS
        viii. Navy Standard RIBS
        ix. Ultra Deep-V
        x. ST Marine USVs

5. Buoy Retrieval Charters

6. 2013-2014 ORMA Survey Study

B. Facilities

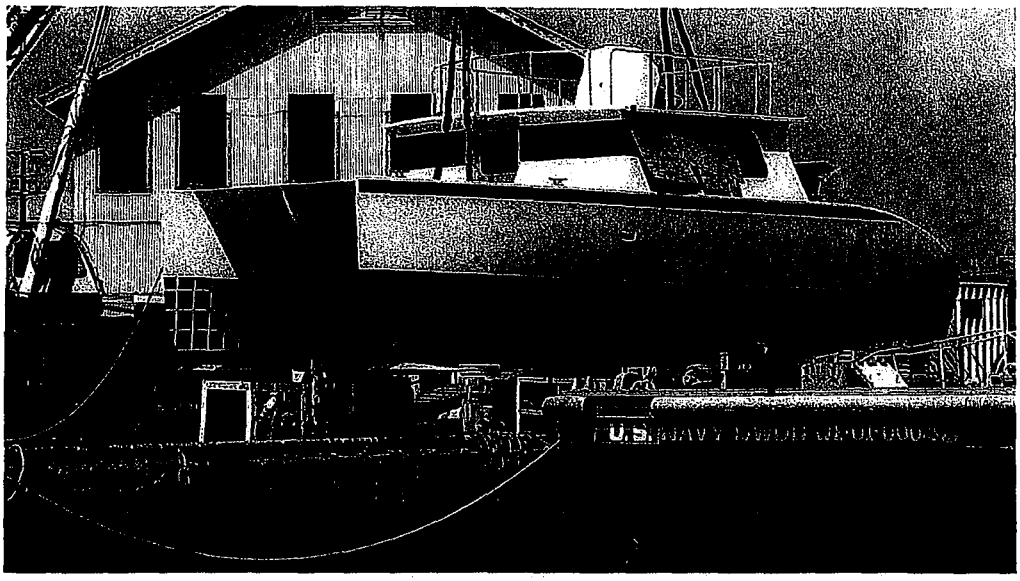
The applicant shall provide a description of its facilities and demonstrate its adequacy in relation to the request. If facilities are not presently available, describe plans to secure facilities. The applicant shall also describe how the facilities meet ADA requirements, as applicable.

Navatek's Research and Hydrodynamic Staff employs a staff of engineers, hydrodynamicists, marine mechanics, and vessel operators working out of offices and construction facilities located at, Pier 41, Honolulu, Hawaii. Navatek's small boat construction facilities include 7-acre construction and repair facilities, and equipment, including dry-docking, rigging and crane services, steel and aluminum fabrication and welding, mechanical and machine shop, and painting and preservation. Navatek separately owns and operates a fiberglass reinforced plastics shop. The Navatek, Ltd. FRP shop includes a free-span 3,000 square foot insulated building, a 1,000 square foot covered boat shop and more than 5,000 square feet of hard-top storage and lay-down area. The FRP shop and staff has the capability and expertise to work in a variety of composite materials including all fabrics such as Kevlar, carbon fiber and pre-pregs, and all resins such as vinylesters, epoxy and fire retardant formulations of each. The shop application techniques include capability for hand laminating, vacuum bagging, and resin infusion. Staff experience includes fabrication and repair of US Navy RIBs, and other small Navy support craft and construction of America's Cup racing yachts.

Navatek has a fleet of vessels particularly suited for the waters off Oahu. These vessels are offered as in-kind contributing support to this project. See attached detail sheets for vessel information.

In addition to the facilities and fleet of vessels, Navatek proposes to purchase a Datawell DWR-G 0.4 GPS wave buoy to record wave height conditions during studies. See attached Datawell buoy specification sheet for more information.

