



PT. AMAN REJEKI INDONESIA

Integrated Solutions

No. : 026/ARI/E/IV/2021
Perihal : Penawaran ARI Simulator

Jakarta, 14 April 2021

Kepada Yth.

Bapak Dr. Capt. MASHUDI ROFIK, M.Sc

Direktur Politeknik Ilmu Pelayaran (PIP) Semarang

Jl. Singosari No. 2A, Semarang

Dengan hormat,

Berikut kami sampaikan penawaran harga untuk:

- Full Mission Ship Maneuvering Simulator (FMSMS) DNV Class A with Tug Handling
- Integration Full Mission Ship Maneuvering Simulator with Ship Stability Simulator

Demikian penawaran ini kami buat untuk informasi lebih lanjut, silahkan menghubungi **Aulivia Tandau** di No. HP: **085211213231** atau melalui email: **ats1982@gmail.com** Kami sangat senang untuk memberikan informasi lebih lanjut dan atau klarifikasi yang mungkin Anda butuhkan atas perhatiannya kami ucapkan terima kasih.

Hormat kami,

Aulivia Tandau Saksono

Direktur



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Notification:

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All picture in this proposal are only for indicative

All specification written in this proposal is minimum to run ARI Simulation

This proposal valid until 31 December 2021



1. FULL MISSION SHIP MANEUVERING SIMULATOR

1.1. BASIC SCOPE OF SUPPLY

INSTRUCTOR SOFTWARE CONSIST OF: • ARI Ship Maneuvering Simulator Instructor Station • ARI Ship Maneuvering Simulator Server Application • ARI GMDSS Module (Instructor) • ARI Assessment Module
SHIP TRAINEE STATION CONSIST OF: • Electronic Chart System Module • Radar/ARPA module Software • Visualization Software Modules • Advanced Visual System for Lookout View (Independent Viewing Station) • GMDSS Module • Navigational Light/Bridge Alarm module • Own Ship Conning/Steering console software based including autopilot, hand steering, NFU steering • Navigation aids simulation software module • Conning & Maneuvering Station software • Resource pack of sound databases • Resource pack for integration of hardware HMI components • Resources Ship and Exercise Area Package are: ☐ 20 own ship models ☐ 25 target ship models ☐ 10 exercise areas
ARI HARDWARE, HARDWARE INTERFACES CONSIST OF: • Maneuvering station • Steering Station • Radar Keyboard • ECDIS Keyboard • PTT Handsets • Screen Based Gyro • Azimuth Thruster Controls
INSTALLATION, COMMISSIONING & POWER UP, SYSTEM ACCEPTANCE TESTS • Project Consultancy • Site Layout, Design Drawings etc. • Power, Network Drawings • Factory Acceptance Test for Hardware Components • Integration with Engine Simulator • Site Acceptance
TRAINING AND HANDOVER [FIVE DAYS]
WARRANTY FOR 12 MONTHS
PACKING, FREIGHT AND TRANSIT INSURANCE FOR SHIPMENT



1.2. ADDITIONAL BRIDGE FEATURES

ADDITIONAL FEATURES:

- Anchoring and Mooring Module
- Ship to Ship
- Maneuvering using tugs
- Maneuvering with mooring lines fixed to jetty
- Maneuvering with mooring lines fixed to buoy
- Anti-Piracy Module
- Fire Control Detection Panel
- Bow/ Stern Monitoring System
- Hull Stress Monitoring
- Ballast Water Control Panel
- Torque Indicator
- Fire door/water tight door monitoring panel

1.3. TUG FEATURES

- Ship Assisting work
- Escort work
- High fidelity hydrodynamic modeling of tug behaviour
- Using custom tug controllers to perform Tug Handling Maneuvering
- Making fast and adjusting line length
- Making towage transit
- Basic rope behaviour under tension
- Visualisation with facility to 360° around the horizon
- Effect of wind and weather conditions
- Push/ Pull action by tug
- Procedural training in tug operations
- Conning and Maneuvering Station



2.1. INSTRUCTOR & INDICATIVE TRAINEE STATION

INSTRUCTOR STATION



Indicative Instructor Station

INSTRUCTOR CAPABILITIES

The Instructor Station is a PC based set up which allows control and monitoring of the exercise.

Instructor can Launch, Pause, Resume exercises including replays. Some of the available features for control and monitoring during exercises include:

- Control and monitoring of the available environmental conditions such as current, visibility, wind, swell, precipitation, clouds etc.
- Easy monitoring of the own-ship parameters in graph or log and student actions
- Start, stop, pause, continue, and restart of exercises
- Replay of recorded exercise data
- Control of the target ship shapes, signals, lights, etc.
- Control for target ships' course, speed, etc.
- Creating of hazardous and challenging conditions for trainee by fault injection in navigational equipment and machineries
- Control of tug deployment and operations of Tug
- Distress And Emergency Condition
- Distress/ Safety Signal from selected target vessel, including Parachute flare, Bouyant smoke, Red Star, White
- Assessment module for Trainee performance evaluation

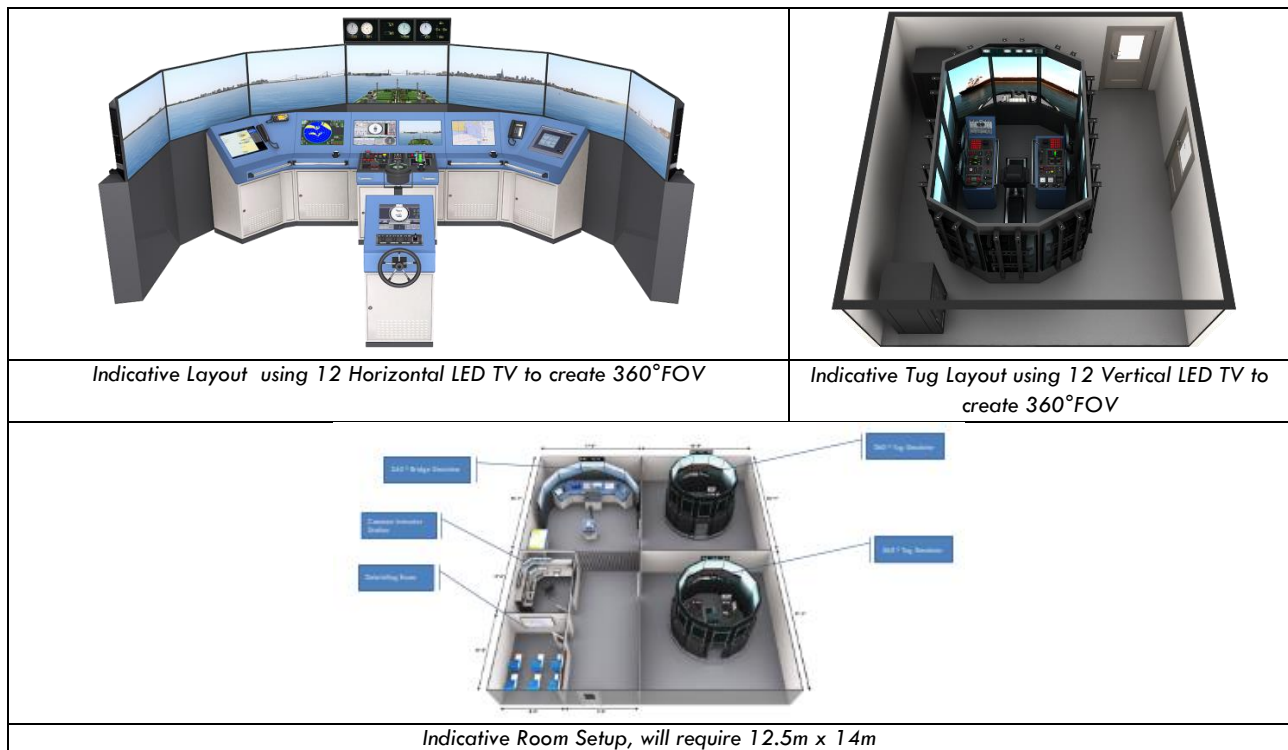


2.2 TRAINEE BRIDGE LAYOUT & SPACE REQUIRE

Setup Bridge ARI Simulator dapat menggunakan layar TV LED dimana dalam penawaran ini sudah termasuk mock-up ruangan. Adapun untuk pelatihan (Training Center), kami menyarankan menggunakan bridge layout mulai dari 240°, menggunakan 7 LED TV dengan ukuran ruangan yang dibutuhkan **minimal 7m x 9m** namun jika dikemudian hari ingin dilakukan upgrade disarankan ruangan minimal 10m x 10m

Setup Tug Simulator ARI menggunakan layar TV LED dimana dibutuhkan 12 LED TV yang dipasang secara vertikal, dengan ukuran ruangan yang dibutuhkan **minimal 7m x 7m**.

