





















# **Operating Institutions**









R/V Taani





R/V Resolution





R/V TBD









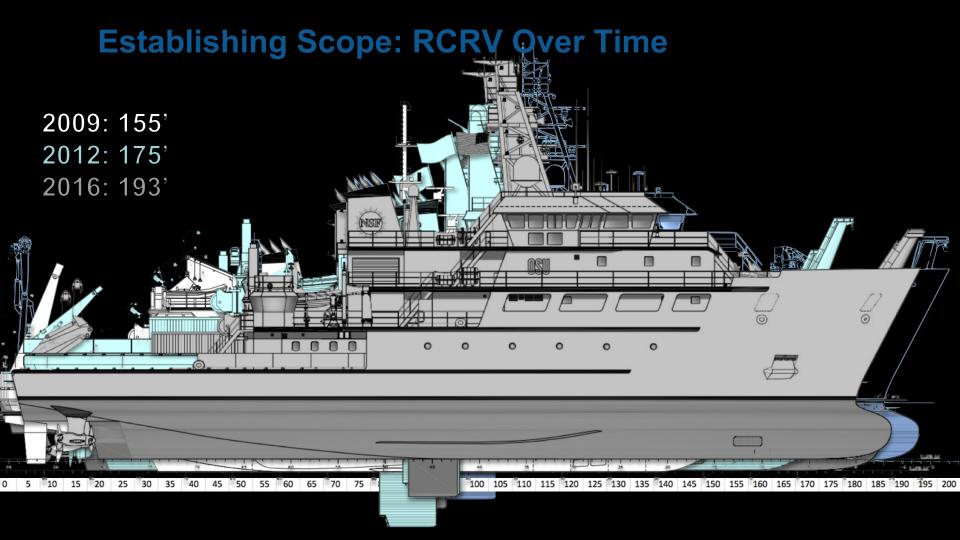














### R/V Resolution Particulars



<ul><li>Length overall199 ft</li></ul>	<ul> <li>Dynamic PositioningABS DP-1</li> </ul>
• Beam 41 ft	Science/Tech Berths16
<ul> <li>Draft @ amidships12.5 ft</li> </ul>	• Crew Berths13
<ul> <li>Regulatory Tonnage .1549 GT</li> </ul>	<ul> <li>Retractable Centerboard (drop keel</li> </ul>
Cruise speed11 kt	<ul> <li>A-frame dimensions25'H x 20'W</li> </ul>
<ul> <li>Max speed13 kt</li> </ul>	<ul> <li>Multibeam SONAREM304, 2040</li> </ul>
<ul> <li>Range6600 nm @ 12 kts</li> </ul>	Number winches
• Endurance21 days min.	• Ice ClassABS Co

















## **Over the Side Handling Equipment**



#### Main Crane

• Folding, telescoping, knuckle boom

• 55 ft Max reach

• 35,000 lb at 20 ft

Towing capable

#### Launch and Recovery System

 Hands Free deployment and recovery

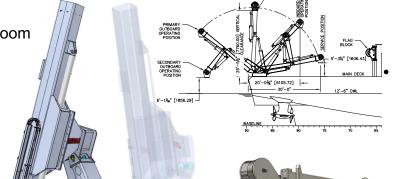
Automated deck to water level

Automated deck to internal lab

Vertical and towing capable

#### Stern A-Frame

- Double-Articulating
- 25 ft from deck to center
- 20 ft width between legs
- Rotating cross beam w/ bolting flange





Winches

### Oceanographic

- **Heave Compensation**
- Auto Pay in/Pay out
- DLT 60,000 lbf
- Max pull 34,000 lbf
- 10,000 Meters

#### Hydrographic

- **Heave Compensation**
- Auto Pay in/Pay out
- DLT 11,600 lbf
- Max pull 3,400 lbf
- 10,000 Meters

















## **Support Equipment**



#### Vans:

Personnel X2

Cold Stores X3Chem. Storage X3

Deck Equipment:

Portable A-frame X3

Portable Crane X3

Portable Winch X3

Transducer Pole X3

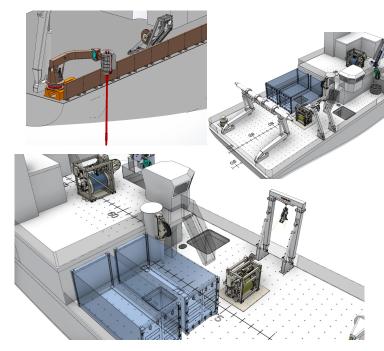
Workboat/Skid X3

PCDRM Coring X1

Deck/Frame X3

Tuggers

• Blocks and Spares X3



**Tension Members** 

Oceanographic Winch

9/16", 3x19 Wire Rope

.681" EO Mech. Cable

5/8" Plasma 12 Strand

Hydrographic Winch

.393 EO Mech. Cable

3/8" Plasma HiCo 12

Cortland EV701272

3 copper

3 Fiber

Steel Tube

Portable Winch

.322" EM Cable

Centerboard

Spare Foot



















### **Acoustic Suite**

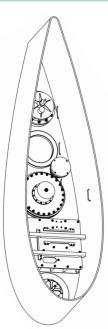


#### Sonar Flat Forward

- Kongsberg EM304: 0.5° transmit x 1.0° receive
- Kongsberg EK80: 38 kHz, 70 kHz, 120 kHz, 200 kHz (all split beam)
- Kongsberg TOPAS subbottom profiler
- Primary 12 kHz transducer
- Sonar self-noise hydrophones (3)
- 3 spare 19" holes for transient transducers

#### Centerboard

- Kongsberg EM 2040
- Teledyne RDI 75 kHz Ocean Surveyor ADCP
- Teledyne RDI 300 kHz Workhorse ADCP
- Secondary 12 kHz transducer
- (1) spare 12inch penetration for transient transducers
- Self-noise hydrophone (1)
- Reson SVP-70 Sound Speed Sensor

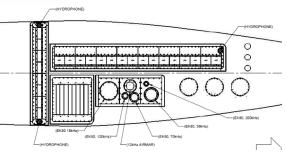


#### Other Systems

- Benthos UDB-9000
- Knudsen 3260
- USBL System

#### Portable Units and Spares

- EM 712 2° x 2°
- EM 2040C
- EK80 Complete
- Sonar Calibration Kit



















### **Sensors**



#### **Underway Surface Seawater Sensors**

- 7x SBE-45 Thermosalinograph
- 7x SBE-38 Intake Temperature
- 10x SBE-43 Oxygen Sensor
- 12x ECO-Triplet (3 configurations)
- 4x WetStar Fluorometer
- 10x C-Star Transmissometer
- 3x TBD pCO<sub>2</sub>\*
- 4x SUNA V2 Nitrate Sensor
- 4x SeaFET V2 pH Sensor
- 4x Flow Control System

#### **CTD Sensors**

- 6x SBE 911 w/Dual T/C Sensors
- 8x Biospherical PAR (Profiling)
- 10x shared with Underway SBE-43
   Oxygen Sensor and C-Star
   Transmissometer
- 7x ECO Fluorometer FLRTD
- 7x SBE-18 pH

#### **Atmospheric Sensors**

- 7x Biospherical PAR (Reference)
- 4x Vaisala PTU330
- 4x Vaisala WXT536
- 8x Kipp and Zonen Pyranometer
- 8x Kipp and Zonen Pyrgeometer
- 3x Vaisala Present Weather FD71
- 4x RM Young Rain Gauge
- 13x Gill 2D & 3D Ultrasonic Anemo
- 16x GoPro (Sky, Sea Conditions)
- 3x ROSR Radiometer\*
- 3x Vaisala CL51 Cloud Radar\*
- 3x Picarro G2401 Atmos Gases\*
- 4x HyperSAS Systems/HyperOCR

# Optional Underway Surface Seawater Sensors (at science request)

- 3x WETLabs AC-S
- 3x TBD Particle Concentration & Particle Size Distribution

#### **Other Sensors**

- 3x TBD Inspection Class ROV
- 6x Kongsberg Seapath 380+
- 3x Centerboard IXBlue Fiber GY
- 3x WaMoS Wave Radar