Navatek
TLB-Cat



Navateks 45' Tandem Lifting Body Catamaran was initially built in 2010 to demostrate the application of tandem lifting body concept to a multihull vessel. The TLB-Cat has demonstrated excellent motions in high sea states and provides exceptional efficiency due to the reduced drag afforded by the lifting bodies. Combined with Navatek ARES (Adaptive Ride Enhancement system) the TLB-Cat is a stable working platform with a large enclosed cabin and ample space to accommodate a large group of passengers or crew.

PERFORMANCE:

Speed Maximum	**27 kts**
Cruise Speed	**20 kts**
Maximum Time at Sea	**5 Days**

GENERAL DIMENSIONS:

Length Overall	**45' 6"**
Beam Overall	**20'6"**
Draft (Full Load)	**4' 2"**
Displacement at Full Load	**16 LT**

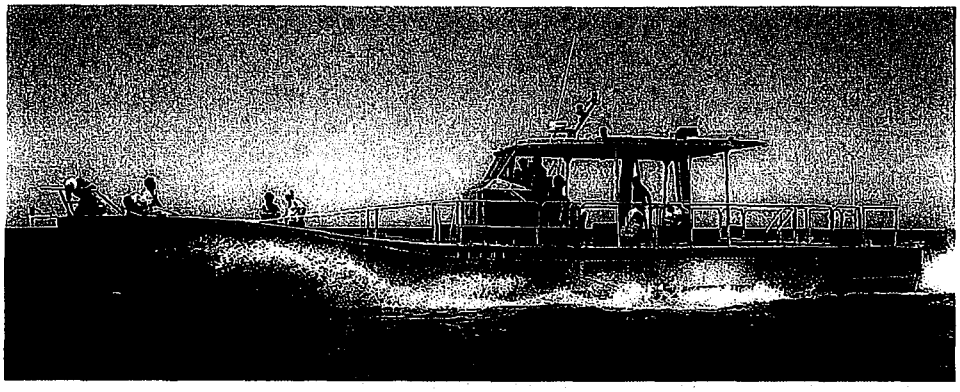
PROPULSION AND AUXILIARIES:

Main engines x2 ..... **Yanmar 370 hp**

TANK CAPACITIES:

Fuel	**360 Gallons**

Navatek
BLB-65



Navatek's bow lifting body (BLB) hull form achieved the greatest combination of efficiency, sea keeping, and cost of any Navatek lifting body. Official Navy trials were conducted aboard the BLB-70 in 2007. Their subjective assessment stated: *"most impressive was the smoothness and stability of the ride..."* and *"...the active system was highly effective in reducing the amount of severity of impacts and motions."* In 2008, the *BLB-70* was modified to become the ***BLB-65***. Its waterline length was shortened slightly, and Navatek installed its new, dihedral bow lifting body with trailing edge flaps. The vessel provides a stable platform from which to conduct at sea operations, a weather proof helm station and long range capabilities.

PERFORMANCE:

Speed Maximum	**40 kts**
Cruise Speed	**25 kts**
Maximum Time at Sea	**5 Days**

GENERAL DIMENSIONS:

Length Overall	**64' 9"**
Beam Overall	**18' 11"**
Draft (Full Load)	**5' 3"**
Displacement at Full Load	**29LT**

PROPULSION AND AUXILIARIES:

Main engines x 2	**CAT C-12 704 hp**

TANK CAPACITIES:

Fuel	**1000 Gallons**

Directional Waverider GPS

Datawell - Oceanographic Instruments

Measuring waves with GPS

The DWR-G wave buoy measures waves with help of the Global Positioning System (GPS) only. It features a patented algorithm and custom-made GPS receiver. With a single stand-alone GPS receiver it can measure directional waves, up to 100 s periods, without any calibration ever, and even in the middle of the ocean.