Berikut adalah setup Field Of View (FOV) untuk Bridge Simulator dan Tug Simulator:





2.3. HARDWARE HMI CONTROL DEVICES AND OTHER COMPONENTS [PROVIDED BY ARI]

MANEUVERING & CONNING CONSOLE HARDWARE CLASS A



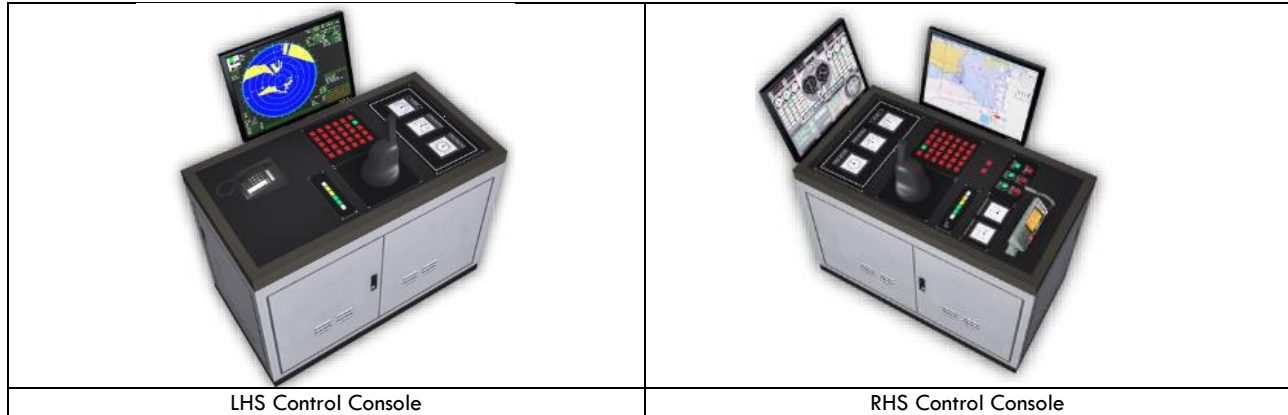
Indicative Setup for Maneuvering Console DNV Class A

The Conning and Manoeuvring hardware control includes:

- Thruster Control Panel with Alarms, Power Request, thruster ready status
- Dual Handle Engine Telegraph
- General Alarm Panel
- Winch Panel
- Anchor Panel
- Doppler Log
- Engine Panel consisting of Alarm Panel, Control Panel and Status Panel
- Sound Panel
- View Port Control with joystick
- Track Ball
- Lamp Test and Dimmer Panel
- CPP Pitch Controller



MANEUVERING CONSOLE AFT



LHS Control Console

RHS Control Console

OWN SHIP STEERING HARDWARE CONSOLE

		• State of the art autopilot simulated panel • Main steering module display with Digital / Analogue Gyro/Magnetic compass display, steering motor/pump selectors, Digital/Analogue ROT and rudder angle, Fwd./Lateral speed displays, NFU Tiller, Auto, Hand, NFU and Remote Control steering modes, pump indicators and controls • Realistic Steering Wheel with main steering panel • Relevant alarms and indicators																		
Indicative picture of Ownship Screenbased Steering Hardware																				
		<table border="1"> <thead> <tr> <th colspan="2">Specification details basic versions</th> </tr> </thead> <tbody> <tr> <td>Materials / Finish</td> <td>Steel A2, Al, POM, alodine, powder coating</td> </tr> <tr> <td>Weight (net)</td> <td>Approx. 3 kg</td> </tr> <tr> <td>Movement, LF150-01-19 / LF150-01-30</td> <td>$\pm 60^\circ / \pm 155^\circ$</td> </tr> <tr> <td>Detent</td> <td>In zero</td> </tr> <tr> <td>Panel plate</td> <td>96 x 144 mm</td> </tr> <tr> <td>Wheel diameter / grip</td> <td>350 mm / steel or padded</td> </tr> <tr> <td>Potentiometers</td> <td>Single 5 kΩ, linear</td> </tr> <tr> <td>Termination</td> <td>16 pins contact with plug</td> </tr> </tbody> </table> For external dimensions and cut-out, customization and options see page 2	Specification details basic versions		Materials / Finish	Steel A2, Al, POM, alodine, powder coating	Weight (net)	Approx. 3 kg	Movement, LF150-01-19 / LF150-01-30	$\pm 60^\circ / \pm 155^\circ$	Detent	In zero	Panel plate	96 x 144 mm	Wheel diameter / grip	350 mm / steel or padded	Potentiometers	Single 5 k Ω , linear	Termination	16 pins contact with plug
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Indicative picture of Steering Hardware																				



RADAR/ARPA & ECDIS KEYBOARD SERTA PERALATAN KOMUNIKASI (Indicative Picture)

		Radar Keyboard
		MARIS ECDIS Keyboard
 PTT Handset	 Dummy VHF	Peralatan Komunikasi untuk GMDSS

3. COTS AND OTHER PEHRIPERALS FOR FULL MISSION SHIP MANEUVERING

No.	PENGUNAAN (MODULE)	SPESIFIKASI PC
COTS FOR BASIC SCOPE OF SUPPLY		
1	Radar/ARPA; ECDIS; NAVAIDS; GMDSS; Conning	11x Intel I Core 5, 4GB RAM, 1TB Internal HDD, OS – Windows (64bit) 11x Monitor LED 24"
2	Docking Module	1x Intel I Core 5, 8GB RAM, 1 TB Internal HDD, OS – Windows (64bit) with Nvidia Graphic Card 1x Monitor LED 24"
3	Overhead Instrument Module	3x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS - Windows (64 bit) with Nvidia Graphic Card 9x monitor LED 20"
4	240° Visual (Optional)	6x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS - Windows (64 bit) with Nvidia Graphic Card 12x LED TV 55"
5	Instructor Application Module	1x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS - Windows (64 bit) with Nvidia Graphic Card 2x Monitor LED 24" 1x Printer (Print, Scan, Copy) 1x Keyboard + Mouse



6	Instructor GMDSS Module	1x Intel I Core 5, 4 GB RAM, 1TB Internal HDD, OS – Windows (64 bit) 1x Monitor LED 24"
7	Instructor Tug Application Module	2x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS – Windows (64 bit) with Nvidia Graphic Card 2x Monitor LED 24"
8	Repeater	1x Radar Repeater LED 24"
		3x Visual Repeater LED 24" (Bridge View) 1x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS – Windows (64 bit) with Nvidia Graphic Card
		6x Visual Repeater LED 24" (Tug View) 2x Intel I Core 7, 8 GB RAM, 1TB Internal HDD, OS – Windows (64 bit) with Nvidia Graphic Card
9	Debriefing	1x Intel I Core 5, 4 GB RAM, 1 TB Internal HDD, OS – Windows (64bit) 1x Projector with 70" Screen
10	BRIDGE MOCK UP 240° and 2 TUG MOCK UP 360°	Yes completed with Console & Chart Table on the Bridge and Air Conditioner (AC)
11	Network	1x Switch min 24 port, 1 Gbps 2x Switch min 16 port, 1 Gbps
12	UPS with Stabilizer, Electrical & LAN Cabling	Yes
13	Instructor Furniture & Standard room partition (Room size minimum 2m x 3m)	Yes
14	CCTV	Yes

4. SHIP STABILITY SIMULATOR

Fasilitas simulator kestabilan kapal dengan jenis kapal Bulk Carrier, yang mampu untuk mensimulasikan fenomena fisis stabilitas kapal. Simulator stabilitas kapal adalah software simulasi yang berfungsi untuk mensimulasikan fenomena kestabilan sebuah kapal dalam 3 sumbu vector (roll, pitch and heave).

Dengan pembebanan yang diberikan maka akan terjadi perubahan orientasi kapal setiap saat. Orientasi arah kapal dalam 3 sumbu vector setiap saat akan dihitung oleh software simulasi, kemudian dilakukan juga perhitungan parameter-parameter kestabilan kapalnya, yang ditampilkan dalam mode 2D maupun 3D. Dimana tampilan representasi 3D animation dimaksud dapat diperlihatkan perubahan-perubahan besar gaya dan posisi titik-titik sentral mekanika (center of gravity, center of buoyancy, metacentric, dll) setiap saat sebagai akibat perubahan bobot dan letak beban, yang ditunjukkan titik posisis dan magnitude dari setiap vector. Selain itu computer juga akan menampilkan kurva-kurva parameter kestabilan kapal dari model kapal tersebut.

