

Subject

Guideline for measurement of dose rate for ships in Japanese ports

# **ClassNK**

## **Technical Information**

No. TEC-0852

Date 28 April 2011

To whom it may concern

The need for the information on radiation dose rate for ships from Japan has been on the increase at the ports outside Japan since the aftermath of damage on the Fukushima nuclear power plant caused by the earthquake on 11 March 2011 and subsequent Tsunami.

In the face of this need, Japanese Government (MLIT: Ministry of Land, Infrastructure, Transport and Tourism) has developed the guideline on radiation measurement for ships in order to provide foreign port authority with proper access to accurate data. Attestation for radiation dose rate will be issued if the measurement is conducted based on the guideline. ClassNK is requested by MLIT to issue an attestation in case where the measurement is conducted in Port of Keihin Yokohama Area.

In this context, ClassNK issues the attestation for ships of which radiation dose rate is measured in line with the guideline in Port of Keihin Yokohama Area. ClassNK is also ready to issue an appraisal report for ships that measurement is carried out in Japanese ports other than Yokohama area.

The attestation issuance procedures are shown below.

- A) The radiation dose rate measurement operator is to be arranged by the applicant.
- B) The applicant requests ClassNK (the nearest service site from the location of the measurements) for a document of attestation, submitting to ClassNK reports containing the results of measurement to be conducted following the guideline. ClassNK issues the attestation having confirmed that the data provided in the reports are based on the measurements method provided in the guideline.
- C) ClassNK does not charge the attestation issuance fees.

For any questions about the above, please contact:

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Attachment:

1. Guideline for measurement of dose rate for ships in port
2. Application and reporting form

NOTES:

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April 22 2011  
[Attachment 2]

## GUIDELINE FOR MEASUREMENT OF DOSE RATE FOR SHIPS IN PORT

Inspection and Measurement Division, Maritime Bureau

This guideline provides a method of measurement of dose equivalent rate (hereinafter referred to as "dose rate") for ships in port to be conducted by ship operators or third parties undertaking the measurement. Ship operators are requested to use this guideline as a reference in the conduct of the measurement in port.

### 1) Location

As a matter of principle, measurement should take place at berth or at places for anchoring. Places of measurement may be decided otherwise in consultation with parties concerned in a case where measurement in the aforementioned places is difficult.

### 2) Equipment

The equipment to be in use for the measurement should meet the following specifications:

Type: GM, scintillator, ionization chamber and semi-conductor survey meter;

Emitter:  $\gamma$  ray is to be detected;

Range for detection:

Energy range: 60 keV to 1.25 MeV for  $\gamma$  ray detection;

Measurement range: 0.1  $\mu$  Sv/h to 10  $\mu$  Sv and wider for 1cm dose equivalent rate;

Accuracy:  $\pm 20$  % for  $^{137}\text{Cs}$ ;

Calibration: It should be clarified that proper calibration is implemented by the certificate of recognized organizations or their equivalent companies; inspection records by equipment supplier or photocopy of in-house inspection records. Annual calibration is to be desired.

It should be noted that some countries/regions have the criteria set by Bq/cm<sup>2</sup> instead of  $\mu$  Sv/h, whereby requiring cautious consideration in selection of the equipment.

### 3) Method

Dose rate should be measured at five points in total. The five points comprise one point for deck of the bow, two points in total for deck of both sides in the vicinity of mid-ship, one point for deck of the stern, and one point in the vicinity of fore-castle. Other points may

be subject to measurement as a result of consultation amongst ship operators and measurement companies, taking into account the ship destination, cargoes to be carried and time needed for measurement. The measurement should be conducted in accordance with operational manuals for the equipment and the equipment should be placed as close as possible to the surface of the measurement points, but caution should be taken not to be in contact with the surface. The measurement should take place in such a manner that the interval of measurement is sufficient for the equipment to stabilize in indicating the dose rate (approximately three times of response time) and that the both maximum and minimum values for respective point are to be recorded. In the conduct of the measurement the background dose rate should be read and subsequently recorded.