\* Includes replaceable spares

















## **Vessel Personnel Capacity**



After discussion with OI's, academic fleet and industry the suggested operational crew includes:

Bridge

Master

Chief Mate

Second Mate

W/ Personnel Van

Engineering

Chief Engineer

1st Engineer

<sup>2nd</sup> Engineer

Electrotechnical Engineer

13 Crew: Technicians: Science: 14 Deck

Bosun

AB1

AB2

AB3

### Galley

Chief Steward

Assistant Cook • MarTech. 02

Marine Technicians

MarTech. 01



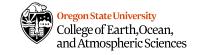








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## R/V Taani Build Update



#### **Under Construction**

- Module 21
  - Shell Plate Fitting
- Module 22
  - Interior Weld out complete, awaiting foundations. Plan Blast/Paint 20<sup>th</sup> November
- Module 31
  - Main deck and Domestic Equipment room pipefitting, Equipment Foundations. Plan Blast/Paint November
- Module 32
  - Framing Weld out continues.
- Module 91
  - Side shell plating installation.
- Module 111
  - Assembly started on outside plating.
- Module 112
  - Cutting stared last week.





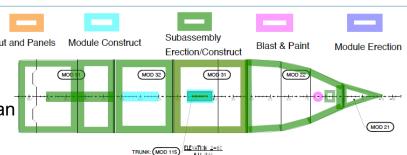


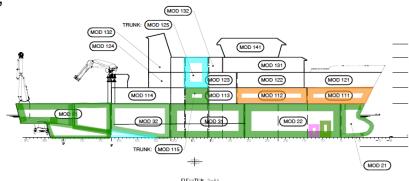














**RV TAANI** 



## R/V Taani









Mod. 22













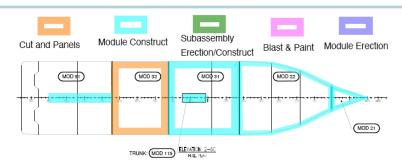


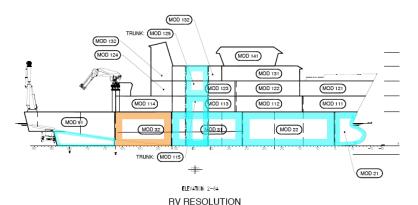




### R/V Resolution Build Update







#### **Under Construction**

- Module 21
  - Shell Plate Fitting
- Module 22
  - Frame fit, drop down and Jet drive thruster foundations and sub assembly in process
- Module 31
  - Shell plate fitting started. Centerboard steel structure in process, FAT of assembly on 11/22. Al portion of centerboard in construction.
- Module 32
  - Panel Fabrication Complete.
- Module 91
  - Start 11/25

















### **R/V** Resolution







Mod. 22 Mod. 32

THE
UNIVERSITY
OF RHODE ISLAND
GRADUATE SCHOOL
OF OCEANOGRAPHY







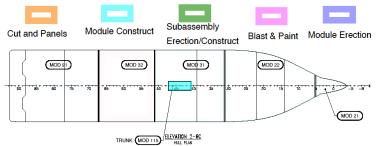


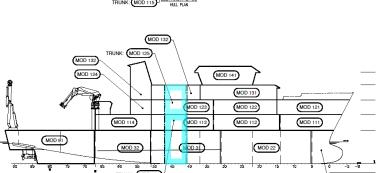












ELEVATION 2-6A RV TBD

Construction Plan

- Schedule approved. Planned start of Construction: 03 March 2020
- Projected Keel-Laying Date: 03 March 2020