Dengan menggunakan simulator kestabilan kapal ini dapat diperkenalkan kepada siswa tentang:

- 1) Konsep displacement
- 2) Menghitung posisi G kapal sesungguhnya saat kosong atau Light-Ship



- 3) Menghitung posisi G dalam arah membujur (Longitudinal): LCG
- 4) Menentukan posisi G dalam arah tegak (Vertikal): KG
- 5) Menentukan posisi G dalam arah melintang (transversal, lateral): TCG
- 6) Menghitung posisi G kapal akibat mengangkut muatan
- 7) Menghitung posisi G kapal akibat membongkar muatan
- 8) Menghitung posisi G kapal akibat memindah muatan
- 9) Menggeser muatan arah membujur untuk mengubah trim
- 10) Menggeser muatan arah melintang untuk mengubah senget
- 11) Mengatur tangki ballast untuk mendapatkan kondisi draft tertentu
- 12) Menilai kapal dalam kondisi tender atau stiff
- 13) Effect of slack water

Model kapal akan mengacu pada model kapal bulk carrier dengan konfigurasi sebagai berikut:

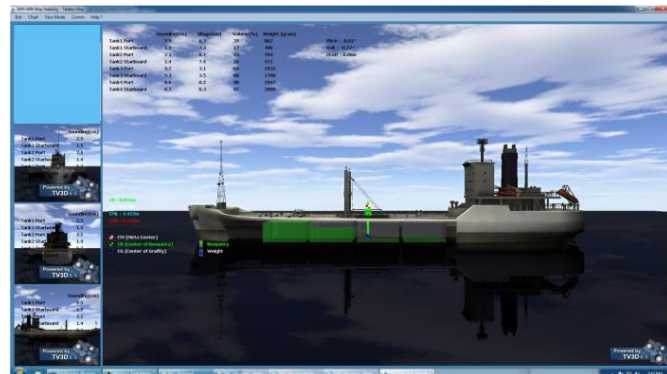
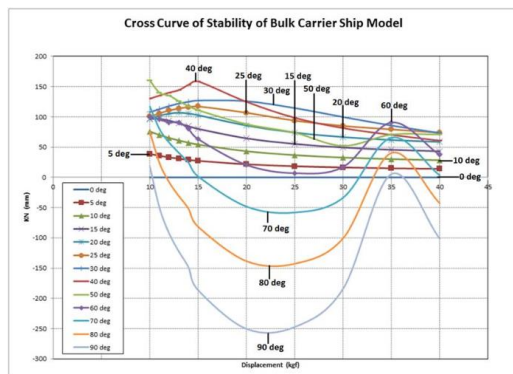
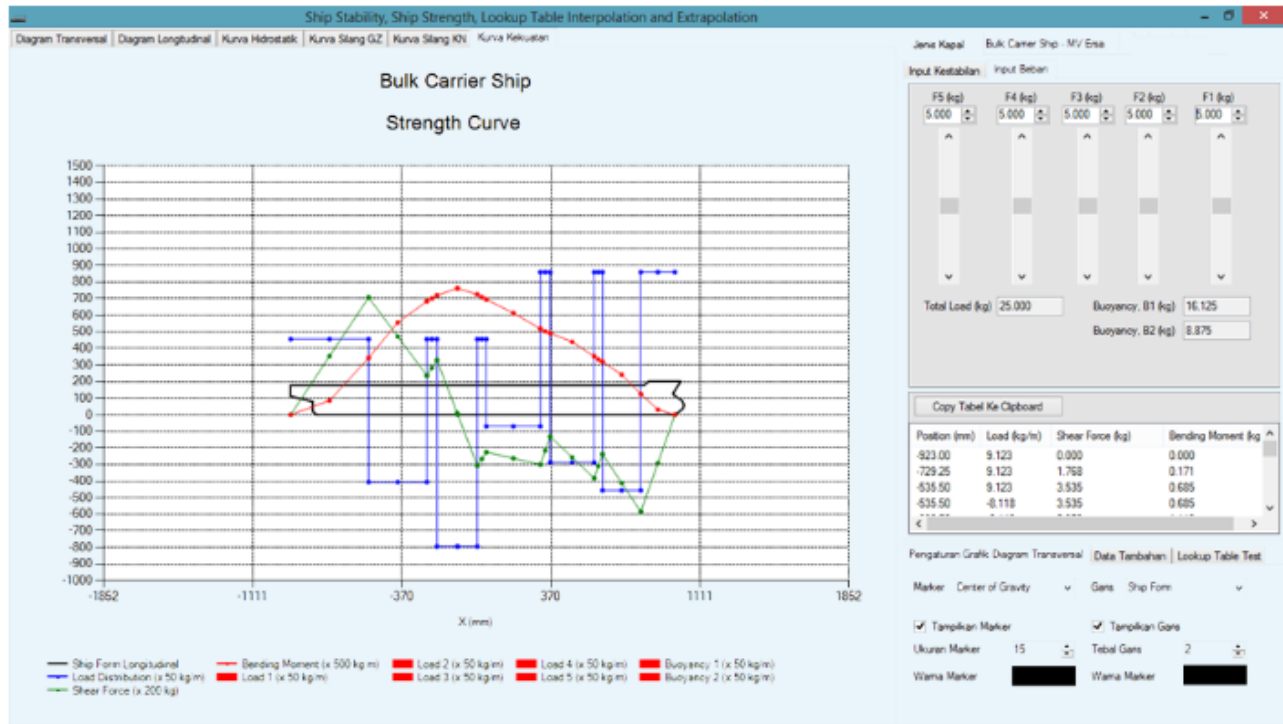
- Memiliki ruang palka
- Memiliki tangki ballast
- Memiliki tangki freshwater
- Memiliki tangki bahan bakar

Model kapal ini sekaligus digunakan untuk model kapal pada bridge simulator, sehingga efek kestabilan tadi dapat dirasakan perbedaannya pada saat kapal bergerak dan terganggu ombak.



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Indicative Picture of Ship Stability Simulator



5. COTS AND OTHER PEHRIPERALS FOR SHIP STABILITY SIMULATOR

No.	PENGUNAAN (MODULE)	Keterangan
1	Instructor Station Software with PC Instructor	Intel I Core 7, 8 GB RAM, 2TB Internal HDD + 256GB SSD, OS - Windows (64 bit) with Nvidia Graphic Card 1 x Monitor LED 24.5"
2	Studen Station with Student PC	6x Intel I Core 7, 8 GB RAM, 2TB Internal HDD + 256GB SSD, OS - Windows (64 bit) with Nvidia Graphic Card 6 x Monitor LED 24.5"
3	Module CBT: Ship Stability Simulator	6 x Intel I Core 7, 8 GB RAM, 1 TB Internal HDD, VGA Minimal 1GB, OS - Win 8 6 x Monitor LED 21,5"
4	Module CBT: Ship Stability Tutorial	Yes
5	Scoring Computation	Yes
6	Database for Trainee Data Entry, Instructor Data Entry, Exercise Result Print out	Yes
7	Console Station	Yes
8	Instructor Furniture	Yes
9	Trainee Furniture	Yes
10	Network	2x Switch min 8 port, 1 Gbps
11	UPS with Stabilizer, Electrical & LAN Cabling	Yes
12	Projector with Motorized screen	Yes

6. GARANSI

Garansi yang diberikan adalah untuk masa waktu 12 bulan setelah dilakukan instalasi dan berita serah terima terhadap simulator dari pihak kami kepada pengguna yang mana dalam proses tersebut telah dilakukan pemeriksaan bersama yaitu semua komponen tidak bercacat baik secara bentuk simulator itu sendiri, komponen didalamnya termasuk komponen penunjang seperti tampilan luar yang telah sesuai dengan spesifikasi yang diberikan oleh kami dan simulator tersebut telah berhasil disimulasikan pada kondisi normal pelatihan.

Keamanan kelistrikan dan tempat peletakan simulator bukan merupakan bagian dari Garansi. PT. ARI memberikan garansi pada lingkup pekerjaan pengadaan simulator didalam ruangan yang disediakan oleh klien.

PT. ARI memberikan tanggap layanan dalam waktu 3x24 jam atau maksimal 5x24 jam (LUAR JABODETABEK) untuk melakukan pemeriksaan awal terhadap kendala yang ada.



Garansi meliputi:

1. Garansi software, PT. ARI memberikan garansi bahwa instalasi yang terdapat didalam PC merupakan instalasi asli dan original dari pabrikan, baik WINDOWS maupun dari Applied Research International (ARI Simulatio) merupakan milik klien. *Upgrade software* merupakan opsional, terkecuali sifatnya **mandatory** yang terkait akibat perubahan pada peraturan IMO dan STCW atau WINDOWS yang sudah *End Of Life*.

Garansi akan hangus jika ditemukan:

- Virus yang diakibatkan oleh kelalaian pengguna, seperti memasukan *Flash Disc*, dll yang mengandung virus atau akibat pengaksesan internet yang tidak bertanggung jawab.

