

Annex "Specifications"

	Nordisk Sikkerhet AS (NS)
	Ref.: Avtale nr. 741, 07/07/2015
	Project title: "Three fixed radiation portal monitors for FSUE "Atomflot"

Specifications

Turnkey supply of three fixed radiation portal monitors and training of the FSUE "Atomflot" personnel

Contracting Authority: Nordisk Sikkerhet AS

Recipient: FSUE "Atomflot"

Tenderer's name: _____

Annex “Specifications”

Contents

BACKGROUND.....	3
1. VEHICAL RADIATION PORTAL MONITOR.....	3
2. RAILROAD RADIATION PORTAL MONITOR.....	5
3. PEDESTRIAN RADIATION PORTAL MONITOR.....	6
4. OPERATOR’S WORKPLACE EQUIPMENT AND SOFTWARE.....	8
5. EQUIPMENT DOCUMENTATION.....	10
6. EQUIPMENT DELIVERY TERMS AND CONDITIONS.....	10
7. TRAINING COURSE: OPERATION, MAINTENANCE AND REPAIR.....	11
8. TRAINING COURSE DOCUMENTATION.....	11
9. TRAINING COURSE DELIVERY TERMS AND CONDITIONS.....	12
10. TIME SCHEDULE.....	12

Annex “Specifications”

BACKGROUND

The Tenderer shall fill in the Annex “Specifications” in the format given below. The Tenderer’s proposed supplies and services should be manufactured and certified in accordance with the technical regulations and standards of the Russian Federation given in Clauses 2.3, 4.3, and 6.4 of the document “Invitation to tender”. The complete table should be submitted to the Contracting Authority along with the required tender documents. On the front page of the Annex “Specifications”, the Tenderer shall indicate its name. After the completion of this document, it should be signed and dated by the Tenderer-authorized person.

1. VEHICAL RADIATION PORTAL MONITOR

	The Contracting Authority's Requirements	Tenderer's Offer
Manufacturer	—	
Model	—	
TECHNICAL SPECIFICATIONS		
Vehicle RPM general specification		
Number of pillars	2	
Dimensions of the pillar, no more than	4200×900×400 mm	
Detection channels	Gamma, neutron	
Gamma channel	Organic plastic scintillator	
Neutron channel	He-3 tubes	
Detection zone no less than	Vertical: 3.0 m Horizontal: 3.5 m	
Occupancy sensors	Infra-red sensor or other type	
Alarm indication	Audible and visual indication, both on the monitor pillar and at the operators workplace, different for neutron and gamma alarms	
Tamper switch	Required	
Remote audible and visual alarm unit	To be installed within ~200 meters away from RPM.	
External connection to network	TCP/IP protocol. Ethernet type network is required	
Requirements to cable lines	Cable must be laid outside in a corrugated metal pipe at an approximate distance to the operator's workplace of no more than 70 m	
Image of alarm-causing objects (video camera is to be included in the scope of this contract)	Associated IP-video camera based surveillance system with IR-illuminator	
Power supply	220 ±10% V / 50±5 Hz	
Offline work in the event of power supply interruption, no less than	6 hours for the whole system.	

Annex "Specifications"

	The Contracting Authority's Requirements	Tenderer's Offer
Power consumption	≤ 50 W (≤ 1500 W with thermo regulation)	
Regime of operation	24 h of continuous operation	
Service life, no less than	10 years	
Mean time between failures, no more than	4000 hours	
Environmental requirements		
Ambient temperatures	From -50 to +50 °C	
Relative humidity	Up to 95% at ambient temperature of 35°C and lower, without condensation of moisture	
Capability to operate in a maritime environment	Required	
Protection degree, no less than	IP 54 as per GOST 14254-96	
Electromagnetic compatibility		
Constant magnetic field	400 A/m	
Electrostatic discharges	6 kV for contact 8 kV for air	
Radio-frequency field	up to 10 V/m (20 - 1000 MHz)	
Mechanical resistance		
Vibration during transportation	acceleration of 2 g (frequency 10 - 33 Hz)	
Vibration during operation	acceleration of 0.5 g (frequency 10 - 33 Hz)	
Performance		
False Alarm Rate	1 per 10000 passages during 8 hours of operation, with confidence level of 95%.	
<i>Minimal Identified Activity (for the speed of 2,2 ± 5% m/sec, background dose rate ≤ 0.22 μSv/h, and the width of detection zone of 6.0 m)</i>		
For Co-57, MBq	No more than 0.35	
For Cs-137, MBq	No more than 0.35	
<i>Identified Neutron Flux (for the speed of 2,2 ± 5% m/sec, background dose rate ≤ 0.22 μSv/h, and the width of detection zone of 6.0 m)</i>		
For Cm-244 or Cf-252, neutr/s	No less than 2·10 ⁴	
Natural gamma background suppression	Required	
CONSUMABLES AND SPARE PARTS		
Consumables and spare parts for three (3) years of normal usage	Yes	