MOD 21











# **Engine and Drives**







Caterpillar C-32 Factory Test 5/14/19

Schottel STP Twin Propeller Z-Drives















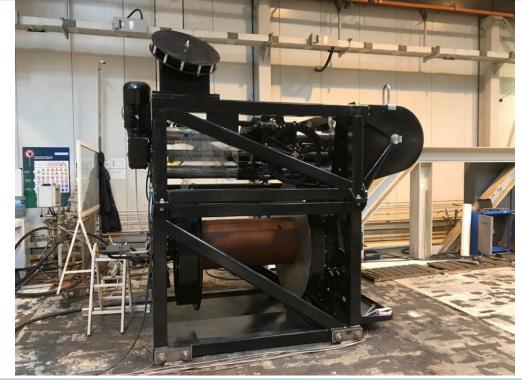


# **Over the Side Equipment**





V1 Hydro Winch FAT 11/15/19, Serbia



LARS FAT 9/12/19, Norway













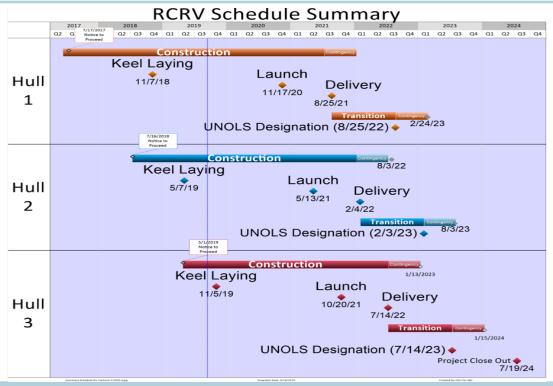






### **RCRV Class Delivery Timeline**















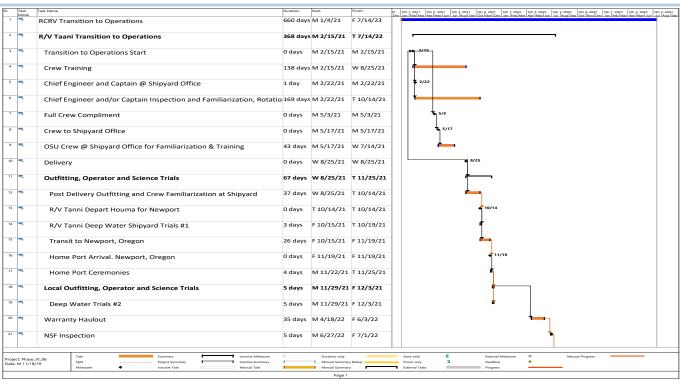




























# **Transition to Operation**



ID	rask .	Task Name	Duration	Start	Finish	O Qtr 1, 2021 Qtr 2, 2021 Qtr 3, 2021 Qtr 4, 2021 Qtr 4, 2021 Qtr 1, 2022 Qtr 2, 2022 Qtr 3, 2022 Qtr 3, 2022 Qtr 1, 2022 Qtr 1, 2022 Qtr 1, 2023 Qtr 2, 2023 Qtr 3, 2020 Qtr
22	Mode				T 7/14/22	Dec Jan Febi Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Febi Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Febi Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Febi Mar Apr May Jun Jul Aug
		Start of Operation	O days	1 //14/22	1 //14/22	
23	-	R/V Resolution Transition to Operations	413 days	M 7/26/21	T 2/23/23	
24	4	Transition to Operations Start	0 days	M 7/26/21	M 7/26/21	199 7/26
25		Crew Training	140 days	M 7/26/21	F 2/4/22	1   +
26	-3-	Chief Engineer and Captain @ Shipyard Office	1 day	M 7/26/21	M 7/26/21	7/26
27	-3-	Chief Engineer and/or Captain Inspection and Familiarization, Rotatio	169 days	M 7/26/21	T 3/17/22	<u>*                                 </u>
28	-5	Full Crew Compliment	0 days	M 11/1/21	M 11/1/21	*11/1
	-5	Crew to Shipyard Office	0 days	M 11/22/21	M 11/22/21	11/22
30	-3	, , , , , , , , , , , , , , , , , , ,	·	M 11/22/21		
31	-3		0 days		F 2/4/22	2/4
32		,	181 days		F 10/14/22	
33		Post Delivery Outfitting & Crew at Shipyard	35 days	F 2/4/22	T 3/24/22	
34					M 4/4/22	
35	-5		·		M 3/7/22	3/7
36	-5		·		W 3/9/22	
37	->		·		M 4/4/22	1 4/4
38	->		·	M 4/11/22		
"	-5		-	M 4/18/22		
40	->		·	M 4/18/22		
41	-3,	<u>,                                      </u>		M 10/17/22		
42	-5	NSF Inspection	5 days	M 1/9/23	F 1/13/23	
Project Date: N	: Phase_P	V_06 Talk Summary Inactive Milestone 9 Spit Project Summary Inactive Milestone 1 Inactive Mi	•	Duration-only  Manual Summary  Manual Summary	Rollup	Start-only C External Milestone ♦ Manual Progress Fish-only 2 Deadline ♦  External Tasks Progress
$\vdash$		Manual Task		Page 2	•	• EASETTINE LABOUR Progress
				Page 2		





















