KONGSBERG

Scope of Work

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Upgrade to Class B bridges

Norway Royal Salmon

Document Status

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Approved: Bjarne Torkelsen
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Address: KONGSBERG DIGITAL AS
PO Box 1009
N-3194 Horten Norway.

Telephone: +47 67 80 48 00
E-mail: maritimesimulation.sales@kdi.kongsberg.com
Web Site: http://www.kongsberg.com

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1 INTRODUCTION

K-Sim® Navigation - Ships bridge simulator

K-Sim® Navigation is designed for the future of advanced and integrated ships bridge simulation training. It is based on a cutting-edge technology platform enabling more realistic training scenarios and enhanced user benefits for both instructors and students

Realism

An advanced new physical engine and state-of-the-art hydrodynamic modelling allow vessels, objects and equipment to behave and interact as in real life. Vessels and objects including various geographical training areas and all possible weather conditions are brought to life with a sophisticated new visual system.

Instructor System

K-Sim® Navigation has been developed with the user experience firmly in focus. In addition to the realistic environment for students, instructors benefit from an award winning* instructor system designed to facilitate ease of use. It features an intuitive and modern educational tool utilizing a modified ECDIS chart as a starting point with drag & drop function for creating exercises. The instructor system also includes automatic recording and an advanced assessment system for ensuring optimal training and feedback standards.

**Award for Design Excellence from the Norwegian Design Council*

Configuration flexibility

K-Sim® Navigation provides a fully scalable range of options – from a PC based desktop system, through to a full mission bridge simulator.

Team training possibilities

K-Sim® Navigation is built on the same core technology platform as the market leading K-Sim® Offshore simulator. It can easily be integrated with other Kongsberg Maritime simulators to enable a comprehensive range of training scenarios. Already approved to DNV GL Class-A standards, K-Sim® Navigation allows maritime schools and academies to extend their available portfolio of courses, while in addition, providing them with the controlled environment necessary for undertaking valuable research projects.

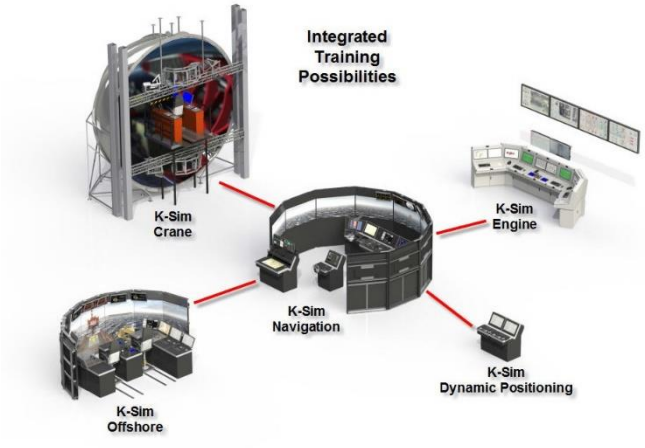

Figure 1 "Full Picture"

https://www.kongsberg.com/en/kongsberg-digital/maritime%20simulation/k-sim%20navigation%20- page/

2 SCOPE OF WORK

Upgrade of Class C to B K-Sim Navigation Bridges

- 3 x Class B Bridges with existing SW licenses
- Bridge consoles with HW instrument panels
- Visual system:
- 120° Horizontal field of view
- 3x55" Screens on each bridges

All systems:

- System software
- SW Instruments
- Models and Exercise areas
- Documentation
- Quality Management
- Packing and shipment
- Installation
- Site Acceptance Test
- Familiarization Training

Each piece of equipment installed in the simulator has a similar functionality to corresponding real equipment. KDI uses a generic/ mimic with functions similar to the various real instruments found on board vessels. Each piece of equipment resembles the behavioral characteristic, accuracy, reaction time and other limitations, related to corresponding equipment in use. Where generic/emulated instrumentation is used, the following requirements apply:

- Digital and analogue instrumentation are grouped and positioned into realistic functions areas.
- The visual proportion of the emulated instruments are closed to real instrumentation.
- Scale and range are in accordance with real instrumentation.

2.1 Upgrade from Class C to B K-Sim Navigation Bridges

SPESIFICATIONS	
Horizontal field of view	120° Horizontal field of view
Visual channels	3 x channels
Visual screens	3 x 55" LED Backlit
Consoles	4

Bridge with 120degree Visual View with 3 LED screens

3 DELIVERABLE ITEMS

3.1 Bridge Hardware

BRIDGE HARDWARE ITEMS	Brg 1	Brg 2	Brg 3
KM05 - 650 Instrument console with 24"monitor	3	3	3
KM05 - 45° Corner console with 24" monitor	option	option	optional
Sound System with sub-woofer and 4 speakers	1	1	1

BRIDGE HW INSTRUMENT PANELS	Brg 1	Brg 2	Brg 3
MultiFlex touch panel	2	2	2
Tracker Ball	2	2	2
Dual Telegraph	1	1	1
Dual Thrusters	1	1	1
VHF/DSC Handset	1	1	1
Steering wheel	1	1	1
Steering system heading control joystick	1	1	1

