



European Maritime Safety Agency

Quarterly Report

Q4 - 2014

EU LRIT CDC

and

LRIT Ship DB

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1. SCOPE OF THE DOCUMENT

This document provides information on the system performance of the European Union LRIT Cooperative Data Centre (EU LRIT CDC or EU CDC) and on outstanding events with respect to the EU CDC activities and operations during the quarter covered by the report.

This Quarterly report is available to all LRIT users on the User Web Interface (UWI) of the EU CDC.

To avoid overloading the report with figures, some graphs show only full data for one month, but the result for the quarter is presented and summarized in tables.

This document is divided into two parts:

- **EU CDC Main figures** gives a general overview of the status of the EU CDC, its main issues and Key Performance Indicators (KPI);
- **Annexes** which show more detailed graphs and figures for the EU CDC which are referred to in the first part.

2. EU CDC MAIN FIGURES

2.1. EU CDC HIGHLIGHTS

The following are the highlights for the fourth quarter of 2014:

- **Quality of Service:** two major incidents, one due to a CSP outage and the other linked with an ASP outage, impacted the QoS this quarter. Nevertheless all the targets were met, and the level of service provided to end users was very good.
- **Maximum reporting rate:** Following an ASP campaign in October to improve the percentage of ships' terminal reporting properly, the reporting rate peaked at over 92%. This was the best result ever reached in the EU CDC since the set-up in June 2009. Of course, this good figure is also due to the continuous fleet monitoring done by some Contracting Governments.
- **Montenegro will join the EU CDC:** Montenegro will join the EU CDC in January 2015. This will bring the number of EU CDC participating countries to 38, and 5 ships will be added to the EU LRIT Ship Database.
- **New release foreseen early 2015:** the release 2.3 will be tested during Q1 2015, and deployed in March 2015. It will correct 46 anomalies, among them 2 IMSO audit findings, and includes 3 evolutions.
- **New tender for EU CDC recognised ASP:** the current contract with the recognised ASP CLS will end by end 2015. The launch of a new tender for contracting a recognised ASP is foreseen for February 2015.

2.2. KEY PERFORMANCE INDICATORS

The table below includes the KPIs used for measuring the EU CDC performance, of which many are based on the IMO requirements. The time format is hh:min.

Activity/Service	Performance Indicator	October	November	December	Quarter	Target
EU LRIT CDC System operational	Availability of the system over the period	99.26%	99.38%	99.40%	99.34%	> 99.00%
	Maximum continuous downtime of the EU LRIT CDC	00:04	00:04	00:11	00:11	< 12:00
EU LRIT CDC Reporting performance	Percentage position reports delivered according to IMO requirement	99.39%	99.66%	99.60%	99.55%	> 99.00%
EU LRIT CDC user web interface	Availability of the User Web Interface	99.89%	99.82%	99.62%	99.78%	> 95.00%

Table 1 – Key Performance Indicators

All the Key Performance Indicators were met this quarter.

The User Web Interface for the EU CDC had a very high availability over 99.7 %.

The availability of the Web Interface of the Ship Database does not enter into the calculations for the KPIs, but its availability was 99.9% during this quarter.

2.3. SYSTEM PERFORMANCE

This section refers to messages delivered by the EU CDC. The Quality of Service (QoS) measures if messages were properly delivered.

The IMO Definition of QoS is according to MSC Res. 263(84) §13 document:

$$\text{QoS} = \frac{\text{Number of delivered LRIT reports meeting latency requirements}}{\text{Total number of LRIT information requests}} \times 100\%$$

The QoS refers to Periodic (type 1), Poll (type 2) and SAR (type 3) position reports which were delivered by the EU LRIT CDC as per IMO requirements.

The target QoS is:

- 95% over any 24-hour period (24h QoS)
- 99% over any 1 month (30d QoS)

Table 2 is the monthly QoS covering both the periodic and polled messages. The QoS was above the IMO requirement for all the quarter.

	October	November	December
Monthly IMO-30d QoS (target 99%)	99.39%	99.66%	99.60%
Number of delivered reports that did not meet the IMO requirements	5,629	3,057	3,642
Percentage of delivered reports that did not meet the IMO requirements	0.61%	0.34%	0.40%
Total number of reports sent by EU CDC	921,746	895,205	913,119

Table 2 – Monthly 30d QoS

Further detailed information on the 24h and 30d QoS as well as the QoS for periodic reports or for polled reports can be found in § 3: Annexes in §3.3 System Performance.

In terms of the CSP latency which affects the performance of the DC, this was stable and is on average between 1 and 4 minutes.

2.4. SHIP INTEGRATION AND REPORTING

The Ship DB transmits a new version of the list of ships instructed to report to the EU LRIT CDC on a daily basis at a fixed time (cut-off time). The information provided in Table 3 is a snapshot of the situation for ship integration and ship reporting during the first week of each month. The ship reporting calculation is:

$$\% \text{ ship reporting} = \frac{\text{ships statuses normal, under and over reporting}}{\text{all ships integrated}} \times 100\%$$

So it takes into account stopped ships, which are also integrated.

	October	November	December
Total of ships in the EU LRIT CDC	8803	8817	8812
Ships integrated in the EU LRIT CDC (*=% of total of ships)	8624 97.9% *	8642 98.0% *	8626 97.9% *
Ships that have reported in the last 3 days (**=% of ships integrated)	7604 88.2% **	7737 89.5% **	7708 89.3% **

Table 3 – Integration and reporting statuses

The information provided in Table 4 is a summary of the actions taken, mainly to improve the reporting, during the quarter. The activity for restarting ship terminals not reporting as expected is measurable through the number of restarts and DNID uploads done by LRIT users or the ASP, for countries which delegated the monitoring of their fleet to EMSA. The higher number of DNID uploads in October is due to the ASP campaign to improve the percentage of ships' terminal reporting properly.