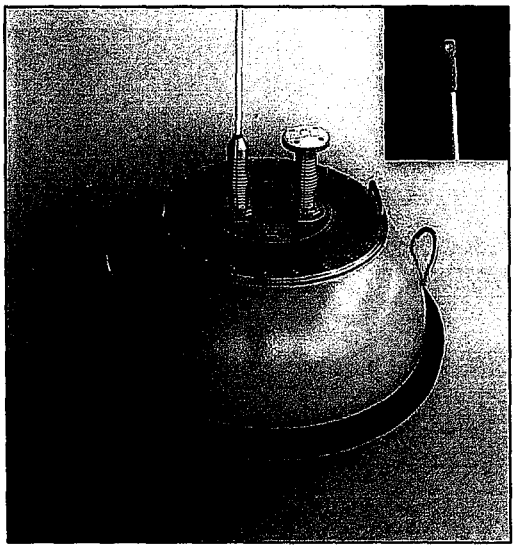
Already with its introduction in 2002 the new GPS measurement principle was tested against the standard in the field of wave measurement: the Datawell Directional Waverider (MkII). For a copy of these publications please visit our website or contact Sales. By now the GPS buoy is well-established and has taken its own place in the oceanographic market.

The highlights:

- **Measuring wave height and wave direction.**
- **Wave periods up to 100 s.**
- **HF link up to 50 km** over sea. By powering up the transmitter and using a directional receiving antenna the HF range can be stretched.
- **LED flashlight** mounted at the top of the antenna increasing the buoy's visibility to passing ships.
- The **GPS receiver** for the wave measurement also serves for buoy positioning, thus facilitating buoy retrieval.
- A **water temperature sensor** in the mooring eye providing sea surface temperature. (0.7m and 0.9m version only)
- Standard integrated **datalogger** based on the latest flash card technology.
- **High capacity primary cells** operating under all wave conditions and weather circumstances for up to one-and-a-half years without replacement.
- An accurate onboard **energy meter** monitors the actual energy consumption of the buoy, and reports a reliable estimate of the remaining operating life.
- Available in **0.9 m, 0.7 m and even 0.4 m diameter hulls.** See also our separate DWR-G 0.4 m diameter brochure.

Optionals:

- **HF link:** 25.5 MHz - 35.5 MHz
- **Iridium:** global, two-way satellite link
- **Iridium SBD:** global, two-way satellite link
- **Argos:** global, one-way satellite link.
- **GSM:** near shore data link via SMS or Internet
- **Power switch:** on/off
- **Hull painting:** yellow (no anti-fouling)



0.7 m (Hull painting is optional, not standard)

Datawell BV
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2012 LM Haarlem
The Netherlands

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E sales@datawell.nl
W www.datawell.nl

Directional Waverider GPS

Datawell - Oceanographic Instruments

Specifications

Wave motion sensor	Sensor	single GPS (not differential)	
	Precision	1-2 cm	free floating, all directions (1σ)
		1-2 cm + 0.5 %	moored, vertical (1σ)
		–	moored, horizontal, depends on current and wave frequency (excluding GPS antenna pitch and roll motion)
	Periods	1.6 s - 100 s	
	Calibration	not required ever	
	Exclusion	GPS signals do not penetrate through water, occasional data gaps may occur	
	Exclusion	not resistant to SA (Selective Availability, may be switched on by US Department of Defence for strategic reasons)	
Wave data	Data	north, west, vertical	
	Resolution	1 cm (north 2 cm, LSB "north" is GPS data gap indicator)	
	Range	–20 m - +20 m	
	Rate	1.28 Hz	
	Reference	WGS84	
Spectral data	Frequency resolution	0.005 Hz below 0.10 Hz and 0.010 Hz above	
	Frequency range	0.025 Hz - 0.60 Hz	
	Direction resolution	1.5°	
	Direction range	0° - 360°	
Standard features	Datalogger	Compact Flash Module 512Mb	
	LED Flashlight	4 high intensity LEDs, colour yellow (590 nm), pattern 5 flashes every 20 s standard length 35 cm	
	GPS position	every 30 min, precision 10 m	
	Water temperature	range –5 °C - +46 °C, resolution 0.05 °C, accuracy 0.2 °C	
Options	HF transmitter Flashlight antenna 195 cm	frequency range 25.5 MHz - 35.5 MHz (35.5 - 45.0 MHz on request) transmission range 50 Km	
	Argos/Iridium	satellite communication	
	GSM	mobile communication	
	Power switch	data files are closed and secured	
	Hull painting	Brantho Korrux "3 in 1" paint system (no anti-fouling)	
General	Hull diameter	0.7 m or 0.9 m (excluding fender)	
	Material	stainless steel (AISI316) or Cunifer 10	
	Weight	approx. 95 Kg (0.9m 225 Kg)	
	Batteries	0.7 m diam. operational life 1 year, 2 sections of 15 batteries 0.9 m diam. operational life 2 years, 5 sections of 13 batteries type Datacell RC25G (250 Wh green)	
	Receiver	RX-C, RX-D (recommended) or Warec (older Warecs may need modification)	
	Compatibility	DWR-G hatchcovers are compatible with MkII buoys	