Annex “Specifications”

2. RAILROAD RADIATION PORTAL MONITOR

	The Contracting Authority's Requirements	Tenderer's Offer
Manufacturer	—	
Model	—	
TECHNICAL SPECIFICATIONS		
Railroad RPM general specification		
Number of pillars	2	
Dimensions of the pillar, no more than	4200×900×400 mm	
Detection channels	Gamma, neutron	
Gamma channel	Organic plastic scintillator	
Neutron channel	He-3 tubes	
Detection zone no less than	Vertical: 3.5 m Horizontal: 6.2 m (in compliance with GOST R 51635-2000)	
Occupancy sensors	Infra-red sensor or other type	
Alarm indication	Audible and visual indication, both on the monitor pillar and at the operators workplace, different for neutron and gamma alarms	
Tamper switch	Required	
Remote audible and visual alarm unit	To be installed within ~200 meters away from RPM	
External connection to network	TCP/IP protocol. Ethernet type network is required	
Requirements to cable lines	The cable should be laid outside in a corrugated metal tube, the approximate distance to the operator's workplace is no more than 70 m	
Image of alarm-causing objects (video camera is to be included in the scope of this contract)	Associated IP-video camera based surveillance system with IR-illuminator	
Power supply	220 ±10% V / 50±5 Hz	
Off-line work in the event of power supply interruption, no less than	6 hours for the whole system.	
Power consumption	≤ 50 W (≤ 1500 W with thermo regulation)	
Regime of operation	24 h of continuous operation	
Service life, no less than	10 years	
Mean time between failures, no more than	4000 hours	
Environmental requirements		

Annex “Specifications”

	The Contracting Authority's Requirements	Tenderer's Offer
Ambient temperatures	From -50 to +50 °C	
Relative humidity	Up to 95% at ambient temperature of 35°C and lower, without condensation of moisture	
Capability to operate in a maritime environment	Required	
Protection degree, no less than	IP 54 as per GOST 14254-96	
Electromagnetic compatibility		
Constant magnetic field	400 A/m	
Electrostatic discharges	6 kV for contact 8 kV for air	
Radio-frequency field	up to 10 V/m (20 - 1000 MHz)	
Mechanical resistance		
Vibration during transportation	Acceleration of 2 g (frequency 10 - 33 Hz)	
Vibration during operation	Acceleration of 0.5 g (frequency 10 - 33 Hz)	
Performance		
False Alarm Rate	1 per 10000 passages during 8 hours of operation, with confidence level of 95%.	
<i>Minimal Identified Activity (for the speed of 2,2 ± 5% m/sec, background dose rate ≤ 0.22 μSv/h and the width of detection zone of 6.0 m)</i>		
For Co-57, MBq	No more than 0.35	
For Cs-137, MBq	No more than 0.35	
<i>Identified Neutron Flux (for the speed of 2,2 ± 5% m/sec, background dose rate ≤ 0.22 μSv/h and the width of detection zone of 6.0 m)</i>		
For Cm-244 or Cf-252, neutr/s	No more than 2·10 ⁴	
Natural gamma background suppression	Required	
CONSUMABLES AND SPARE PARTS		
Consumables and spare parts for three (3) years of normal usage	Yes	

3. PEDESTRIAN RADIATION PORTAL MONITOR

	The Contracting Authority's Requirements	Tenderer's Offer
Manufacturer	—	
Model	—	
TECHNICAL SPECIFICATIONS		
Pedestrian RPM general specification		
Number of pillars	2	

Annex “Specifications”

