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Claims

CERTIFICATE OF SURVEY

NAME OF VESSEL PARAGON	DOCUMENTATION U.S. Doc. No. 993613
OWNER University of California Santa Cruz Longs Marine Lab	HULL IDENTIFICATION NUMBER H.I.N. # RD0032121792
YEAR BUILT 1992 H & F Custom Boats	MODEL RADON 32
TYPE OF VESSEL Auxiliary Fiberglass Sailboat	DESIGNED USE Recreational
DOCUMENTED LENGTH 32' l x 10' B x 5' Depth	DISPLACEMENT Estimated 7000 Lbs. (Not weighed)
MACHINERY YAMAHA Outboard motors Twin F350 Gasoline 700 H.P.	TANKAGE 450 Gallons Total Gasoline (2) 120 Gallon saddle tanks (2) 50 Gallon forward tanks (2) 55 Gallon after tanks 50 Gallons Water
STABILITY TEST REQUESTED BY Jared Figurski - Ocean Technician jared@mbari.org (831) 775-1967 (831) 818-2769	SURVEYED ON BEHALF OF Monterey Bay Aquarium Research Institute 7700 Sandholt Rd. Moss Landing, CA 95039
DATE OF TEST December 7, 2016	
LOCATION N 36° 53' x W 121° 52' Moss Landing, CA 95039	ATTENDING Capt. Joseph W. Rodgers CMS ASA

Comments: On December 7, 2016 a dead weight survey was conducted on the research vessel PARAGON, U. S. Doc. NO. 993613. On the basis of that survey and conservatively estimated light ship, stability calculations have been performed. Results indicate that the stability of the R/V PARAGON as presently outfitted and equipped, is satisfactory for the operation in its intended use on protected waters provided that the operation restrictions stated in the following report's recommendations be observed.

This certificate is designed as a standard presentation of particular facts about the vessel; however, the surveyor's attached report remains the basic information.



The Society of
Naval Architects &
Marine Engineers



National
Association
Marine Surveyors



Cargo Control Group
Internat'l Cargo
Surveyors



American
Arbitration
Association



American Boat
& Yacht Council

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PARAGON

A
1992/93
H & F BOATS
RADON 32



2016 STABILITY REPORT INDEX

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PREAMBLE

The following marine survey report provides general information on the vessel known as PARAGON, a 1993 completed, RADON 32 workboat currently outfitted and utilized as an inshore research craft. The survey reviews vessel's Certificate of Documentation (C.O.D.), provides an inventory of equipment on board, notes vessel's overall condition, provides an opinion as to stability and states suitability for its intended service.

THE FUNCTION OF THE SURVEY

The function of this survey was to assess the vessel's overall condition and to establish stability suitability for its intended service as a coastal oceanographic research vessel deploying mid-water C.T.D. Bathymetry, current temperature, and depth measurements.

The standards and rationale utilized by the undersigned CMS / ASA certified marine surveyor are based on the current theory and methodology of the marine survey profession utilizing a systematic analytical research approach so as to reach a reasonable and defensible conclusion as to the subject vessel's present day suitability for service.

Comments: *It is up to the reader of this report to review each of the characteristics and condition of this boat as mentioned and understand the implications of the survey findings and to interpret them in terms of their own requirements.*

GENERAL

On December 7, 2016 the undersigned surveyor did perform a simplified stability test on the research vessel known as PARAGON. Jared Figurski (Monterey Bay Aquarium Research Institute) requested the survey, opened the vessel, and was in attendance during the stability test. This survey inspection and stability test took place while said vessel was located in the water at the docks of M.B.A.R.I. Moss Landing, CA 95039.

The purpose of the survey was to note the vessel's type, comment on its overall found condition and to deduce a realistic assessment of present day condition. The intention of the stability test was to determine if the vessel had adequate stability to safely incorporate a C.D.T. mid-water trawl winch. This information is designed and intended exclusively for vessel owner/operator considerations and review.



Comments: *The R/V PARAGON was visually inspected and photographed in the water. The vessel's documentation was reviewed, the hull was measured, equipment on board inventoried, and simplified stability test performed.*

THE SCOPE OF THE SURVEY

This survey is a factual report on the visual inspection carried out within the limitations stated below, and the opinions expressed are given in good faith as to the condition of the vessel as seen at the time of inspection.