#### 4) Attestation

Ship operators may request the Government or Class NK to issue a document for attestation when they conduct measurement of dose rate following this guideline. The measurement may be conducted by ship operators for themselves or third parties instead and the above mentioned document will be requested in the following manners.

##### (1) Request for attestation by Government

Ship operators may request Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism (MLIT) for a document of attestation, submitting to MLIT reports containing the results of measurement to be conducted following this guideline. Maritime Bureau issues the document as set out in FORM-1, having confirmed that the data provided in the reports are based on the measurement method provided in this guideline.

##### (2) Request for attestation by Class NK

Ship operators may request Class NK for a document of attestation, submitting to Class NK reports containing the results of measurement to be conducted following this guideline. Class NK issues the document as set out in FORM-2, having confirmed that the data provided in the reports are based on the measurement method provided in this guideline.

#### 5) Criteria for recommending decontamination

In accordance with the IAEA technical document, IAEA-TECDOC-1162, the value to recommend decontamination of ships in port is provided as three times of measured background dose rate.

Ship operators should ensure that decontamination takes place when the measured dose rate exceeds  $5 \mu$  Sv/h, which is provided in paragraph 7.1.14.12 of the IMDG Code.

6) Action to be taken in excess of the criteria

It is recommended that measures for decontamination be taken in a case where the measured dose rate is in excess of three times of measured background dose rate. Ship operators are requested to take measures for decontamination when the measured dose rate exceeds  $5 \mu\text{Sv/h}$ . Appropriate measures to decontaminate should be decided upon in close consultation among interested parties.

It should be noted that some countries or regions have schemes in place in which decontamination or detailed investigations are required in such cases that the measured dose rate for ships have exceeded three times of measured background dose rate, on the grounds that ships may potentially be contaminated.

7) Miscellaneous

This guideline will be subject to review on the basis of the experiences gained in the application of this guideline.

No.  
Date:

To: NIPPON KAIJI KYOKAI  
( Branch Office)

**APPLICATION FOR TECHNICAL SERVICES (DOSE RATE) FOR SHIPS**

We acknowledge the provisions of "REGULATIONS FOR TECHNICAL SERVICES" of NIPPON KAIJI KYOKAI (NK) and request you to carry out appraisal in accordance with the guideline for measurement of dose rate for ships in port issued by inspection and measurement division, maritime bureau on 22 April 2011 for the mentioned below:

Name of ship	
Port of registry	
Gross tonnage	
Classification or IMO number	
Date of measurement	
Location of measurement	
Company of measurement	
Equipment of measurement	

1. Applicant:

Name of Company \_\_\_\_\_

Address \_\_\_\_\_

TEL: \_\_\_\_\_ FAX: \_\_\_\_\_ E-mail: \_\_\_\_\_

Applicant's signature \_\_\_\_\_

2. Delivery of attestation:

- Original Attestation  must be expedited to our office by Courier Service.  
 will be collected by the local agent upon calling your Office.  
 will be expedited to the following address.

Company name & Address \_\_\_\_\_  
\_\_\_\_\_

Same copy by Fax/E-mail:  not required  required to

(Fax No. .... / E-mail .....) )

3. Name of Agent \_\_\_\_\_

(Tel. \_\_\_\_\_ Fax. \_\_\_\_\_ )

(Note)  Tick in boxes as applicable.

Example form of the report

Ship' Name	
Port of registry	
Gross tonnage	
IMO No.	
Date of measurement	
Place of measurement	

Measurement Point	Dose [ $\mu$ Sv/h]	
	Max	Min
Deck (Forward)		
Deck (Afterward)		
Deck (Port side, midship)		
Deck (Starboard side, midship)		
Bridge (Front wall)		
Others		

Company name of measurement	
Measurement by	
Date : YYYY-MM-DD	
Back Ground [ $\mu$ Sv/h]	
Name of measurement equipment	
Manufacture of measurement equipment	
Model or type name of equipment	
Range of measurement dose	

The undersigned declare that the measurement was carried out in accordance with the guideline for measurement of dose rate for ships in port issued by inspection and measurement division, maritime bureau on 22 April 2011 without the prejudice.

\_\_\_\_\_  
(Name& Signature, the measured person)