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V. Personnel: Project Organization and Staffing

A. Proposed Staffing, Staff Qualifications, Supervision and Training

The applicant shall describe the proposed staffing pattern and proposed service capacity appropriate for the viability of the request. The applicant shall provide the qualifications and experience of personnel for the request and shall describe its ability to supervise, train and provide administrative direction relative to the request.

The staffing will be allocated over the term of the project consistent with the scope of work and the tasks. Navatek management will work closely with the model developer and ocean safety personnel in the first month to identify specific locations that would receive the most benefit from this study. Technical and program staff will be involved with the next month to establish the experimental methods and procedures. Vessel operating crews and observers will be involved during the 7 month long study phase. Technical staff will conduct data reduction and generate the final report. Management staff will oversee the project and support all phases of task activity.

Please see attached sheets which detail the staff experience and qualification.

Navatek regularly conducts large scale project operations for research and technical design and engineering. Project value ranges from $50,000 to $25,000,000. Staffing levels range from 1 to 50. Project terms range from 1month to 3 years or more. Navatek has never been debarred, cited or restricted in any manner from participating in State, Federal, or other agency bid, procurement or competitive solicitations. Navatek has contracted with numerous State and Federal agencies including HI St. DOT, US Navy, US Air Force, US SOCOM and others.

B. Organization Chart

The applicant shall illustrate the position of each staff and line of responsibility/supervision. If the request is part of a large, multi-purpose organization, include an organizational chart that illustrates the placement of this request.

Please see attached organization chart following this section.

NAVATEK

Brian Kays, P.E.
Supervisory Engineer

Education

2008 P.E. Mechanical, State of Hawaii
1997 BS, Mechanical Engineering, Univ. of Washington

Experience

Navatek, Ltd., Honolulu, HI **2002-Present**
Supervisory Engineer
Leads and assists multiple mechanical and control system projects including high speed craft ride control and diesel electric propulsion. Detailed experience:

- Program manager for the Ventilated Ducted Propeller (VDP) propulsion demonstration on the HDV100 craft.
- ALB ride control system for six different small craft including 40' Aronow Cat, 11m NSW Rib, 11m Navatek ETM Sled, Bladerunner 51', SeaBlade 40', and TLBCat 40'. Contributions include structural design of foils, struts, and hull attachment brackets; design of the hydraulic systems and hydraulic power units, packaging and installation of electric control equipment, software modifications for the different applications.
- Ride control system for BLB65 technology demonstration craft: Complete hydraulic design for 3-actuator servo valve system and bow thruster controls, integration of electronic controls and software tuning.
- Ride control system for HDV100 technology demonstration craft: Complete hydraulic design for a four actuator servo valve system; enclosing and wiring of electrical components and sensors; fiber optic control signal cable installation and termination; rudder tiller design; multiple hydraulic cylinder mechanical designs including rudder actuation geometry; computer simulation of control system algorithms and boat responses.
- Ride control system for *Sea Flyer* Technology demonstrator craft: Partial hydraulic system design for a seven actuator servo valve system; packaging of electrical components and shipboard wiring; fiber optic cable installation and termination; installation of motion sensors; data acquisition and assistance in tuning system.
- Trailing edge flap design for *Sea Flyer*: Mechanical linkage design for trailing edge flaps and mechanical design of all related components; provided assistance in building and installing flaps and linkage.
- Motion data collection of small watercraft: Designed and built a compact self-contained motion data acquisition system, wrote software to collect and display motion and GPS data along with portable wave buoy information. Installed system on multiple craft and collected and analyzed data.
- Ride control and electric propulsion tuning on 35-ft hybrid lifting body boat: Set up independent data acquisition system to collect data, monitor and tune the electric propulsion system, monitor and tune the ride control system while the boat is underway.