LIMITING CONDITIONS OF THE SURVEY

It must be made known that:

- Underwater wetted surface area was not made available for inspection
- Tanks were not measured nor internally accessed, and inspection in or under was limited
- Sea trial was not performed

Comments: *No destructive opening or testing was undertaken. The survey carries with it no guarantee against faulty design or latent defects or suitability of the vessel for any particular purpose other than stated, nor any guarantee of compliance with any particular rule, requirement, regulation, law standard or code. Parts of the structure, which were covered, unexposed or inaccessible, were not inspected.*

IDENTIFICATION AND DESCRIPTION OF THE VESSEL

The description of the PARAGON in this report is based on:

- U.S. Certificate of Documentation
- Inspection of the vessel in the water
- Taking an inventory of accompanying equipment
- Taking vessel measurements

Comments: *The attending surveyor has provided manufacturers' names, models, identification numbers and weight specifications where possible.*

COAST GUARD VESSEL DOCUMENTATION

Vessel Name:	Paragon	USCG Doc. No.:	993613
Vessel Service:	Research Vessel	IMO Number:	*
Trade Indicator:	Registry	Call Sign:	*
Hull Material:	FRP (Fiberglass)	Hull Number:	RD0032121792
Ship Builder:	H & F Custom Boats	Year Built:	1993
		Length (Ft.):	32
Hailing Port:	Santa Cruz Ca	Hull Depth (Ft.):	5
Owner:	University Of California, Santa Cruz Long Marine Lab Mark Carr 100 Shaffer Rd Santa Cruz, Ca 95060	Hull Breadth (Ft.):	10
		Gross Tonnage:	10
		Net Tonnage:	8
Documentation Issuance Date:	February 24, 2016	Documentation Expiration Date:	March 31, 2017
Previous Vessel Names:	No Vessel Name Changes	Previous Vessel Owners:	University Of California, Santa Cruz Ronald R Rector

Comments: *The Certificate of Documentation was presented on board and found current and in order. The above information has been copied directly from the data base of: The United States Coast Guard Documentation Center 2039, Stonewall Jackson Falling Waters, West Virginia 25419-9502 1-800-799-8362 <http://www.uscg.mil/hq/g-m/vdoc>*

LIEN HOLDER

No Preferred Ship Mortgage

Comments: *No liens or attachments recorded.*

HULL IDENTIFICATION NUMBER

RD0032121792

Comments: *Hull Identification Number is a unique 12-digit alpha-numeric identification number that all boats manufactured after 1972 **must** show on their transom and reflects the manufacturer, serial number, and month and year of build. The vessel's H.I.N. # was not found. H.I.N. taken from registration.*

VESSEL'S PARTICULARS

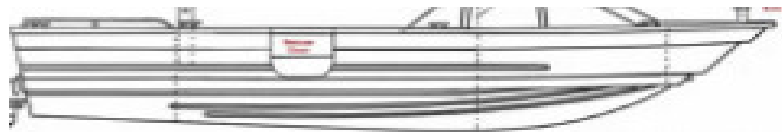
Name:	PARAGON
Designer:	Rod Radon
Builder:	H & F Custom Boats 50510 Highway 101 Bandon, OR 97411
Model:	Radon 32 Commercial
Year built:	1992
Model year:	1993 completed
Builders hull #:	121
Type:	Commercial Dive / Workboat
Length:	37'07" L.O.A. X 32'04" L.O.D. X 22'02" L.W.L
Beam:	10.25' Outside, 8.79' Inside
Draft:	3'
Freeboard Forward:	32"
Freeboard amidships:	26"
Freeboard aft:	23"
Displacement:	Estimated 10,000 +Lbs.
Ballast:	None
Category:	Near coastal
Capacity:	8 persons
Displacement to length ratio:	

Description: This design stems off the California commercial urchin and abalone boats that were utilized in Southern California waters off of Santa Barbara Channel Islands. These boat designs proved popular over the years as efficient, fast and responsive workboats. The original design comes from a yard in Santa Barbara; design known as Radon. This particular craft was put in limited production by a custom boat building shop in Oregon.