BRIDGE VISUAL SYSTEM – FLAT SCREEN DISPLAYS	Brg 1	Brg 2	Brg 3
55" LCD LED back-light display	3	3	3
Custom made bridge fronts (Horizontal)	3	3	3

BRIDGE SIMULATOR COMPUTERS & MISC	Brg 1	Brg 2	Brg 3
Bridge Computer	1*	1*	1*
K-Bridge ECDIS Computer	1*	1*	1*
K-Bridge RADAR Computer	1*	1*	1*
Visual Computers for Main visual scene	2+1*	2+1*	2+1*
Server	-	-	-

Use of existing Computer from Class C desktop

3.2 Instructor Hardware

INSTRUCTOR HARDWARE	Ins 1
Instructor station computer (Image generator)	-
24” Monitor	-
Printer A3 format with network interface	-
Communications equipment: Goose neck microphone and speakers	-
Instructor Visual Monitoring system “Drone View”. To show the visual scene at the instructor station. Including: • 55” Display connected to instructor PC	-

SERVER ROOM HARDWARE	Qty
Firewall Router (for remote support)	-
File server	-

NAS (Network attached Storage unit)	1

3.3 Software Modules

BRIDGE SOFTWARE MODULES	Brg 1	Brg 2	Brg 3
K-Sim Ownship SW License	1*	1*	1*
K-Sim Conning SW License	1*	1*	1*
K-Bridge ECDIS SW License	1*	1*	1*
K-Bridge RADAR SW License	1*	1*	1*
K-Sim Visual Channels SW License	2+1*	2+1*	2+1*

*Use ot existing licenses from Class C desktop

INSTRUCTOR SOFTWARE MODULES	Ins 1	Ins 2
K-Sim Instructor License	-	-

3'rd PPARTY LICENSES	Included
Windows License for each computer in the delivered system	Yes
License (for remote support system)	Yes
C-Map Jeppesen Professional+ World-wide coverage	Yes

BRIDGE SOFTWARE INSTRUMENT PANELS	Per Bridge
Steering System/Autopilot/NFU	1
Throttle	1
Thruster Control	1
AIS Display	1
Anchor Control	1
DGSP Navigator	1
Engine Telegraph (ETU)	1
Fire Indicator	1
Gyro Repeater	1
LOG	1
Navigation Lights	1
Sound Reception System	1
Watch Responsibility	1
Window Wiper Control	1
Steering Gear Control	1
Deck lights	1
Bridge Watch Unit	1
Alarms	1
Day Symbols	1
Engine Alarms	1
Morse	1
Gyro and Steering Gear Control	1
Magnetic Compass Repeater	1
Propulsion Indicators	1
Sound Signals	1
Weather Indicators	1

Visual View Control	1
Clinometer	1
Fire Doors	1

3.4 Simulator Models, Objects & Exercise Areas

INCLUDED SIMULATOR HYDRODYNAMIC MODELS	QTY
Customer can select from our Hydrodynamic Ship Model library.	-

INCLUDED SIMULATOR OBJECTS	QTY
Customer can select from our object library.	-

EXERSICE AREAS INCLUDED	Qty
Customer can select from our exercise area library.	-

4 ADMINISTRATIVE ITEMS

4.1 Documentation

All Kongsberg Digital documentation, where applicable, will be delivered in Adobe® Acrobat® PDF- format. All system manuals will be written in English.

Note: Manuals supplied with other subcontracted equipment, such as third-party Radar/ARPA systems, receivers, printers, projection equipment etc., shall be supplied in the quantities received from the manufacturer.

4.2 Project Management

When the contract is signed, Kongsberg Digital will assign a Project Manager who will be responsible for administration and day-to-day communication with the customer up until delivery and installation of the system specified in the quotation. Unless otherwise specified, Project meetings held outside KDI's premises will be charged according to cost.

Project management is based on Kongsberg Digital standard PM procedures. Other standards will be charged according to time and material.

4.3 Quality Assurance and Quality Control

Quality Assurance and Quality Control are included.
The KDI project manager is responsible for preparing an internal test procedure in accordance with the KDI Quality Assurance program. The test will be made according to the test procedure and the equipment will be shipped after successful completion of the test.

4.4 Factory Acceptance Test (FAT)

The KDI project manager is responsible for preparing an FAT procedure in accordance with the KDI Quality Assurance program. The test will be made according to the test procedure and the equipment will be shipped after successful completion of the test.

4.5 Site Acceptance Test (SAT)

The KDI project manager is responsible for preparing an SAT procedure in accordance with the KDI Quality Assurance program. Following a completed installation, a system acceptance test (SAT) will be conducted. A customer representative authorized to sign the SAT certificate shall be present during the entire SAT.

4.6 Installation and Start-up

The installation of the simulator equipment will be conducted by a Kongsberg Digital experienced installation engineer. System start-up will take place immediately after the installation and commissioning period. At the end of the start-up period, a Site Acceptance Test of the system will take place. The installation and commissioning includes basic instructions, installation material appropriate for setting the simulator to work including plugs, cables and miscellaneous installation material.