Genie Industries, Redmond, WA **2000-2002**
Senior Design Engineer
Responsible for the mechanical and system designs of multiple pieces of rough terrain construction equipment for a large construction and industrial lifting equipment manufacturer. Detailed experience:

- Led the design of Rough Terrain Scissor Lift, Genie GS3384. Completed the mechanical chassis design, engine installation and testing, hydraulic four-wheel and two-wheel drive systems, and lifting/steering systems. Worked concurrently with the manufacturing team so that implementation into production was smooth and quick.
- Managed the certification and testing process for multiple pieces of equipment to ANSI, CSA, CE, and Australian standards.
- Performed stability calculations for and structural design of the lifting boom for a 65' man lift.

Genie Industries, Redmond, WA **1996-2000**
Design Engineer, Associate Engineer, Intern
Designed mechanical components and hydraulic circuits for a large construction and industrial lifting equipment manufacturer. Detailed experience:

- Design of chassis (including multiple engine options, multiple drive system options, and multiple cylinder lifting systems) for a family of large rough terrain scissor lifts. Design of the hydraulic drive systems and the lifting and steering hydraulic systems. Implementation of designs into assembly line production and supported design for engineering changes.

- Design of chassis (including engine installation, hydraulic system component packaging and placement, and axles/steering geometry) for smaller rough terrain scissor lifts. Assisted with implementation of design into assembly line manufacturing and supported design for engineering changes.
- Multiple mechanical designs spanning many product lines including indoor scissor lifts, trailer mounted man-lifts, push around industrial lifts, and large rough terrain scissor and stick boom man lifts.

Qualifications

Computer skills: SolidWorks, ProEngineer, Ansys Designspace, Pro/E Mechanica, AutoCAD, Matlab, Labview, Working Model, and Microsoft Office applications.
Licenses: Engineer-in-Training, Washington State, Jan. 1998.
Patents: Co-inventor on Genie Industries U.S. Patent #6,050,358 (2000)

Publications

Kays, B.J., B.J. Rosenthal, R.S. Holcomb, and T.J. Peltzer, "Implementation and Full-Scale Testing of Adaptive vs. PID Control System Algorithms for Advanced Marine Vehicles," Proceedings, Tenth International Conference on Fast Sea Transportation, 2009

Peltzer, T.J., T.S. Keipper, B. Kays, and G. Shimozono, "A New Paradigm for High-Speed Monohulls: the Bow Lifting Body Ship," Proceedings, Ninth International Conference on Fast Sea Transportation, 2007

Knapp, R., J. Elm, and B. Kays (2007). "Robust Real-Time Microcontroller-based Control Hardware for a 21.3 m Bow Lifting Body Technology Demonstrator Craft," Proceedings, Ninth International Conference on Fast Sea Transportation, Shanghai, China.

NAVATEK

Scott I. Yamashita, P.E.
Hydrodynamic Engineer

Education

1991 BS, Aeronautical Engineering, Embry-Riddle Aeronautical University

Experience

Navatek, Ltd., Honolulu, HI **2001-Present**
Hydrodynamic Engineer

Performs computational fluid dynamics modeling and analysis using various potential flow and RANS codes. Designs various fluid and mechanical systems and supervises during the construction phase for projects. Detailed experience:

- CFD analyses and optimization of hull and lifting bodies for an experimental 40-ft catamaran.
- CFD analyses and optimization for the addition of a bow lifting body to a 170-ft monohull.
- Conceptual design, CFD analyses, detail systems design, and supervised construction for several installations of an Aft Lifting Body to various boats.
- CFD analyses and optimization for bow lifting body on a 65-ft trimaran project.
- CFD analyses on planing hull performance and impacts of lifting devices for 45-ft deep-V monohull project.
- Design and CFD analysis on littoral combat ship candidate to investigate the benefits/impacts of adding multiple lifting bodies to the current hull design.
- CFD analysis of 240-ft experimental catamaran hull with lifting bodies.
- Completed hydrodynamic analysis and systems design for *Sea Flyer* technology demonstrator vessel.
  - Modeling and CFD analysis of hullform, lifting body, and foil section to ascertain operational and performance envelope.
  - Coordinated and modified design and construction of engine foundations.
  - Designed current bilge and exhaust systems.
  - Coordinated design of dry chemical fire system.
- Designed various systems on *Waverider* technology demonstrator vessel.
  - Designed/modified auxiliary water system and engine room ventilation system.
  - Produced design data and documentation for machinery, systems, evacuation, and hydraulic portions of USCG certification for passenger vessel.

Sato & Associates, Inc., Consulting Engineers, Honolulu, HI **1992-2001**
Civil Engineer

Performed complete civil design of projects on Oahu, Maui, Kauai, and Hawaii. Detailed experience:

- Designed drainage, sewer, and water systems
- Designed site grading and performed requisite hydraulic and hydrologic calculations.
- Designed road layouts, parking layouts, and traffic control plans.
- Processed various construction permits for county, state, and federal agencies.
- Various projects for this work include:
  - Honokowai Shopping Center, Lahaina, Maui.
  - Papakolea Drainage Improvements, Honolulu, Oahu.
  - Reconstruction of Streets, Various locations, Honolulu, Oahu.
  - Kekuilani Subdivision, Kapolei, Oahu
  - Various waterline and park projects on Oahu.
- Completed preliminary assessment report for the Board of Water supply on the conditions of potable water aquifers on the North Shore of Oahu.

Qualifications

Licensed Professional Engineer, Civil Engineering, State of Hawaii, 1998-present.
Computer skills: Solidworks, AutoCAD, Multisurf, Rhino, Ansys CFX, USAERO, AEGIR, FORTRAN, Java, and Microsoft Office applications

NAVATEK

Troy S. Keipper
Naval Architect

Education

2000 BS, Naval Architecture & Marine Engineering, University of Michigan

Experience

Navatek, Ltd., Honolulu, HI **2002-Present**

Naval Architect

Perform naval architecture tasks including performance prediction, general arrangement, stability, and structural design, structural calculations and structural drawing. Detailed experience:

- *New Patrol Vessel:* Principal Naval Architect, 60m patrol vessel for the Singapore Navy, concept design.
- *Maritime Domain Awareness vessel (MDA):* Principal Naval Architect, concept through detail scantling design of a 60ft steel research vessel with azimuthing propulsors and DP2.
- *Blagg 25:* Principal Naval Architect, 25ft composite planning craft, currently undergoing builder's trials.
- *9m USV:* Performed stability analysis in accordance with the Procedures Manual for Stability Analysis of the US Navy Small Craft.
- *CEROS 2003:* Principal Investigator on $125k grant from Center for Excellence in Research of Ocean Sciences. Reported findings for assessing benefits of adding a lifting body to the bow of large ships.
- *Model Test BLB-300*: Naval Architect and Project Manager for 1/30th scale model test and hydrodynamic validation program. Successfully conducted testing program at the Offshore Model Basin, Escondido, CA.
- *Prototype BLB-70*: Principal Naval Architect and Program Manager for construction of $2.5M, 70ft technology demonstrator. Construction at Derecktor Shipyard, CT, with assembly and outfitting in Honolulu, HI. Carderock Division, Naval Surface Warfare Center conducted official navy test data on vessel in 2007.
- *TLB-Cat,* a 44ft, 49 Passenger Carrying Catamaran. Preliminary design and stability analysis and report for USCG Certificate of Inspection. Currently in construction.
- *ETM Tour Boat,* 37ft monohull RIB tour boat, stability analysis and report for USCG COI.
- *CHSV:* Conducted hydrodynamic analysis assessing the benefits of implementing twin lifting body hydrofoils to an 1800LT composite ship. Subcontractor to Northrop Grumman Ship Systems. Model test conducted at Marin Tow Tank Facility, Netherlands.
- *BLB-160,* Lead Naval Architect for 160ft prototype trimaran. Currently in preliminary design.
- *T-Craft,* Hull Lines and initial hydrostatics for 350ft Catamaran, concept design.
- *BLB-CAT:* Principal Investigator for $1.4M, 1 year project funded by Office of Naval Research, 8/2006 through 8/207.