	The Contracting Authority's Requirements	Tenderer's Offer
Dimensions of the pillar, no more than	2200×630×200 mm	
Detection channels	Gamma, neutron	
Gamma channel	Organic plastic scintillator	
Neutron channel	He-3 tubes	
Detection zone, no less than	Vertical 0.8 m Horizontal: 2 m	
Occupancy sensors	Infra-red sensors or other type	
Alarm indication	Audible and visual indication, both on the monitor pillar and at the operators workplace, different for neutron and gamma alarms	
Tamper switch	Required	
Remote audible and visual alarm unit	To be installed within ~200 meters away from RPM.	
External connection to network	TCP/IP protocol. Ethernet type network is required	
Requirements to cable lines	Cable line should be installed inside the building. Approximate distance to the operator's workplace is no more than 40 m.	
Image of alarm-causing objects (video camera is to be included in the scope of this contract)	Associated IP-video camera based surveillance system with IR-illuminator	
Power supply	220 ±10% V / 50±5 Hz	
Off-line work in the event of power supply interruption, no less than	6 hours for the whole system.	
Power consumption	≤ 30 W	
Regime of operation	24 h of continuous operation	
Service life, no less than	10 years	
Mean time between failures, no more than	4000 hours	
Environmental requirements		
Ambient temperatures	From -5 to +40 °C (K2 category in comply with GOST R 51635)	
Relative humidity	Up to 75% at the ambient temperature of 30 °C and lower, without condensation of moisture (K2 category in comply with GOST R 51635)	
Capability to operate in a maritime environment	Not required	
Protection degree, no less than	IP 54 as per GOST 14254-96 (dust protection, solid bodies protection, antisplash)	

Annex “Specifications”

	The Contracting Authority's Requirements	Tenderer's Offer
Electromagnetic compatibility		
Constant magnetic field	400 A/m	
Electrostatic discharges	6 kV for contact 8 kV for air	
Radio-frequency field	up to 10 V/m (20 – 1000 MHz)	
Mechanical resistance		
Vibration during transportation	Acceleration of 2 g (frequency 10 – 33 Hz)	
Vibration during operation	Acceleration of 0.5 g (frequency 10 – 33 Hz)	
Performance		
False Alarm Rate	1 per 10000 passages during 8 hours of operation, with confidence level of 95%.	
<i>Minimal Identified Activity (for the speed of $1,2 \pm 5\%$ m/sec, background dose rate $\leq 0.22 \mu\text{Sv/h}$ and the width of detection zone of 1.5 m)</i>		
For Co-57, MBq	0.25	
For Cs-137, MBq	0.12	
<i>Identified Neutron Flux (for the speed of $1,2 \pm 5\%$ m/sec, background dose rate $\leq 0.22 \mu\text{Sv/h}$ and the width of detection zone of 1.5 m)</i>		
For Cm-244 or Cf-252, neutr/s	$1.2 \cdot 10^4$	
Natural gamma background suppression	Required	
CONSUMABLES AND SPARE PARTS		
Consumables and spare parts for three (3) years of normal usage	Yes	

4. OPERATOR'S WORKPLACE EQUIPMENT AND SOFTWARE

	The Contracting Authority's Requirements	Tenderer's Offer
Manufacturer	—	
Model	—	
TECHNICAL SPECIFICATIONS		
PC general specification		
PC type	Industrial-grade	
Processor frequency	$\geq 2\text{GHz}$	
RAM	$\geq 8\text{GB}$	
Hard disk volume	$\geq 1.0\text{TB}$	
Number of external connections:		
Ethernet 100/1000 Mbit	≥ 2	
USB 2.0 or higher	≥ 2	
Display	LCD, preferred size of 24 - 28"	
LCD brightness	$\geq 500 \text{ cd/m}^2$	

Annex “Specifications”

	The Contracting Authority's Requirements	Tenderer's Offer
Operating system	Windows 7 or higher	
Functions	<ul style="list-style-type: none"> - Collection and visualization of information from the RPMs and camera - Registration of all detection events and a database of these events; - Detection protocol creation and periodic reports; - Issuance of control signals to the turnstile; - Communication with the inspection point security system over an Ethernet connection 	
Software requirements		
The number of simultaneously connected RPMs	≥ 10	
Multilevel access	At least 2 level access: operator and administrator	
In normal (no alarm) state operator must be able to monitor:	<ul style="list-style-type: none"> - RPMs status; - UPSs status (if there is no main power); - Online video from associated camera/cameras. 	
Alarm window	<ul style="list-style-type: none"> - Displays count rate histogram of the alarm; - Shows video fragment of the alarm causing object and allows to save best frame; 	
Database	Stores all collected data for at least 180 days, including video fragments of the alarms.	
Power supply	220 ±10% V / 50±5 Hz	
Off-line work in the event of power supply interruption, no less than	6 hours for the whole system	
Power consumption	≤ 300 W	
Regime of operation	24 h of continuous operation	
Service life, no less than	10 years	
Mean time between failures, no more than	4000 hours	
Associated network		
Network type	Wired network	
Network equipment	No special requirements. Routers, switches and so on, if necessary.	