Catatan: *Virus dapat menyebabkan “down time”, sehingga pengerjaannya tidak terikat waktu*

- Crash pada software akibat kelalaian penggunaan seperti cara mematikan tidak sesuai prosedur dan juga mati mendadak akibat mati lampu), untuk itu disarankan pengguna menyiapkan UPS untuk mencegah kejadian diatas.
- Melakukan *re-install* software simulator, tanpa memberitahukan ataupun berkoordinasi dengan pihak ARI Simulator

2. Garansi PC dan Hardware penunjang, PT. ARI memberikan garansi bahwa spesifikasi tertera telah mendapat persetujuan dan telah sesuai standar yang diminta oleh pihak ARI Simulation. Adapun jika spesifikasi yang tertera pada penawaran tidak lagi tersedia, maka kami akan memberikan **spesifikasi yang terbaru yang sesuai** untuk menjalankan aplikasi simulator. Garansi PC dan Hardware penunjang akan hangus jika terjadi hal-hal berikut ini:

- PC dan Hardware penunjang tersiram air, kerusakan yang diakibatkan oleh hewan dan atau akibat kelalaian penggunaan lainnya yang tidak sesuai dengan *Standard Operating Procedure* (SOP) sehingga menyebabkan kerusakan pada PC dan hardware penunjang
- Kerusakan yang diakibatkan sambaran petir, lonjakan voltase listrik kedalam ruangan simulator, kebakaran, serta kerusakan yang terjadi karena pergeseran konstruksi bangunan yang diakibatkan oleh perubahan struktur maupun bencana alam yang menyebabkan kerusakan pada PC dan Hardware penunjang

Catatan: *UPS tidak termasuk dalam garansi Hardware*

INSTALASI & KUNJUNGAN

Pekerjaan instalasi simulator di lokasi adalah sebagai berikut:

- Pembuatan jaringan internet dan kelistrikan didalam ruangan simulator
- Pembuatan *mock-up* ruangan dan penempatan alat simulasi
- *Setting up* LAN dan menghubungkan semua komputer kedalam jaringan
- *Loading of SW* pada komputer yang disediakan



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- *Testing of Simulator*
- Penyerahan dan pelatihan

Catatan: *Remote support dari India, diperlukan koneksi internet minimal 1Mbps dan pekerjaan PT.ARI tidak termasuk menghubungkan simulator ke jaringan internet serta penarikan kabel listrik dari luar kedalam ruangan*

Selama masa garansi kami memberikan batasan kunjungan adalah 10 hari kerja sedangkan untuk *remote support* (langsung dari ARI Simulation) diberikan batasan 30 jam. Untuk kelebihan batasan kunjungan dikenakan biaya Rp. 3.000.000 per hari kunjungan dan untuk *remote support* dikenakan biaya Rp. 7.500.000 per hari. Untuk luar wilayah Jabodetabek, akan dikenakan biaya tambahan berupa akomodasi dan transportasi sesuai tagihan.

GARANSI HABIS

Setelah masa garansi habis, untuk menjaga agar peralatan tetap pada kondisi baik, maka kami menyarankan untuk melakukan perpanjangan masa garansi. Dengan memperpanjang masa garansi maka kami akan memastikan peralatan simulator tetap terjaga baik.

Jika klien tidak melakukan pembelian paket perpanjangan garansi atau jika telah melewati kuota waktu dari paket perpanjangan garansi, maka klien akan dikenakan biaya kunjungan Rp. 3.000.000,- per hari dan untuk *remote support* dari ARI Simulation dikenakan biaya Rp. 7.500.000 per hari. Untuk wilayah luar Jabodetabek, akan dikenakan biaya tambahan berupa akomodasi dan transportasi sesuai tagihan. Jika terdapat penggantian Hardware maupun Human Machine Interface (HMI), maka pembeli akan dibebankan biaya perbaikan atau penggantian sesuai harga barang ditambahkan 15%.

PELATIHAN

ARI Simulation akan menyediakan pelatihan, paska instalasi kepada pelatih (instruktur) maupun pihak yang bertanggung jawab terhadap operasi simulator. Rata-rata waktu pelatihan yang diperlukan adalah 4 hari kerja dan jika diperlukan perpanjangan waktu maka akan diberikan tambahan hari maksimal yaitu selama 2 hari kerja. Kegiatan pelatihan ini termasuk kegiatan peragaan alat simulasi (*commisioning*). Selain itu juga akan diserahkan manual penggunaan simulator kepada pengguna untuk dapat dipelajari lebih lanjut.

Perpanjangan masa pelatihan di Indonesia maka akan dikenakan biaya sebesar USD 1,350 per hari.

JAMINAN SUKU CADANG

PT. ARI menjamin ketersediaan suku cadang khususnya untuk suku cadang PC dan Hardware penunjang adalah selama 5 tahun. Selepas masa tersebut kami menyarankan untuk melakukan *upgrade* PC, yang mana bila *upgrade* dilakukan tidak akan menghilangkan *software* simulator yang telah dimiliki. Namun hal ini tidak berlaku jika WINDOWS sudah *End Of Life* (EOL), maka wajib dilakukan **Upgrade Software** ARI.



7. COMMERCIAL OFFER

Berikut adalah penawaran harga ARI Simulator dari kami:

No.	Keterangan	Harga
1	Full Mission Ship Maneuvering Simulator 240° Visual Class A with Tug Simulator and Integrated with Ship Stability Simulator	Rp. 20.286.947.000
PPN 10%		Rp. 2.028.694.700
Total Harga		Rp. 22.315.641.700

Keterangan:

1. Harga diatas sudah termasuk pajak
2. Harga diatas sudah termasuk biaya pengiriman sampai ke lokasi
3. Harga diatas sudah termasuk biaya *onsite installation*, integrasi, pelatihan dari ARI India selama 4 hari
4. Perkiraan waktu pekerjaan hingga pelatihan adalah 6 bulan
5. Harga berlaku sampai dengan tanggal 31 Desember 2021

8. BUYER PREPARATION

1. Ruangan yang memadai/ mencukupi untuk meletakkan simulator tanpa tiang ditengah ruangan
2. Listrik masuk kedalam ruangan minimal adalah 20.000 Watt
3. Tenaga pengajar serta teknisi (IT)



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9. CERTIFICATION

DNV GL	
STATEMENT OF COMPLIANCE	
Statement No: 023/180511 DNV GL Id No: 142684	
Particulars of Product	
Function Area:	Bridge Operation Simulator
Class Notation	INTEGRATED SIMULATOR SYSTEM, NAUT AW (SIM), DYNPOS - AUT (SIM), HSC, TUG, ICE, AHTS, IN
Name and type designation:	ARI-NAVSIM100000an Dry Cargo Ships, Container Ships, RO/RO Ships, Passenger Ships, Oil Tankers, Chemical Tankers, Liquefied Gas Tankers, Compressed Gas Tankers, Naval, Naval Support, Naval Landing Craft, Offshore Service Vessel - Anchor Handling, Towing, Supply, AHTS, Windfarm Maintenance, Standby Vessel, + Vessel of Special Operations - Crane Vessel, Cable Laying Vessel, Pipe Laying Vessel, Diving Support Vessel, Fire Fighter, Semi-Submersible Heavy Transport Vehicle, Icebreaker, Tug, Dredger, Pusher, Inland Water Craft, Fishing Vessel, Stern Trawler
Particulars of Manufacturer	
Manufacturer:	ARI Simulation
Manufacturer address:	Applied Research International
This is to confirm:	
That the above product is found to comply with Class A- Standard for Certification of Maritime Simulators No. DNVGL-ST-0033 April 2018.	
Application	
The above Standard is based on requirements in the STCW Convention, Regulation I/12 and corresponding Industry standard and guidelines.	
This Statement is valid until 2023-05-11 , provided the requirements for the retention of the Statement will be complied with.	
Issued at Sandefjord on 2018-05-11	
Nordholm, Aksel David	for DNV GL
Capt. Aksel David Nordholm Manager Simulator Certification	 Partha Basu Auditor
This Statement is subject to terms and conditions overleaf. Any significant change in simulation performance may render this Statement invalid.	
	Form code: MSS 301 Revision: 2018-03 www.dnvgl.com Page 1 of 3 © DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

STATEMENT OF COMPLIANCE

Statement No:
003/180511
DNV GL Id No:
142684

Particulars of Product

Function Area:

Bridge Operation Simulator

Name and type designation:

ARI-NAVSIM10000λn
ECDIS, Radar/ARPA & Navigational Aids

Particulars of Manufacturer

Manufacturer:

ARI Simulation

Manufacturer address:

Applied Research International

This is to confirm:

That the above product is found to comply with Class A- Standard for Certification of Maritime Simulators No. DNVGL-ST-0033 April 2018.

Application

The above Standard is based on requirements in the STCW Convention, Regulation I/12 and corresponding industry standard and guidelines.