Task Mode	Task Name	Duration	Start	Finish	0 Qtr 1, 2021 Qtr 2, 2021 Qtr 3, 2021 Qtr 4, 2021 Qtr 4, 2021 Qtr 4, 2022 Qtr 2, 2022 Qtr 3, 2022 Qtr 4, 2022 Qtr 1, 2023 Qtr 2, 2023 Qtr 2, 2024 Qtr 3, 2022 Qtr 4, 2022 Qtr
43 5	Start of Operation	0 days	T 2/23/23	T 2/23/23	
44 🤜	R/V GCOC Transition to Operations	394 day:	s M 1/10/22	F 7/14/23	-
45 🤜	Transition to Operations Start	0 days	M 1/10/22	M 1/10/22	[***] 1/10 
6 🤜	Crew Training	100 days	s M 1/10/22	F 5/27/22	
7 =5,	Chief Engineer and Captain @ Shipyard Office	1 day	M 1/10/22	M 1/10/22	1/10
8 =5,	Chief Engineer and/or Captain Inspection and Familiarization, Rotation	169 days	M 1/10/22	T 9/1/22	-
9 =5	Full Crew Compliment	0 days	F 3/11/22	F 3/11/22	3/11
0 =5	Crew to Shipyard Office	0 days	M 5/9/22	M 5/9/22	5/9
1	TBA Crew @ Shipyard Office for Familiarization & Training	40 days	F 5/20/22	T 7/14/22	1
52 =5,	Delivery	0 days	T 7/14/22	T 7/14/22	7/14
3 🤜	R/V GCOC Outfitting, Operator and Science Trials	41 days	F 7/15/22	F 9/9/22	†   <b>*</b>
4 3	Post Delivery Outfitting and Crew Familiarization at Shipyard	35 days	F 7/15/22	T 9/1/22	<u> </u>
5 🤜	Depart Houma for TBA	0 days	T 9/1/22	T 9/1/22	<b>→</b> 9/1
6 🐃	Deep Water Shipyard Trials #1	3 days	T 9/1/22	M 9/5/22	n
7	Transit to TBA	1 day	M 9/5/22	M 9/5/22	1
8 🤜	Home Port Arrive TBA	0 days	M 9/5/22	M 9/5/22	9/5
9 3	Home Port Ceremonies	5 days	M 9/5/22	F 9/9/22	*
0 🤜	Local Outfitting, Operator and Science Trials	130 days	s M 9/12/22	F 3/10/23	1   · · · · · · · · · · · · · · · · · ·
1 3	Deep Water Trials #2	130 days	s M 9/12/22	F 3/10/23	1
2 3	Warranty Haulout	35 days	M 3/13/23	F 4/28/23	1
3 🤜	NSF Inspection	5 days	M 5/1/23	F 5/5/23	1   <b>*</b>
	·				Start-poly C Descript Milastons © Manual Process
oject: Phase	JV_06 Task Summary Inactive Milestone  /10 Split Project Summary Inactive Summary	-	Duration-only  Manual Summa	y Rollup	Start-only C External Milestone  Manual Progress  Finish-only Deadline
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### **Webcams**



RCRV\_Cam-01

RCRV\_Cam-02

RCRV\_Cam-03

RCRV Cam-04