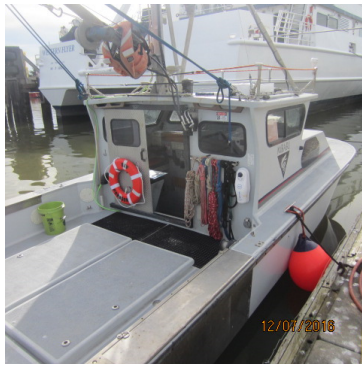
The semi-deep V-shaped mono hull is capable of planning at high speeds. The boat has a conventional flared stem. Topside freeboard is of low. Topside shows a Navy gray gel-coat finish. The beam is wide at 10 feet big and for a stable work platform. The transom is flat. An extended "ARMSTRONG" outboard motor bracket has been added for additional buoyancy and mounting of twin outboard motors.



Underwater wetted surface area shows a deep V-entrance extending to a shoal draft underbody with multi splash chines molded in place and single and hard main chine.



The all fiberglass hull has been completely decked over with a textured nonskid decking. The bow stem is equipped with an aluminum anchor chock and diamond nonskid stem plate. A Sampson post is fitted. The forward flight deck houses a 16" hydraulic operated anchor windlass. Side decks measured 14" and allow a complete walk around of a modern pilothouse and forward and equipped with (3) reversed rubber gasket square windows. Cabin sides have a fitted oval window and a sliding rectangular window. Full machinery instrumentation and controls and a full range of modern electronic navigation devices are protected within the pilothouse. A sit-down helm station is to starboard complete with footrest. An added L-shaped observation bench is across the way. A cuddy cabin is forward. Behind the bow chain locker is a V-berth with storage compartments under and shelves on the side.



A sliding companionway door faces the aft work deck area, which measures some 105" wide x 144" long. A knee-high 18.5" deep bulwark surrounds work deck, which has been divided with (2) saddle fuel tanks and (4) fish hold large storage compartments.

Work deck is equipped with a pressurized raw water hose bib.

A garage machinery compartment is to stern and equipped with a pneumatic lift hatch. Compartment houses ship battery banks, a Honda gas powered motor powering a hydraulic motor, hydraulic reservoir, bilge pumps, fuel tanks and fuel control valve.

The vessel is rigged with an aluminum mast, which is frame-supported off the cabin top and equipped with a working boom with hydraulic lift which

The vessel is powered by twin YAMAHA 350 h.p. v-8 four-stroke outboard motors, which may readily push the boat at 25 kn cruising speed and up to 40 kn on flatwater.

Comments: Ron Radon design and built Radon Boats of Santa Barbara, CA, a company famous for building commercial and utility work boats. The boats were primarily designed for the urchin and abalone dive market, but have been utilized for all types of utility workboats. Radon Craft was made famous in the mid-1970's for their performance and work boat capabilities. Vessel models came in 18', 20', 22', 24', 26', 27', 28', 30', 32', 34', and 36' models. Many boat builders have emulated or acquired the Radon Hull around the world due to its superior performance and stability especially in rougher ocean conditions. The boat has been redesigned for sporting and fishing pleasure and for commercial applications such as fire and police boats. The design has proved popular. This particular vessel was originally built for and utilized as a commercial urchin dive boat out of Oxnard, California. The University of Santa Cruz purchased the craft in 2001 and repowered it. The University utilized the vessel for near shore scuba diving and oceanographic research platform for kelp forest monitoring. The vessel was later loaned for use by Monterey Bay Aquarium Research Institute.



Comments: The vessel shows no modifications from its original design and cabin layout.

LENGTH-TO-BEAM RATIO

Relatively beamy

Comments: *Beaminess (lower L/B) usually adds to initial stiffness and interior room, but also makes for greater difficulty recovering from a capsize.*

TYPE OF CONSTRUCTION

The PARAGON has been constructed entirely out of fiberglass-reinforced plastics by H & F Custom Boats, Brandon, Oregon to a RADON 32 design. The hull has been fabricated utilizing alternating layers of fiberglass mat and biaxial woven cloth which have been hand laid within a female mold utilizing iso-phantholic polyester resin as a laminating agent. An internal molded structural reinforced floor pan providing backbone. Fiberglass reinforced bulkheads divide the accommodation and hold and provides additional transverse strength. Supplemental laminates are added at attachments for additional strength.

A cored molded fiberglass deck and cabin assembly has been fully bonded without the use of fasteners, to the deck Blanche. The deck was constructed by a molding system (glass fiber, synthetic resin sandwich) for strength/weight ratio. All areas of working and maneuvering on deck are textured nonskid. Solid reinforced areas are constructed at points under the deck fittings. The exterior of the vessel has a navy gray finish. The bottom of the boat has been painted with an ablative anti-fouling paint.