This Statement is valid until **2023-05-11**, provided the requirements for the retention of the Statement will be complied with.

Issued at **Sandefjord** on **2018-05-11**

Nordholm, Aksel
David

Digitally signed by Nordholm,
Aksel David
Date: 2018.05.11 07:53:08 +02'00'

for **DNV GL**

Capt. Aksel David Nordholm
Manager Simulator Certification

Partha Basu
Auditor

This Statement is subject to terms and conditions overleaf. Any significant change in simulation performance may render this Statement invalid.



Form code: MSS 301

Revision: 2018-03

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Page 1 of 2

Application/Limitation

The simulator is capable of simulating a realistic environment for all of the applicable STCW competence requirements referred to in the column for Class A, B, C and S in Table 3-2.

Table 3-2 Competencies addressed by bridge operation simulator class					
<i>STCW reference</i>	<i>Competence</i>	<i>Class A (NAV)</i>	<i>Class B (NAV)</i>	<i>Class C (NAV)</i>	<i>Class S (NAV)</i>
Table A-II/1.3	Use of radar and ARPA to maintain safety of navigation	A	B	C	(S)
Table A-II/1.4	Use of ECDIS to maintain the safety of navigation	A	B	C	(S)
Table A-II/1.5	Respond to emergencies	A	B	C	(S)
Table A-II/1.6	Respond to a distress signal at sea	A	B	C	(S)
Table A-II/2.6	Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision-making	A	B	C	(S)
Table A-II/2.7	Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making	A	B	C	(S)

This Statement of Compliance is for the manufacturer offering the simulator for examination or mandatory simulator training and complies with the requirements of DNVGL-ST-0033 Maritime Simulator Systems.

Based on this statement of compliance, maritime training providers in possession of simulators that comply with the requirements of the standard can apply for a product certificate for "Maritime simulator". The simulator's function area and the simulator class according to the standard will be stated on the certificate.

STATEMENT OF COMPLIANCE

Statement No:
005/180511
DNV GL Id No:
142684

Particulars of Product

Function Area:	Radio Communication Simulator
Name and type designation:	ARI-COMMSIM10000λn

Particulars of Manufacturer

Manufacturer:	ARI Simulation
Manufacturer address:	Applied Research International

This is to confirm:

That the above product is found to comply with Class A- Standard for Certification of Maritime Simulators No. DNVGL-ST-0033 April 2018.

Application

The above Standard is based on requirements in the STCW Convention, Regulation I/12 and corresponding industry standard and guidelines.

This Statement is valid until **2023-05-11**, provided the requirements for the retention of the Statement will be complied with.

Issued at **Sandefjord** on **2018-05-11**

Nordholm, Aksel
David

Digitally signed by Nordholm,
Aksel David
Date: 2018.05.11 07:55:46 +02'00'

for **DNV GL**



Capt. Aksel David Nordholm
Manager Simulator Certification

Partha Basu
Auditor



Application/Limitation

The simulator is capable of simulating a realistic environment for all of the applicable STCW competence requirements referred to in the column for Class A, B, C and S in Table 5-2.

Table 5-2 Competencies addressed by radio communication simulator class

<i>STCW reference</i>	<i>Competence</i>	<i>Class A (COM)</i>	<i>Class B (COM)</i>	<i>Class C (COM)</i>	<i>Class S (COM)</i>
Table A-IV/2.1	Transmit and receive information using GMDSS subsystems and equipment and fulfilling the functional requirements of GMDSS	A	B	C	
Table A-IV/2.2	Provide radio services in emergencies	A	B	C	

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Based on this statement of compliance, maritime training providers in possession of simulators that comply with the requirements of the standard can apply for a product certificate for "Maritime simulator". The simulator's function area and the simulator class according to the standard will be stated on the certificate.



PT. AMAN REJEKI INDONESIA

Integrated Solutions



Certificate of Registration

PT. Aman Rejeki Indonesia

Springhill Office Tower Suite 10E, Jl. Benyamin Sueb Ruas D7 Blok D6, Kemayoran,
Jakarta 14410, Indonesia.

Operate a management system that complies with the requirements of

ISO 9001:2015

With the scope:

Provision of Supply, Installation and Services of Maritime Educational
Product and Management Consultant

EA Code: 33 & 35

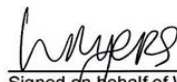
Certificate No. QS 4808

Originally Registered: 12th January 2017

Registered by WQA: 12th January 2017

Re-Certification: 12th January 2023

Latest Issue: 13th January 2020


Signed on behalf of WQA

Validity of this certificate can be checked by contacting:
Worldwide Quality Assurance Ltd
Severn House,
Mandale Business Park,
Durham,
DH1 1TH
www.worldwideqa.com



134

This certificate remains the property of Worldwide Quality Assurance Ltd and must be returned on request.

WQA 14C, Issue 8



PT. AMAN REJEKI INDONESIA

Integrated Solutions



Lloyd's
Register

Current issue date: 8 July 2020
Expiry date: 29 July 2023
Certificate identity number: 10280622

Original approval(s):
ISO 9001 - 30 July 2008

Certificate of Approval

This is to certify that the Management System of:

**Applied Research International Pvt.
Ltd.**

46/13, E-Block, Okhla Industrial Area, Phase-II, New Delhi, 110020, India

has been approved by Lloyd's Register to the following standards:

ISO 9001:2015

Approval number(s): ISO 9001 – 0048141

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

The design and development of software, simulators, computer and model based training aids.