4.7 Facility Requirements

Local Area Network, Voltage, Air-condition, humidity, temperatures, etc. are stated in document "423310 Facility Requirements.pdf" and are mandatory requirements for the customer.

4.7.1 VAC Supply / Building

The customer is required to provide the following support and infrastructure under local or national building code as follows:

- Power outlets with ground system. Voltage 220V AC ±15V AC RMS Single phase or 110V AC ±10V AC RMS Single phase. Frequency 50 Hz or 60 Hz ±0.5 Hz
- Customer to arrange internet connection with fixed public IP address. This will allow remote diagnostic. If the site does not have access to Internet "Broad band" KM will supply Telephone Modem.
- Illumination in all areas containing simulator equipment and all access ways has proper working illumination.
- Construction work in the simulator.
- Paint work in the simulator facility. For color suggestions please contact the project manager.
- Cleaning - the simulator facility is properly cleaned and tidy, and that all access ways are free from stored equipment.
- Temperature control equipment servicing the simulator facility within limits.
- Door access - door widths and access ways to the simulator are in accordance with specification, so that it is possible to bring in the various components of the simulator.
- Building access to allow the simulator equipment to be brought into the building.
- Safety - fire-extinguishing equipment are in place and escape ways are not blocked according to local building codes.

4.8 Environmental Requirements

Temperature

When turned on:

Ideal temperature:	22 ± 3°C (72 ± 5°F)
Minimum temperature:	10°C (50°F)
Maximum temperature:	30°C (86°F)
Maximum temperature gradient:	5°C (9°F) per hour

When turned off:

Minimum temperature:	0°C (32°F)
Maximum temperature:	50°C (122°F

Humidity

When turned on:

Ideal relative humidity:	50% ± 10%
Minimum relative humidity:	30%
Maximum relative humidity:	95% no condensation

When turned off:

Minimum relative humidity:	5%
Maximum relative humidity	95% no condensation

Note that if the humidity is lower than 30%, there may be problems with static electricity.

4.9 Responsibility Matrix

Delivery	KDI	Customer
Delivery and installation of Simulator Equipment in this Scope of Work	X	
FAT/SAT	X	
Instructor table and chair		X
Debriefing. Chairs (If included)		X
Projector 1920 x 1080 for debriefing (If included)		X
Projector fixture for debriefing		X
Projector screen for debriefing		X
Paper charts, books etc.		X
ECDIS charts	X	
UPS (if main power is unstable)		X
Remove empty boxes / trash from simulator delivery.		X
Tables, chairs etc. that are not simulator products is not part of the supply unless otherwise stated in this scope. Customer is responsible to provide those items and to perform the related installation.		X
Installation of equipment not delivered by KDI or not mentioned in this Scope of Work, is responsibility of the customer.		X
Visual Screens with Bridge fronts	X	
Visual Projector system		
Wheelhouse Construction		
Circular Screen construction		

5 SALES PRICE

5.1 Upgrade of Class C to B K-Sim Navigation Bridges

Item	Description	Price in: NOK
5.1	**Upgrade of Class C to B K-Sim Navigation Simulator Bridges** 3x Bridge as illustrated under  Following is included on each bridges: • 3x LED Screens 120° view • 3x Screens frames • All necessary HW panels stated in this Scope • All Consoles and panels for navigation • Delivery Site Austevoll • Included installation, test and SAT on site Sales Price according to Scope of work above:	1.998.000,-
5.2	**LTSSP for upgrade of 3 Class B briges** **Including following:** - Basic SW Update - Hardware Update PC`s - Extended HW warranty - Same service on site service - Implemented in existing LTSSP Agreement	68.000,- Each year for a 5 year agreement

6 GENERAL TERMS AND CONDITIONS

6.1 Expenses Excluded in Sales Price

The sales price is exclusive of possible import duties, taxes, any withholding tax and VAT.

6.2 Payment Terms

Proposed payment terms are:
-40% of the Contract Price shall be paid at Contact Signature.
-30% of the Contract Price shall be paid at shipment.
-30% of the Contract Price shall be paid no later than 30 days after taking-over.

Kongsberg is prepared to discuss alternative solutions

6.3 Time of Delivery

The equipment will be delivered to: Norway Royal Salmon 3-6 months after signed contract.

6.4 Terms of Delivery

According to INCOTERMS 2010: CIP/DAP Norway Royal Salmon, Alta.

6.5 Validity of Quotation

This quotation is valid until: 90 days after the date of this document.

6.6 Equipment Warranty

Kongsberg Digital AS warrants for a period of 12 months from the date of shipment according to Kongsberg Digital's standard terms for warranty.

6.7 Product Recycling

Please check our website http://www.km.kongsberg.com and then "SUPPORT" and "Product Recycling" for more information.

6.8 Other Terms and Conditions

Please refer to attached PDF-document:
609407/2 "Standard_Cond_S&I_of_SW_and_HW Logo.pdf".