Comments: *The fiberglass structure was found in sound condition. The critical deck to hull joint was tight. All structural bulkhead bonding was found intact. The topside gel coat exterior finish was clean and clear.*

MACHINERY COMPARTMENT

The vessel is powered by twin outboard motors mounted on an Armstrong bracket off the transom. The vessel was originally powered by inboard diesels, which were housed in aft engine compartment. This large garage is accessed by pneumatic lift hatch. Area houses:

1. (4) WEST MARINE deep cycle 6V 230 batteries
2. PERKO battery control switch & DC wiring distribution
3. HONDA Model GX390 11H.P. gasoline motor powering a
4. Oilgear PVM A-Frame 014 variable displacement hydraulic pump (1500 PSI, 8 GPM)
5. 20 Gallon aluminum hydraulic tank and filter
6. (4) (Unused) Fuel tanks and fuel control switch
7. Hydraulic winch motor and plumbing
8. RULE HD Bilge pump



Comments: *The compartment was found clean. No evidence of oil leaks or diesel odor. Reasonable access is provided to the machinery for general service needs. Gasoline motor fitted in unvented enclosed area. No automatic fire extinguishing system.*



MACHINERY

Manufacturer: YAMAHA
 Model: F350XCB / LF350XCB
 Serial #: 6AX-1008128 / 6AX1005077
 Year: 2013
 Type: 4-Stroke, vertical, water-cooled gasoline engine
 HP rating: 350 HP @ 6000 RPM
 Number of cylinders: V (8) 60° 32 valve
 Displacement: 5.3 L
 Ignition system: DOHC 12V DC turnkey activation
 Engine control: YAMAHA electronic lever gear and throttle engage
 Lubrication system: Forced lubrication pump
 Cooling system: Raw water
 Exhaust system: Wet out exhaust
 Engine weight: Approximately 780 LBS each **Approximate weight 1,560 LBS +**
 Instrumentation: YAMAHA Smart Panel

- Tachometer
- Oil pressure
- Cooling temperature
- Volt meter
- Fuel level indicator
- Hour meter
- Diagnostics

 Alarm: Audio / visual

- Low oil pressure
- Cooling water temp

 Accessories: Alternator(s)



Comments: Twin YAMAHA 350 h.p. each outboard motors mounted on an ARMSTRONG extended positive flotation motor bracket. The machinery found in clean running condition.

FUEL SYSTEM

Fuel type: Gasoline 89 minimum pain
 Number of tanks: (6)
 Location: P/S amidships saddle tanks (In use)
 P/S mid aft (Not in use)
 P/S aft reserve tank / generator fuel tank (Not in use)
 Date : 1992
 Material: Fiberglas
 Shape: Rectangular box
 Capacity: 450 Gallons +

Port saddle tank	120 gallons	Starboard saddle tank	120 gallons
Port aft tank	55 gallons	Starboard aft tank	55 gallons
Port reserve tank	50 gallons	Starboard gen. tank	50 gallons
TOTAL	225 gallons	TOTAL	225 gallons

Approximate weight 2782 ++ LBS.

Gauge:	YAMAHA Fuel monitor
Flex section:	3/8" hose / U.S.C.G. Type A1 neoprene
Fuel filters:	YAMAHA water fuel separator
	Engine mounted secondary fuel filter element

Comments: *The fuel system was found set up and operational meeting N.F.P.A. standards for installation. The tanks fill from a labeled "GAS" deck plates and vents to atmosphere at the topside and transom. Inspection inside or under the tank was not possible due to installation. Capacity information has been reported. Labeled manifold control and emergency fuel shutoff valves. The auxiliary generator has been removed. Only the two saddle tanks are being utilized with the reported capacity of 152 gallons of fuel on board. **Approximate weight 939.8 + LBS***

BILGE PUMP

GUZZLER Manual diaphragm pump mounted in cabin
 RULE H.D. 12V DC pump with automatic float switch rated at 4.3 GPM
 RULE 3700 12V DC pump with automatic float switch

Comments: *The bilge was found clean and dry. All pumps mounted and operational.*

OTHER PUMPS

PENTAR SHUREFLO 12V DC raw water deck wash down pump

Comments: *Reported operational. Not tested.*

HYDRAULIC SYSTEM

Drive motor:	HONDA 330cc gasoline motor
Hydraulic pump:	OILGEAR veritable displacement
Reservoir:	20 Gallon aluminum tank with filter