Luis Cunha

Area Operations Manager - SAMEA

Issued by: Lloyd's Register Quality Assurance Limited



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Page 1 of 2



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
A	BRIDGE AND TUG SIMULATOR SOFTWARE					
1	Instructor Station Perangkat Lunak Instruktur 1.1 Perangkat Lunak Instruktur Stasiun instruktur menggunakan pada PC yang memungkinkan untuk mengendalikan dan memonitor simulasi pelatihan. Instruktur dapat menjalankan, melakukan jeda/berhenti sejenak, dan melanjutkan kembali simulasi pelatihan. Beberapa Kemampuan yang tersedia untuk mengendalikan dan mengawasi jalannya simulasi 1.2 Assesment Tool Modul penilaian didesain berdasarkan kemampuan dari peserta pelatihan, Sistem penilaian ini didasarkan pada kemampuan individu untuk menimbang dan berperilaku sesuai kebutuhan operasional lapangan secara 'real time' Moda pembelajaran ini menggunakan berbagai metode penilaian dalam bentuk angka untuk menilai dan mengukur kemampuan dari setiap peserta pelatihan. 1.3 Additional Features <i>For Bridge Including :</i> Anchoring and Mooring Module Ship to Ship Maneuvering using tugs Maneuvering with mooring lines fixed to jetty Maneuvering with mooring lines fixed to buoy Anti-Piracy Module Fire Control Detection Panel Bow/ Stern Monitoring System Hull Stress Monitoring Ballast Water Control Panel Torque Indicator Fire door/water tight door monitoring panel <i>For Tugs Including :</i> • Ship Assisting work • Escort work • High fidelity hydrodynamic modeling of tug behaviour • Using custom tug controllers to perform Tug Handling Maneuvering • Making fast and adjusting line length • Making towage transit • Basic rope behaviour under tension • Visualisation with facility to 360° around the horizon • Effect of wind and weather conditions • Push/ Pull action by tug • Procedural training in tug operations • Conning and Maneuvering Station	1	Lot	ARI SIMULATION	Rp	8,220,000,000
		1	Lot	ARI SIMULATION	Rp	150,000,000
		1	Lot	ARI SIMULATION	Rp	250,000,000
2	GMDSS Instruktur - VHF-DSC - MF/HF-DSC - NBDP - Inmarsat-SES - NAVTEX - EPIRB - Fleet 77 - AIS Sart - Portable VHF - Battery Panel - Remote Distress Alarm Panel - Intercom & PA	1	Lot	ARI SIMULATION	Rp	125,000,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
3	<u>Trainee Station</u> ECDIS - Fungsi dasar Navigasi - Fungsi pengecekan Perencanaan Rute - Fungsi Pengawasan Rute	1	Lot	ARI SIMULATION	Rp	150,000,000
4	RADAR/ARPA - Mampu memahami karakteristik <i>Radar LOTS</i> dan faktor yang mempengaruhi kemampuan kerjanya - Meningkatkan dan memelihara <i>radar display</i> - o Tombol <i>Standby – On</i> - o Mengubah <i>pulse length</i> - o Menyesuaikan kontrol untuk mendapatkan gambar yang optimal (<i>tuning, gain</i>) - o Menyesuaikan kontrol tampilan (<i>brilliance, range selector, range ring, VRM, EBL, heading marker, anti-clutter</i>) - o Menyesuaikan tampilan mode (<i>true motion, relative motion – unstabilised, relative motion – stabilized, north up, course up, head up</i>) - o Verifikasi <i>input compass</i> untuk tampilan yang relatif stabil, <i>compass</i> dan <i>log input</i> untuk tampilan gerakan yang sesungguhnya - o Menggunakan fungsi <i>centre offLot, centre reLot</i> - o Meningkatkan dan mengubah skala range - o Mengukur <i>ranges</i> dan <i>bearings</i> - Menunjukkan <i>manual radar plotting</i> : - o Menentukan <i>course, speed</i> dan aspek kapal lainnya - o Menentukan CPA dand TCPA - Menentukan posisi yang akurat kapal dengan radar - Identifikasi bantuan terhadap radar navigasi dan <i>safety</i> - Menggunakan <i>parallel indexing</i> pada radar navigasi - Menggunakan Radar untuk menghindari tabrakan atau senggolan - Mengamati efek/akibat curah hujan terhadap kemampuan deteksi Radar - Identifikasi <i>blind area s</i> dan <i>shadow areas</i> - Mengamati bagaimana <i>clutter</i> menutupi targets (sea clutter, rain clutter) - Meningkatkan dan memelihara tampilan pada ARPA - Memperoleh targets menggunakan fungsi ARPA - o Menggunakan <i>auto-acquisition zone(s)</i> - o Menghapus <i>acquired targets</i> - Mengamati proses penundaan dalam mendapatkan informasi target - Memperoleh informasi target - o <i>Course, speed, CPA, TCPA, BCR etc.</i> - Menggunakan ARPA untuk membantu menerapkan <i>COLREGS</i> - Mengamati dan interpretasi <i>True vectors</i> dan <i>Relative vectors</i> - Menggunakan tampilan <i>target history</i> - Mengamati dan intrepertasi peringatan dan <i>alarm</i> yang terhubung ke fungsi Radar dan ARPA - Menggunakan layar <i>performance</i> <i>Lot up</i> dand menggunakan <i>PI line</i> - Menggunakan lebih dari satu <i>PI line</i> - Menggunakan fungsi <i>Nav Marks</i> - Interpretasi gerakan sesungguhnya pada kapal dari rekaman <i>tracked echo</i> - Mengamati berbagai bentuk error pada tampilan RADAR/ARPA, termasuk contoh: - o <i>Heading marker error, variable range marker, gyro error</i> dan lain-lainnya - Mengamati faktor yang disebabkan oleh kesalahan interpretasi pada gambar radar seperti <i>interference, side echoes, multiple echoes, second trace echoes</i>, dan lain-lainnya	1	Lot	ARI SIMULATION	Rp	150,000,000
5	Visualisasi 225°	7	Lot	ARI SIMULATION	Rp	455,000,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL
		JML	SATUAN		
	Visualisasi dapat menampilkan luasan visual sebesar 225° dengan kapal ownship dan kapal target yang dihitung berdasarkan hidrodinamika model kapal, sehingga mampu memberikan tingkat realisme yang sesuai dengan kekuatan, kondisi, objek, situasi, dan tindakan pengguna dari kapal tersebut.				
6	Conning/ Docking - Kontrol Rudder dan indikator - Indikator rate of Turn - Magnetic compass dan Gyro compass repeaters - Engine controls termasuk RPM dan thruster control - Doppler Log - Indikator waktu, kecepatan angin, jarak layar,serta kedalaman - Tampilan kendali lampu navigasi dari Own ship - Kontrol pada Own Ship Fog Horn (secara Auto/Manual) - Tampilan pilot card dan karakteristik Manuver dari kapal yang digunakan - Docking view - Panel Engine Alarm - Panel Engine Control - Tampilan Kontrol Telegraph (untuk kecepatan mesin dan arah)	1	Lot	ARI SIMULATION	Rp 105,000,000
7	Navigation Equipment - GPS - ECHO Sounder - Course Recorder - Automatic Identification System (AIS) - Doppler Log - Anchoring Mooring	1	Lot	ARI SIMULATION	Rp 105,000,000
8	Overhead Display - Rudder Angle Indicator - Rate of Turn Indicator - RPM Indicators - Anemometer - Time (simulation time of the day) - Doppler Log speeds	1	Lot	ARI SIMULATION	Rp 105,000,000
9	GMDSS Trainee - VHF-DSC - MF/HF-DSC - NBDP - Inmarsat-SES - NAVTEX - EPIRB - Fleet 77 - AIS Sart - Portable VHF - Battery Panel - Remote Distress Alarm Panel - Intercom & PA	1	Lot	ARI SIMULATION	Rp 125,000,000
10	TUG Visual 360° Visualisasi dapat menampilkan visual kapal tug dan kapal target yang dihitung berdasarkan hidrodinamika model kapal, sehingga mampu memberikan tingkat realisme yang sesuai dengan kekuatan, kondisi, objek, situasi, dan tindakan pengguna dari kapal tersebut.	24	Lot	ARI SIMULATION	Rp 1,560,000,000
11	TUG Radar	2	Lot	ARI SIMULATION	Rp 300,000,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL
		JML	SATUAN		
	- Mampu memahami karakteristik <i>Radar LOTS</i> dan faktor yang mempengaruhi kemampuan kerjanya - Meningkatkan dan memelihara <i>radar display</i> - o Tombol <i>Standby – On</i> - o Mengubah <i>pulse length</i> - o Menyesuaikan kontrol untuk mendapatkan gambar yang optimal (<i>tuning, gain</i>) - o Menyesuaikan kontrol tampilan (<i>brilliance, range selector, range ring, VRM, EBL, heading marker, anti-clutter</i>) - o Menyesuaikan tampilan mode (<i>true motion, relative motion – unstabilised, relative motion – stabilized, north up, course up, head up</i>) - o Verifikasi <i>input compass</i> untuk tampilan yang relatif stabil, <i>compass</i> dan <i>log input</i> untuk tampilan gerakan yang sesungguhnya - o Menggunakan fungsi <i>centre offLot, centre reLot</i> - o Meningkatkan dan mengubah skala range - o Mengukur <i>ranges</i> dan <i>bearings</i> - Menunjukkan <i>manual radar plotting</i> : - o Menentukan <i>course, speed</i> dan aspek kapal lainnya - o Menentukan CPA dand TCPA - Menentukan posisi yang akurat kapal dengan radar - Identifikasi bantuan terhadap radar navigasi dan <i>safety</i> - Menggunakan <i>parallel indexing</i> pada radar navigasi - Menggunakan Radar untuk menghindari tabrakan atau senggolan - Mengamati efek/akibat curah hujan terhadap kemampuan deteksi Radar - Identifikasi <i>blind area s</i> dan <i>shadow areas</i> - Mengamati bagaimana <i>clutter</i> menutupi targets (sea clutter, rain clutter) - Meningkatkan dan memelihara tampilan pada ARPA - Memperoleh targets menggunakan fungsi ARPA - o Menggunakan <i>auto-acquisition zone(s)</i> - o Menghapus <i>acquired targets</i> - Mengamati proses penundaan dalam mendapatkan informasi target - Memperoleh informasi target - o <i>Course, speed, CPA, TCPA, BCR etc.</i> - Menggunakan ARPA untuk membantu menerapkan <i>COLREGS</i> - Mengamati dan interpretasi <i>True vectors</i> dan <i>Relative vectors</i> - Menggunakan tampilan <i>target history</i> - Mengamati dan intrepertasi peringatan dan <i>alarm</i> yang terhubung ke fungsi Radar dan ARPA - Menggunakan layar <i>performance</i> <i>Lot up</i> dand menggunakan <i>PI line</i> - Menggunakan lebih dari satu <i>PI line</i> - Menggunakan fungsi <i>Nav Marks</i> - Interpretasi gerakan sesungguhnya pada kapal dari rekaman <i>tracked echo</i> - Mengamati berbagai bentuk error pada tampilan RADAR/ARPA, termasuk contoh: - o <i>Heading marker error, variable range marker, gyro error</i> dan lain-lainnya - Mengamati faktor yang disebabkan oleh kesalahan interpretasi pada gambar radar seperti <i>interference, side echoes, multiple echoes, second trace echoes</i>, dan lain-lainnya				
12	TUG ECDIS - Fungsi dasar Navigasi - Fungsi pengecekan Perencanaan Rute - Fungsi Pengawasan Rute	2	Lot	ARI SIMULATION	Rp 300,000,000
13	TUG Conning LHS/RHS - Kontrol Rudder dan indikator - Indikator rate of Turn - Magnetic compass dan Gyro compass repeaters	2	Lot	ARI SIMULATION	Rp 130,000,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
14	Ownship and Sailing Area - Engine controls termasuk RPM dan thruster control - Doppler Log - Indikator waktu, kecepatan angin, jarak layar,serta kedalaman - Tampilan kendali lampu navigasi dari Own ship - Kontrol pada Own Ship Fog Horn (secara Auto/Manual) - Tampilan pilot card dan karakteristik Manuver dari kapal yang digunakan - Docking view - Panel Engine Alarm - Panel Engine Control - Tampilan Kontrol Telegraph (untuk kecepatan mesin dan arah) 5 Indonesia Sailing Area (Tj. Priok, Tj Perak, Selat Sunda, Selat Makasar, Sorong) 5 International Sailing Area (Singapore, Selat Malaka, Felixstowe, Gilbralta, Bosphorus) 20 Kapal Ownship 25 Kapal Target	1	Lot	ARI SIMULATION	Rp	100,000,000
BRIDGE AND TUG SIMULATOR HARDWARE						
1	Instruktur Bridge - Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit) - Monitor LED 24" - Printer (Print, Scan, Copy) - Keyboard + Mouse	1	Unit	Unbranded	Rp	57,000,240
		2	Unit	LG 24MK430H	Rp	4,440,000
		1	Unit	Epson L3150	Rp	3,960,000
		1	Unit	Logitech MK220	Rp	300,000
2	Instruktur GMDSS - Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit) - Monitor LED 24" - Keyboard + Mouse - PTT Handset - Speaker 2.0	1	Unit	Unbranded	Rp	8,580,000
		1	Unit	LG 24MK430H	Rp	2,220,000
		1	Unit	Logitech	Rp	300,000
		1	Unit	ARI SIMULATION	Rp	600,000
		1	Unit	Logitech Z120	Rp	240,000
3	Instruktur Tug - Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit) - Monitor LED 24" - Keyboard + Mouse	1	Unit	Unbranded	Rp	57,000,240
		2	Unit	LG 24MK430H	Rp	4,440,000
		1	Unit	Logitech MK220	Rp	300,000
4	Repeater Visualization Bridge - Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit) - Monitor LED 24" Tug - Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit) - Monitor LED 24"	1	Unit	Unbranded	Rp	8,580,000
		3	Unit	LG 24MK430H	Rp	6,660,000
		1	Unit	Unbranded	Rp	57,000,240
		3	Unit	LG 24MK430H	Rp	6,660,000
5	Repeater Radar Trainee - Monitor LED 24"	1	Unit	LG 24MK430H	Rp	2,220,000
6	Trainee Station ECDIS - Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit) - Monitor LED 24" - ECDIS Keyboard	1	Unit	Unbranded	Rp	8,580,000
		1	Unit	LG 24MK430H	Rp	2,220,000
		1	Unit	Logitech MK220	Rp	30,000,000
6	RADAR ARPA - Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit) - Monitor LED 24" - Radar Keyboard	1	Unit	Unbranded	Rp	8,580,000
		1	Unit	LG 24MK430H	Rp	2,220,000
		1	Unit	ARI SIMULATION	Rp	30,000,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
7	- Speaker 2.0	1	Unit	Logitech Z120	Rp	240,000
	VISUALISASI 240°					
	- Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit)	4	Unit	Unbranded	Rp	228,000,960
8	- TV LED 65"	7	Unit	Samsung 55TU7000	Rp	151,200,000
	CONNING					
	- Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	1	Unit	Unbranded	Rp	8,580,000
9	- Monitor LED 24"	1	Unit	LG 24MK430H	Rp	2,220,000
	- Mouse Trackball	1	Unit	Logitech M570	Rp	1,140,000
	DOCKING					
10	- Intel I Core 5, 4 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit)	1	Unit	Unbranded	Rp	19,980,000
	- Monitor LED 24"	1	Unit	LG 24MK430H	Rp	2,220,000
	- Mouse	1	Unit	Logitech M170	Rp	150,000
11	NAVIGATION EQUIPMENT					
	- Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	1	Unit	Unbranded	Rp	8,580,000
	- Monitor LED 24"	1	Unit	LG 24MK430H	Rp	2,220,000
12	- Mouse	1	Unit	Logitech M170	Rp	150,000
	- Speaker 2.0	1	Unit	Logitech Z120	Rp	240,000
	OVERHEAD					
13	- Intel I Core 5, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit)	1	Unit	Unbranded	Rp	19,980,000
	- Monitor LED 20"	3	Unit	LG20MK400H	Rp	5,130,000
	GMDSS TRAINEE					
14	- Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	1	Unit	Unbranded	Rp	8,580,000
	- Monitor LED 24"	1	Unit	LG 24MK430H	Rp	2,220,000
	- Keyboard + Mouse	1	Unit	Logitech MK220	Rp	300,000
15	- PTT Handset	1	Unit	ARI SIMULATION	Rp	600,000
	- Speaker 2.0	1	Unit	Logitech Z120	Rp	240,000
	Tug Station					
16	VISUALIZATION					
	- Intel I Core 9, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit)	8	Unit	Unbranded	Rp	456,001,920
	- TV LED 55"	24	Unit	Samsung 55TU7000	Rp	259,200,000
17	ECDIS					
	- Intel I Core 5, 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	2	Unit	Unbranded	Rp	1,760,000
	- Monitor LED 24"	2	Unit	LG 24MK430H	Rp	4,440,000
18	- Mouse	2	Unit	Logitech M170	Rp	300,000
	RADAR					
	- Intel I Core 5, 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	2	Unit	Unbranded	Rp	17,160,000
19	- Monitor LED 24"	2	Unit	LG 24MK430H	Rp	4,440,000
	- Speaker 2.0	2	Unit	Logitech Z120	Rp	480,000
	- Mouse	2	Unit	Logitech M170	Rp	300,000
20	CONNING					
	- Intel I Core 5, 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	2	Unit	Unbranded	Rp	17,160,000
	- Monitor LED 24"	2	Unit	LG 24MK430H	Rp	4,440,000
21	- Mouse	2	Unit	Logitech M170	Rp	300,000
	GMDSS TRAINEE					
	- Intel I Core 5 , 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	2	Unit	Unbranded	Rp	17,160,000
22	- Monitor LED 24"	2	Unit	LG 24MK430H	Rp	4,440,000
	- Keyboard + Mouse	2	Unit	Logitech MK220	Rp	600,000