Antrim Associates, Naval Architects, El Sobrante, CA **2000 –2002**

Naval Architect

Design and engineering of pleasure and racing sailboats for leading yacht design firm. Detailed experience:

- *24' Sport Boat, Ultimate 24: An ultra light sport boat designed for one-design racing and club training.*
  - *Winner: US Sailing Sportboat of the Year, 2003*
- *18m Fast Cruising Catamaran, Preliminary Design.*
- *55 ft Cruising Catamaran, Preliminary Design.*
- *60 ft Wylie Designed Schoolship, Derek M Baylis: Report and Structural Engineering for USCG certification.*
- *40 ft Racing/Cruising Trimaran, Preliminary Design for private client.*
- *Other projects include engineering of keels and rudders for numerous racing and cruising sailboats.*
- *Designed, developed and maintained company website, www.AntrimDesign.com.*

Qualifications

Computer skills: Solidworks, AutoCAD, Multisurf, GHS, Ansys CFX, and Microsoft Office applications

Patents: "Bow Lifting Body," Patent No,: US 7,191,725 B2, "Low Drag Submerged Asymmetric Displacement Lifting Body," Patent No,: US7,004,093

Publications: Ninth International Conference on Fast Sea Transportation, FAST 2007. "A New Paradigm for High-Speed Monohulls: the Bow Lifting Body Ship."

NAVATEK

Charles Field
Mechanical Engineer
Vessel Operator

Education

2012 MS Candidate, Ocean and Resources Engineering, University of Hawaii-Manoa
2010 BS, Mechanical and Ocean Engineering, Massachusetts Institute of Technology

Experience

Navatek, Ltd., Honolulu, HI **8/2010-Present**
Engineering Intern
Analyzes ship motions data with focus on vertical accelerations, animates object movements based on simulated motions data. Detailed experience:

- Ship motions comparison
  - Determines appropriate sea trials for hull comparison based on GPS data
  - Calculates significant accelerations for corresponding sea trials
- Computer animation
  - Represents CAD model as a Non-uniform rational B-spline to increase processing speed
  - Determine random incident waveform from input wave heights and periods
  - Simulate real-time animation with necessary time step calculations