Comments: *Gasoline motor drives a veritable displacement hydraulic pump which powers:*

1. *Anchor windlass*
1. *C.D.T. Drum winch*
2. *Power winch*
3. *Boom hoist lift*

Comments: *hydraulic system set up and operational. Hydraulic fluid rated hoses are like new and equipped with proper hydraulic terminal ends.*

Approximate weight 150+LBS

WATER SYSTEM

Number of water tanks:	(1)
Location:	Amidships
Material:	Polyethylene plastic rectangle box
Capacity:	50 Gallons
Water lines:	Reinforced vinyl hose
Water pump:	12V DC on demand water pump
Gray water:	Directed overboard

Comments: *Water tank is secured by furniture. Tanks fill from side deck fill plate labeled "WATER". Water is gravity fed off the base of tank. Water system is not in use at this time. Water tank empty.*

Approximate weight 418 LBS

ABOVE WATERLINE THROUGH HULL CONNECTIONS

PORT	TRANSOM	STARBOARD
Fuel tank vent	Fuel tank vent	Fuel tank vent
Cockpit scupper		Cockpit scupper

Comments: *Topside mounted vents and drains located and identified as reported.*



SAFETY EQUIPMENT

ORION Emergency alert signal flare 12mm signal flares gun kit
LIFESLING Man overboard recovery ring
Radar reflector
WEST MARINE A.I.S. ship identification
ACR E.P.I.R.B. 406 category II position radio beacon

FIRE EXTINGUISHERS

(2) AMEREXABC 3 Lbs. dry chemical fire extinguishers

PERSONAL FLOTATION DEVICES

(8) Standard PFD Type II adult life jackets
(8) Commercial PFD Type I adult life jackets
(8) Survival immersion suits
(1) PFD Type IV JIM BUOY throw ring with lanyard

Comments: *The safety equipment listed was on board at time of survey inspection. Signal flares are dated. See notes following.*

SOUNDING DEVICES

Sound Signal 12V DC air horn

Comments: *U.S.C.G. further requires a bell like sounding device for vessels of this size and type.*

NAVIGATION LIGHTS

AQUA SIGNAL 12V DC LED

- P/S Bow cabin mounted side lights
- Stern light
- Masthead anchor light

Comments: *The vessel meets international guidelines for navigation lights for vessel size.*

DECK ILLUMINATION

Mast mounted fore deck directional
Mast mounted deck directional

Comments: *Lights were mounted and operational.*

ANCHOR GEAR

WEST MARINE triad 26 LBS. 10 KG with section of 5/16 chain and approximately 200' rode
SIMPSON LAWRENCE 22 LBS Claw with section of chain and nylon 1/2" rode

ANCHOR WINDLASS

15" aluminum hydraulic operated windlass mounted on fore deck

DECK CLEATS

Sampson post mounted on fore deck
P/S forward, aft mounted 12" stainless steel horn cleats

Comments: *The stem is equipped with an aluminum anchor chock with roller. The main anchor is suited for vessel size and type and is mounted and ready to deploy. The anchor chain and rode were not laid out for accurate measurement or complete inspection.*

NAVIGATION

Helm Compass

ELECTRONIC NAVIGATION DEVICES

GARMIN 760 GPS / RADAR Display

GARMIN 7612 GPSMAP / chart plotter / depth sounder display

RAYMARINE Auto helm series autopilot

COMMUNICATION DEVICES

ICOM M3-02 VHF Radio

Comments: *Modern array of electronic navigation devices mounted and operational*

BOSUNS LOCKER MISCELLANEOUS EQUIPMENT

Operator's manual

Equipment manuals

Bolt cutters / toolbox

Garden hose

Seat cushions / V-berth upholstery

Dock lines

(2) Large orange fenders

Shore power electrical cord

Comments: *The items listed were onboard at time of survey and found in serviceable condition. Additional equipment was reported but not seen.*

DECK WINCH

Manufacturer: OCEAN ENGINEERING (reported)

Use: Oceanographic

Model: Skid mounted cable hydraulic research winch

Year: 2016

Drum dimensions: 34"

Level wind: Electric driven adaptive program

Break: Actuator brake drum

Gear drive: Hydraulic motor gear

Wire type: CTD cable

Controls: Jog control-speed control

Davit: 4" x 4" S/S Square pipe with 65" center line extension arm

16" x 2 1/4" Running block



OTHER WINCH(S)