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
	- PTT Handset	2	Unit	ARI SIMULATION	Rp	1,200,000
	- Speaker 2.0	2	Unit	Logitech Z120	Rp	480,000
18	OVERHEAD					
	- Intel I Core 5, 8 GB RAM, 1TB Internal HDD, Nvidia Graphic Card - Windows 10 (64 bit)	2	Unit	Unbranded	Rp	39,960,000
	- Monitor LED 20"	6	Unit	LG 20MK400H	Rp	10,260,000
19	DEBRIEFING					
	- Intel I Core 5, 4GB RAM, 1 TB Internal HDD – Windows 10 (64bit)	1	Unit	Unbranded	Rp	8,580,000
	- Monitor LED 24"	1	Unit	LG 20MK400H	Rp	2,220,000
	- Projector with 70" Motorized Screen	1	Set	Infocus IN116XA	Rp	25,800,000
20	PERALATAN SIMULATOR					
	<u>Bridge Simulator</u>					
	- Sebuah Perangkat panel dalam kesatuan yang memiliki : General Alarm Panel Lamp Test Sound Signal Panel Bow Thruster Engine Order Telegraph Anchoring Panel Engine Telegraph View Port Controls Pitch Controller - Dual Telegraph Control - Bow Thruster Control	1	Lot	ARI SIMULATION	Rp	100,000,000
	<u>Tug Simulator</u>					
	- Sebuah Perangkat panel dalam kesatuan yang memiliki : Alarm Indicators M/E Speed Propeller Speed Thrust Direction Azimuth Thruster Controls Break pump prerssure indicator Main pump pressure indicator Towing Hook Nature	2	Unit	ARI SIMULATION	Rp	200,000,000
21	PERALATAN PENDUKUNG					
	- Speaker 5.1 Dolby® Digital 5.1 decoding Total watts: (RMS) 500-W Subwoofer: 165-W Satellites: 5 x 67-W System Frequency response: 35 Hz-20 KHz	3	Unit	Microlab	Rp	9,000,000
	- Switch 24 Port Standards and Protocols: IEEE 802.3, IEEE 802.3u, IEEE 802.3ab , IEEE 802.3x Interface: 24 10/100/1000Mbps RJ45 Ports (Auto Negotiation/Auto MDI/MDIX) Network Media: 100BASE-TX, 1000BASE-T : UTP CAT 5/5e (maximum 100m) EIA/TIA-568 100-ohm STOP (maximum 100m) RAM Buffer : 3.5 Mbits Power Supply: 100-240VAC, 50/60Hz Power Consumption: Maximum: 15.7 Watts	1	Unit	D-link	Rp	1,050,000
	- Switch 16 Port Standards and Protocols: IEEE 802.3, IEEE 802.3u, IEEE 802.3ab , IEEE 802.3x Interface: 16 10/100/1000Mbps RJ45 Ports (Auto Negotiation/Auto MDI/MDIX) Network Media: 10BASE-T: UTP CAT 3, 4, 5/5e cable (maximum 100m) EIA/TIA-568 100-ohm STOP (maximum 100m) RAM Buffer : 2 Mbits	2	Unit	D-link	Rp	1,908,000