Annex “Specifications”

	The Contracting Authority's Requirements	Tenderer's Offer
Scope of supply	Network equipment, Elements of structured cable system (cable communication lines, cable connectors, info-sockets and other components.	
Environmental requirements		
Ambient temperatures	From 0 to +40 °C	
Relative humidity	Up to 75% at the ambient temperature of 30 °C and lower, without condensation of moisture	
Capability to operate in a maritime environment	Not required	
Protection degree, no less than	IP 54 as per GOST 14254-96	

5. EQUIPMENT DOCUMENTATION

DOCUMENTATION		
Specifications as per GOST 2.114-95 (“Tehnicheskie Usloviia”)	In Russian	
Programme and procedure of factory tests	In Russian	
Design documentation for cable lines installation, including the following documents: -Chart of external points connection -Cable log -Mounting drawings -Power supply drawings	In Russian	
Operator's manual including procedure for calibration and periodical verification	In Russian	
Programme and procedure of site acceptance tests	In Russian	
Transportation documentation	In Russian	
Certified for use in Russia	Yes	

6. EQUIPMENT DELIVERY TERMS AND CONDITIONS

DELIVERY TERMS AND CONDITIONS		
Terms of delivery	DDP, Incoterms 2010	
Place of Delivery	FSUE Atomflot's warehouse, 183017, Murmansk-17, Russia	
Unloading at the place of delivery	Provided by Contractor, free of charge	

Annex “Specifications”

Delivery Time	≤ 90 calendar days after the date of contract signature	
Warranty Period	≥ 24 months after signature of the Certificate of Acceptance	

7. TRAINING COURSE: OPERATION, MAINTENANCE AND REPAIR

	The Contracting Authority's Requirements	Tenderer's Offer
GENERAL TERMS		
Training should be held in	Russian language	
Number of trainees per course, up to	15	
Duration, hours	32	
Themes to be covered	<ul style="list-style-type: none"> - The nature of gamma and neutron radiation - Radioactive sources and nuclear materials - The interaction of radiation with matter - Gamma / neutron detectors - Operationing principles of radiation portal monitors - Detailed analysis of all units of the supplied equipment - Operation - Detailed analysis of algorithms and features of operation - Maintenance - Minor repairs - Specialized software: installation and operation. 	
Theoretical part duration, hours	≥ 10	
Practical part duration, hours	≥ 20	
Instructional video	As an advantage	
ACKNOWLEDGMENT OF COMPLETION OF THE COURSE		
Verification	Test, written form.	
Number of questions	≥ 20	
Possible answers per question	≥ 4	
Percentage of right answers to pass	≥ 80	

8. TRAINING COURSE DOCUMENTATION

DOCUMENTATION		
One certificate per trainee	In Russian	
List of materials to provide on one CD/DVD per trainee	<ul style="list-style-type: none"> - Set of training materials; - User documentation for the installed equipment. 	
Training materials language	In Russian	

Annex “Specifications”

Results of test should be delivered to the Contracting Authority and Recipient	Yes	
--------------------------------------------------------------------------------	-----	--

9. TRAINING COURSE DELIVERY TERMS AND CONDITIONS

DELIVERY TERMS AND CONDITIONS		
Number of courses	1	
Should take place in	Russia, Murmansk-17, at the FSUE “Atomflot” site	
Delivery Time	Within 14 calendar days after the date of installation and commissioning of the RPMs.	

10. TIME SCHEDULE

The full cycle for implementation of all operations under this tender should not exceed one hundred and twenty-one (120) calendar days.

	Action	Period of completion	Tenderer's Offer	Note
1	Submission of documents: <ul style="list-style-type: none"> - Equipment specifications (“Tehnicheskie usloviia”) - Programme and procedures of factory acceptance test - Design documentation for cables installation - Programme and procedures of on-site acceptance tests at the FSUE Atomflot 	Within 45 calendar days after the signing of Contract		
2	Equipment manufacturing and factory acceptance testing	Within 60 calendar days after the signing of Contract		
3	Equipment delivery	Within 30 calendar days after the factory acceptance test		
4	On-site commissioning and training of the FSUE “Atomflot” personnel	Within 30 calendar days		

Annex “Specifications”

		after equipment delivery		
5	Contract Completion (signed Certificate of acceptance by the Contracting Authority, the Contractor, and the Recipient)	Within 14 calendar days after the commissioning of equipment		

Authorized person on behalf of the Tenderer:

Name: _____

Title: _____

Signature: _____

Date: _____