7" Hydraulic capstan with 500 pound lift mounted cockpit

3" Hydraulic boom lift ranch

Comments: *Hydraulic operated winch is specifically designed for oceanographic research purposes. "AS NEW" condition aluminum drum. Stainless steel pipe skid*

Winch approx. weight 700 LBS

Davit approx. weight 250 LBS

12V DC ELECTRICAL SHIPBOARD SYSTEM

12V DC shipboard system / engine start

(4) WEST MARINE 6V PERKO Master Combination and disconnect switch

Master distribution panel with labeled circuit breakers

YAMAHA 70 amp alternators

- STERLING PRO CHARGE automatic battery charger 125V AC-12V DC 30 amp
- XANTREX Sinewave inverter 1000 W 12V DC-115V AC
- XANTREX Sinewave inverter 3000 W 12V DC-115V AC

Comments: *DC shipboard system found set up and operational. Insulated cabling throughout and distribution panels equipped with labeled circuit breaker switches. The vessel is wired with select DC cabin lights, courtesy lights, LED navigation lights, outlet, instruments, bilge pumps and accessories. The electrical system was set up and operational meeting ABYC guidelines for wiring size, harness and labeled electrical circuits.*

120 V AC ELECTRICAL SYSTEM

30 Amp/120V shore power plug-in connection

MARINE BOAT CABLE double insulated wiring

Comments: *Simplified direct shore side AC connection*

THE RIG

4.5" Aluminum pipe mast mounted on cabin top in tabernacle base

Aluminum pipe A-frame supported

Masthead equipped with anchor light

GARMIN radar antenna

Offset spreader with forward searchlight / deck directional light / GPS antenna

(2) Shakespeare folding mount VHF radio antennas (2) Aft deck directed work lights

3.5" Aluminum pipe working boom with pull master type hydraulic operated lift winch

Block and tackle topping lift P/S boom tackle



Comments: *The mast and boom were found set up and in good overall condition. The rig is proportionate to the vessel size and type.*

REPORTED LOSSES

No reports of prior loss.

No indications of past grounding, collision, fire or other damage

COMPLIANCE

1. The Safe Boating Act of 71 provides for the standardized Hull Identification Numbers (HIN) system and required all manufacturers to affix them permanently to each boat. The number must be at least 1/4" high and affixed to the starboard side of the transom within two inches of the top. A second copy of the number is to be affixed to the boat, presumably inside the hull. No number was found
2. The Federal Water Pollution Control Act prohibits the discharge of oil in any navigable water of the U.S. Regulations issued under the Federal Water Pollution Act require all vessels with propulsion machinery to have a capacity to retain oily mixture on board and be equipped with a fixed or portable means of discharge oily mixtures to a reception facility. Oil absorbent pads are suitable to meet this requirement. In addition, vessels 26 ft. in length or over must display a place card of at least 5 in. by 8 in. made of durable material, fixed in a conspicuous place near the machinery stating that the discharge of oil is prohibited.

SUGGESTIONS

1. Batteries should be placed in acid resistant boxes equipped with vented lids and made secure from movement in all direction as per A.B.Y.C. general guidelines.
2. Navigational information found on board a the vessel includes:
Charts, coast pilot, Coast Guard light list, tide tables. Keep updated.
3. This vessel uses a carbon based fuel diesel for propulsion. During the burning of these fuels carbon monoxide (CO₂) gas may be created due to incomplete combustion. Adequate ventilation must be provided at all times. A carbon monoxide alarm is mounted.
4. Masters of all vessels must insure that each item of life saving equipment is in good working order and ready for immediate use whenever the vessel is operated. Safety items should be serviced in accordance with manufacturers' guidelines.
5. Due to the nature of gasoline the placement of an automatic type fire extinguishing system within the enclosed machinery compartment is highly suggested.
6. Wear life jackets when working on the water

SUMMARY OF INSPECTION

The research vessel known as PARAGON was visually inspected, sounded, and photographed in the water. U.S. Documentation was found current and in order.

The equipment listed in this report was found on board at time of survey.

It is the attending surveyor's opinion based upon this inspection that:

The "PARAGON" is in **SOUND CONDITION** and as outfitted is suited for its designed and intended use as a **NEAR COASTAL RESEARCH CRAFT**.