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SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
22	Power Supply: 100-240VAC, 50/60Hz	1	Set	HIKVISION	Rp	13,320,000
	Power Consumption: Maximum: 9.00 Watts	3	Unit	Motorola	Rp	7,200,000
	- CCTV 8 Camera					
	- Walkie Talkie					
	BRIDGE AND TUG FURNITURE					
	Adapun pekerjaannya sebagai berikut:					
	- Instructor Furniture					
	Terdiri atas:					
	- Meja Custom Made (disesuaikan dengan ruangan)	1	Unit	SELF MADE	Rp	12,600,000
	- Kursi direktur	1	Unit	SELF MADE	Rp	3,600,000
	- Kursi Debriefing	20	Unit	Chitose	Rp	21,600,000
SUBTOTAL A					Rp	14,341,031,600
B	SHIP STABILITY					
23	SHIP STABILITY SOFTWARE					
	<u>SW Instructor Station</u>	1	Lot	SS ARI SIMULATION	Rp	529,868,250
	Meliputi :					
	- Exercise Data					
	- Mode Test					
	- Mode Training					
	- Ship Selection					
	- Requestable Assistant					
	- Scoring & Evaluation					
	- Object Payload Selection					
	- User Privileges					
	- Shutdown & Boot Up Automation System					
	<u>SW Student Station</u>	6	Lot	SS ARI SIMULATION	Rp	1,766,741,625
	Meliputi :					
	- Visual 3D					
	- Environment / scenery					
	- Camera View					
	- 2D Lighting and Materials Effect					
	- Animation Object					
	- Render Surface FX Effect (water, clouds)					
	- Inclinator Visualization (Pitching and Rolling)					
	- Objects Collision					
	- Objects Payload					
	- Vehicle Traffic					
	- Physics Calculation					
	- Buoyancy Effect					
	<u>Sound Effect</u>	1	Lot	SS ARI SIMULATION	Rp	58,984,575
	Meliputi :					
	- 3D Sound Effect					
	- Frequency Effect					
	<u>Visual DataBase</u>	1	Lot	SS ARI SIMULATION	Rp	361,118,250
	1. Port Area					
	Meliputi :					
	- Land size 1 x 1 km2					
	2. Ships Model					
	Meliputi :					
	- 3650 DWT Generic Cargo					
	- 4180 DWT Full Container Cargo					
	- 50000 DWT Bulk Carrier					
	3. Static Object					
	Meliputi :					



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL
		JML	SATUAN		
	- Building - Vehicle - Fence - Trees - Human 4. Dynamic Object Meliputi : - Ship - Human - Boat - Animal 5. Texture Meliputi : - Texture - Texturing				
	Scoring Computation 1. Accuracy Meliputi : - Object Payload Positioning - Weight and Balance - Stability on Rolling and Pitching 2. Speed Meliputi : - Simulation Accomplishing - Decision Marking of Object Payload Positioning 3. Safety Meliputi : - Volume and Dimension 4. Result Meliputi : - Passed / Failed	1	Lot	SS ARI SIMULATION	Rp 127,500,000
	Data Base Meliputi : - Trainee Data Entry - Instructor Data Entry - Exercise Result Print Out	1	Lot	SS ARI SIMULATION	Rp 112,500,000
24	SHIP STABILITY HARDWARE 1. PC Instructor Processor Type : Core I7 HDD : 2 TB + SSD : 256 GB VGA : 6GB Memory : 8GB DDR3 Monitor 24" Keyboard + Mouse OS Windows 10 Original	1	Lot	HP	Rp 33,331,800
	2. PC Student Processor Type : Core I7 HDD : 2 TB + SSD : 256 GB VGA : 6GB Memory : 8GB DDR3 Monitor 24" Keyboard + Mouse OS Windows 10 Ultimate Original	6	Lot	HP	Rp 199,990,800



SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
	3. Projector with Motorized Screen - Projector : Bright (Lumens) : 3300 Contrast Ratio : 16000:1 Resolution : WXGA Lamp & Filter Life (Hours) : Up to 10000 Connection : HDMI Power Speaker (W) : 10 Short Projection Distance at 0.60m (inch) : 18 Power Supply (V) : AC 100 - 240 Frequency (Hz) : 50/60 Power Consumption (W) : 300 - Screen Projector Motorized 4:3 / Wide Screen Screen Size 2,0 x 1,5 M Remote	1	Lot	EPSON	Rp	25,800,000
	4. Sound System Indoor Speaker Passive 15 inch Mic Wireless Power Mixer	1	Lot	SONY	Rp	14,351,500
	5. Headset Wireless Headphone	6	Set	Logitech	Rp	6,840,000
	6. Network System Switch Hub UTP Cable Conduit	1	Lot	Custom	Rp	12,000,000
	7. Deck Console and Chair Solid Wood Painting	7	Lot	CUSTOM	Rp	50,400,000
25	SHIP STABILITY FURNITURE 1. Meja Instruktur Ukuran : 120 x 75 x 75 cm Class COD 128	1	Unit	CUSTOM	Rp	2,760,000
	2. Kursi Instruktur Ukuran w x d x h = 465 x 610 x 870 Frame Finishign : Powder Coating, Frame Colour : Black, Pholstery Material : Fabric	1	Unit	CUSTOM	Rp	1,500,000
	3. Almari Dokumen Material Plat besi bertutup kaca Ukuran 205 x 90 x 40 cm Sliding Glass Doors	1	Unit	CUSTOM	Rp	8,400,000
26	KOMPONEN PENDUKUNG SHIP STABILITY 1. Modul CBT : Ship Stability Simulator 100 Frame Content Multimedia : Animation Cathegory 2D & 3D Web Based Size 1366 x 1768 pixel	1	Modul	SS ARI SIMULATION	Rp	337,500,000



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SPEFISIKASI SIMULATOR BRIDGE, TUG AND SHIP STABILITY

NO	URAIAN PEKERJAAN	KUANTITAS		MERK	TOTAL	
		JML	SATUAN			
	Naration / text indonesia version					
	2. Modul CBT : Panduan Praktikum "Ship Stability" (Tutorial) <u>Content Multimedia :</u> Animation Cathegory 2D & 3D Web Based Size 1366 x 1768 pixel Naration / text indonesia version	1	Lot	SS ARI SIMULATION	Rp	260,000,000
	3. PC Set with UPS 650 VA - Core I7, RAM Minimal 8Gb, HDD Minimal 1TB, Monitor Minimal 24" LED, Win 8, DVD RW, VGA Minimal 1GB, Wireless Keyboard, Wireless Mouse - UPS 650 VA	6	Set	HP	Rp	135,000,000
	4. Computer System for Instructure with UPS 650 VA - Core I7, RAM Minimal 8Gb, HDD Minimal 1TB, Monitor Minimal 24" LED, Win 8, DVD RW, VGA Minimal 1GB, Wireless Keyboard, Wireless Mouse - UPS 650 VA	1	Unit	HP	Rp	22,500,000
	5. Multimedia projector with Motorized Screen <u>Spesifikasi :</u> WXGA (1280 x 800) 3000 Lumens ANSI, 1,7 Kg 3 LCD Technology Screen, 120" wall mounted, motorized	1	Set	EPSON	Rp	30,000,000
SUBTOTAL B					Rp	4,097,086,800
C	KELISTRIKAN, JARINGAN DAN RENOVASI					
27	INTEGRASI, KELISTRIKAN, JARINGAN & RENOVASI					
	- Integrasi Bridge, Tug and Ship Stability	1	Lot	ARI SIMULATION	Rp	381,103,600
	- UPS 10 KVA	3	Unit	APC	Rp	294,840,000
	- Kelistrikan Instalasi dan Panel Listrik ke dalam gedung	1	Lot	CUSTOM	Rp	221,150,000
	- Lokal Power Network Distribution	1	Lot	CUSTOM	Rp	194,535,000
	- Penyekatan ruangan, Mockup & Console	1	Set	SELF MADE	Rp	666,000,000
	- Mock up Bridge & Tug					
	- Console Bridge & Tug					
	- Console Ship Stability					
	- CBT Console					
	- AC 1 PK	3	Unit	Daikin	Rp	28,800,000
	- AC 2 PK	4	Unit	Daikin	Rp	62,400,000
SUBTOTAL C					Rp	1,848,828,600
TOTAL A+B+C					Rp	20,286,947,000
PPN 10%					Rp	2,028,694,700
GRAND TOTAL					Rp	22,315,641,700