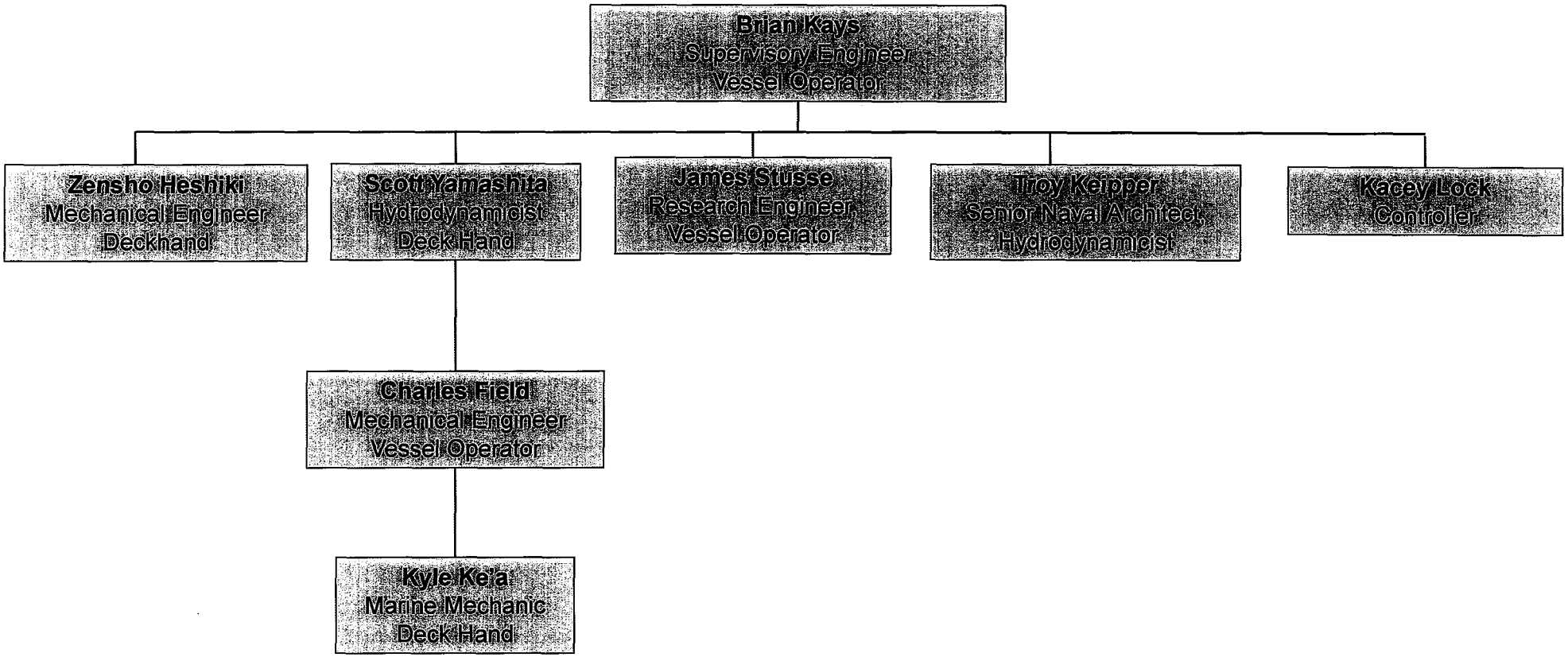
Makai Ocean Engineering, Inc., Waimanalo, HI **6/2009-8/2009**
Engineering Intern
Drafted mechanical drawings for various engineering projects, researched requirements for heat exchanger testing. Detailed experience:

- Seawater Air Conditioning projects
  - Drafted mechanical drawings for city-wide pipe layouts for variety of projects
  - Performed weight calculations for redesigned pipe weights
  - Performed head loss calculations from pipe lengths
- Ocean Thermal Energy Conversion project
  - Summarized technical papers with focus on heat exchanger performance tests
  - Designed heat exchanger test facility layout based on instrumental requirements

Qualifications

Member, SNAME
Computer skills: Solidworks, AutoCAD, Matlab, and Microsoft Office applications

Navatek Ltd. Research and Hydrodynamics Support Staff



Notes: All employees highlighted in gray will play a role in the project. See page 5 in the financial section of the grant application for time allocation details for each employee.

C. Compensation

The applicant shall provide the annual salaries paid by the applicant to the three highest paid officers, directors, or employees of the organization by position.

Highest Paid Personnel	Annual Salary
Supervisory Engineer/Vessel Operator	$130,558.48
Controller	$111,566.00
Research Engineer/Vessel Operator	$110,011.20

VI. Other

A. Litigation

The applicant shall disclose any pending litigation to which they are a party, including the disclosure of any outstanding judgement. If applicable, please explain.

There is no litigation pending with Navatek.

B. Licensure or Accreditation

The applicant shall specify any special qualifications, including but not limited to licensure or accreditation that applicant possesses relevant to this request.

Not applicable.