This vessel should be considered as a **REASONABLE MARINE RISK** as long as it is maintained and continued to be utilized in a seamanship like manner.

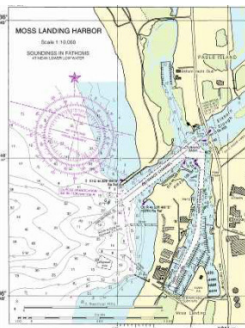
NOTES

United States Coast Guard courtesy vessel safety examination January 20, 2016

VESSEL'S CURRENT LOCATION

Monterey Bay Aquarium Research Institute dock
N 36° 53' x W 121° 52' Moss Landing, CA 95039

Comments: *An all-weather protected, small craft harbor operated by Moss Landing Harbor District, a subdivision of the state of California located on the east side of Monterey Bay, Northern central California serving interests of around 1000 recreational and commercial boaters. The harbor is protected by a sand spit and breakwater channel. Contact harbormaster at 831-633-5417*



OPPORTUNITIES

- ✓ Size
- ✓ Condition
- ✓ Location
- ✓ Outboard motors

CONSTRAINTS

- Gasoline

SIMPLIFIED STABILITY TEST

DATE OF TEST

December 7, 2016 is the date given in this report and is the date to which the report applies. The deadweight survey has taken into consideration the PARAGON's type, its found condition, its present location, as well as the weather and sea conditions and other factors that may influence the forces of prevailing on the vessel during this test.

Comments: *The weather and sea condition and the forces of nature are subject to constant change. The vessel's stability value will change with these fluctuating conditions.*

Date of test:	12/7/2016
Name of vessel:	R/V/ Paragon
Documentation No:	993613
Hull #:	RD00 32121792
Length:	36' L.O.A. X 32' L.O.D.
Beam:	10'
Draft:	3'
Watertight compartments:	Partial subdivision
Height:	17.50'
Mooring arrangement:	Tied to dock
Wind:	SW 0-5 Knts
Sea condition:	Mild
Total test weight:	2460 LBS. +
Total distribution:	2460 LBS. +
Load height:	52"
Anticipated suspended weight:	300 LBS
Freeboard forward:	32" loaded on trim without crew
Freeboard amidships:	26" loaded on trim without crew
Freeboard aft:	23" loaded on trim without crew

December 7, 2016 is the date given in this report and is the date to which the report applies. The deadweight survey has taken into consideration the PARAGON's type, its found condition, its present location, as well as the weather and sea conditions and other factors that may influence the forces prevailing on the vessel during this test. The weather and sea condition and the forces of nature are subject to constant change. The vessel's stability value will change with these fluctuating conditions. Measurements were taken of the vessel without list. The total weight of the vessel with mounted gear as described in the survey report (not including passengers or crew) was estimated. Freeboard was measured from the distance from the sheer line to the loaded waterline. As this is a cockpit vessel, the gunwale top was measured along an imaginary extension of the sheer line in way of the cockpit and was considered the sheer line. References to freeboard were taken forward, amidships and aft from the water line to the sheer line.

(10) Human test weights were utilized for combined weight of 2460 Lbs. The test weight defines only the weight that was moved during the test. Weights representing equipment and/or fuel and oil and/or water are considered part of the vessel in a "loaded condition".



Distribution of the human test weight included the distribution port and starboard so as to obtain the abnormal trim. Human test weights were arranged so that the vertical center of gravity CG was above deck. The vertical distribution of the test weight was such as to stimulate the most unfavorable vertical pull likely to occur when utilizing the C.T.D. winch.

With the vessel in this loaded condition, calculations were performed to obtain an estimated anticipated heeling moment. An immersion mark with pencil was placed 12" and 16" on the topside amidships above the load waterline prior to the application of the test weight to determine extreme heeling moment. An incline gauge both electronic and mechanical utilized to determine the degree of list. (No more than 8 degrees of list occurred). All other measurements were taken in feet. The test was performed with (2) of the fuel tanks $\frac{3}{4}$ full. Hydraulic tank was full. All other tanks were reported empty. The vessel was otherwise fully afloat and loaded. Mooring lines were slacked. During the loading and moving of human test weights, care was taken for any evidence of low stability.

SUMMARY OF INSPECTION

On the basis of the survey and estimated light ship stability calculations, the vessel PARAGON as presently outfitted and equipped was determined to have **satisfactory stability**. The vessel as outfitted showed reasonable buoyancy. The vessel's beam is wide and center of gravity is well-defined. Metacenter height was found reasonably high with the vessel in a loaded condition. The values of the test indicated reasonable stability for use as outfitted on protected waters.

The chine amidships did rise out of the water slightly as a result of the heel test. However the vessel did not list past the placed immersion mark.

Cockpit scuppers were found to be at or near the new waterline at the final test angle of list so as to possibly permit entry of water into the cockpit. The calculations did not specify account for high winds, heavy seas or extreme movement of gear, equipment or passengers.

The following restrictions should be observed.

RECOMMENDATIONS

1. All deck hatches including fish hold and machinery compartment access hatch(s) should be made secure and watertight when the vessel is in operation. The placement of tie downs or set pins should be considered. In addition all doorways and other openings through which water can enter the hull should remain closed when the vessel is engaged.
2. Cockpit scuppers bulwarks must always be open while underway. However, the cockpit scuppers were at or near the imaginary new waterline during the final test angle of list so as to possibly permit entry of water into the cockpit. Such openings on each side are fitted with one-way flappers but these may be inadequate.
3. A limit of passengers should be considered when employment of trawl winch. Suggested limit of one operator and two crewmembers on board.
4. No extra weight, crewmembers or passengers to be on cabin top.
5. All gear and other large weight items should be stowed low, below in a manner to prevent shifting.
6. Trawling off the quarter or beam generates tremendous forces that can readily capsize a vessel. Care must be taken when maneuvering with equipment off the quarter or beam. Suspended weights act as though the entire weight is being added at the point of suspension. This causes a significant rise in the vessel's center of gravity. Capsizing forces can develop as the metacentric height is reduced significantly and the vessel will move out of a stable condition towards the unstable condition. Recommended practice: minimize the duration of these operations. Extreme caution when lifting over side.
7. A quick release mechanism or some other way for emergency releasing of employed overboard equipment should be considered and used.
8. Minimize the number of partially filled fuel/water or hydraulic tanks. Free surface movement can severely impair the vessel's stability.
9. The vessel is near its capacity. Do not overload. Overloading increases draft and decreases reserve buoyancy, which decreases stability.
10. Maintain at least 1 foot of freeboard (distance from the waterline to the upper gunwale) at all times. If the center of gravity of the vessel moves above the metacenter due to weight addition or poor distribution of weight the vessel could become unstable and if extremely inclined could be in danger of capsizing.

NOTE

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STANDARDS

American Boat & Yacht Council - Standards and Practices for Small Crafts.
United States Coast Guard Code of Federal Regulations, Title 33

ACCURACY

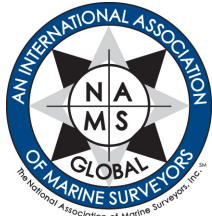
The information presented above is believed to be accurate, but there is no guarantee. It is possible that errors have occurred in the presentation of this material.

ABOUT: Capt. Joseph W. Rodgers is a licensed U.S. Coast Guard merchant marine officer, who from 1978 to present has been professionally involved as a Certified Marine Surveyor, (CMS) with the National Association of Marine Surveyors and appointed to insurance companies, financial institutions, yacht brokers, law firms, corporations, and individuals needing comprehensive appraisals on ships, yachts and private vessels of all sizes and types. His firm of Rodgers & Associates represents American and London Institute of Marine Underwriters. Capt. Rodgers is also a senior member of the American Society of Appraisers, Machinery and Equipment section, holding a designation in Technical Valuation of yachts and ships.



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CERTIFICATION

I have made a personal inspection of the vessel that is the subject of this report. The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and is my personal, impartial, unbiased professional opinion. I have no present or prospective interest in the vessel that is the subject of this report, and I have no personal interest with respect to the parties involved. My compensation is not contingent upon the development or reporting of a predetermined direction that favors the cause of the client, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of the report. The American Society of Appraisers and the National Association of Marine Surveyors have mandatory recertification and continuing education program(s) for all of its senior members. The undersigned is in compliance with these program(s). The analysis, opinions and conclusions were developed, and the findings have been prepared in conformity with and are subject to the requirements of the principles of the National Association of Marine Surveyors code of ethics and the Uniform Standards of Professional Appraisal Practice (USPAP) as outlined by the American Society of Appraisers and the Appraisal Foundation.
Submitted without prejudice,

CAPT. JOSEPH W. RODGERS, C.M.S. / A.S.A



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