	October	November	December
Number of 'Stop'	42	43	53
Number of 'Restart'	1838	991	887
Number of 'Continue integration'	22	12	13
Number of 'DNID upload'	1084	547	416

Table 4 – Integration and reporting actions

Figure 1 shows that following this campaign, the reporting rate rose above 92%. It is the higher value ever achieved for the EU CDC. In this figure, the reporting is calculated as follow:

$$\% \text{ ship reporting} = \frac{\text{ships statuses normal, under and over reporting}}{\text{ships statuses normal, under, over and not reporting}} \times 100\%$$

Ships stopped, either by the national administrations or by the ASP, are not included in this graph.

Now 10 CGs delegated the monitoring of their fleet to EMSA. For these 10 flags, the ASP takes the appropriate actions in case of not reporting ships, or report to the CGs the actions that remain under the responsibility of the CGs, such as updating the LRIT Ship DB or asking the shipowner to correctly log in the terminal to the satellite network.

This good result on the reporting is also related with some CGs monitoring closely their fleet, and taking the appropriate actions to restart the reporting when needed. A high reporting rate is directly linked to the active monitoring of the fleet.

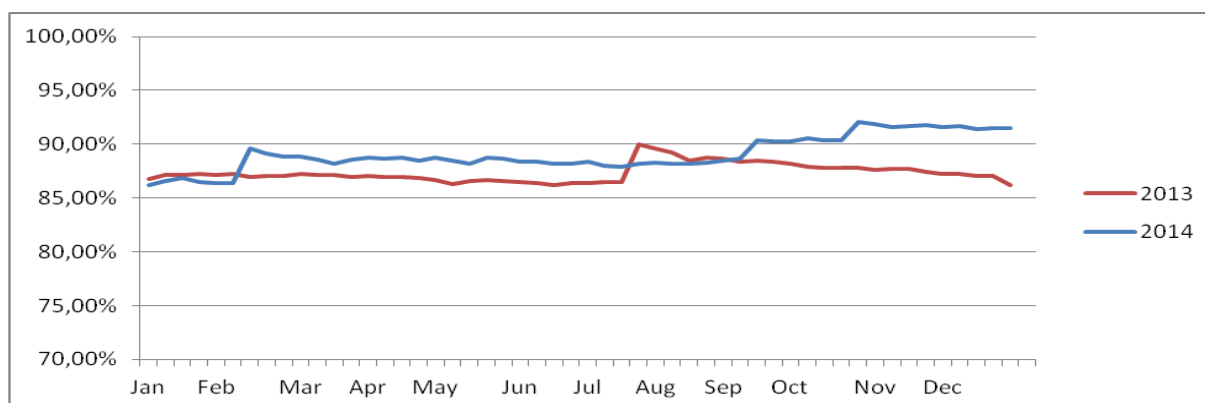


Figure 1 – Evolution of reporting rate

2.5. ACTIVITIES IN THE EU CDC

This chapter details the user activity in the UWI, the amount of requests made by the CGs, and the positions processed by the EU CDC. Note that the activity generated by ship integration and reporting (Stop, Restart, DNID upload...) is reported in section 2.4 above.

87% of the requests come from the IDE. The remaining 13% are split between requests generated automatically by the SAM anti-piracy tool, and requests generated by EU CDC end-users: SAR, Coastal, Flag, and Port.

Around 98% of LRIT position reports come from the EU CDC ASP (mandatory reporting), the remaining position reports come from the IDE.

Inmarsat C is the biggest CSP of our ASP, routing more than 93% of the ASP reports.

Figures showing these data are in § 3: Annexes § 3.4.1 General.

2.5.1. User activity in the UWI

Table 5 below illustrates the user activity in the User Web Interface of the EU CDC during the month of December. An inactive user is a user which has not connected to the EU CDC during this month.

Contracting Governments	Total users	Inactive users	Number of connections
Belgium	52	47	109
British Virgin Islands (United Kingdom)	1	1	0
Bulgaria	12	9	13
Croatia	3	1	108
Curaçao (Netherlands)	5	5	0
Cyprus	5	2	100
Czech Republic	1	1	0
Denmark	76	68	22
Estonia	8	7	20
Falkland Islands (Malvinas)	2	2	0
Finland	12	10	56
France	33	24	121
Germany	11	5	105
Gibraltar (United Kingdom)	4	3	4
Greece	57	40	57
Greenland (Denmark)	16	15	109
Iceland	25	23	75
Ireland	5	4	3
Italy	26	10	695
Latvia	10	8	29
Lithuania	6	2	121
Luxembourg	9	5	67
Malta	14	9	28
Netherlands	10	6	47
Norway	51	49	11
Poland	16	10	174
Portugal	9	7	15
Romania	7	7	0
Slovakia	1	1	0
Slovenia	21	21	0
Spain	48	40	182
Sweden	31	30	9
United Kingdom	21	15	59
TOTAL	608	487	2339

Table 5 – User activities per flag

Table 6 below summarizes the user activity in the UWI during the quarter.

	October	November	December
Number of users	605	606	608
Number of user connection	2615	3143	2339
Number of inactive users	476	480	487

Table 6 – User activities

On average this quarter, 20% of the users connected to the EU CDC, which is constant along the quarters.

2.5.2. Standard requests activity per Flag

This section deals with requests made by LRIT users and position reports, processed by the EU CDC during the month of December.

Figure 2 shows the standard requests (message type 4: polls, reporting rate changes, requests for most recent and archived positions, stop and restart) made by LRIT Users and the SAM anti-piracy tool, and figure 3 the position reports (messages type 1: periodic position reports, and type 2: polled position reports).

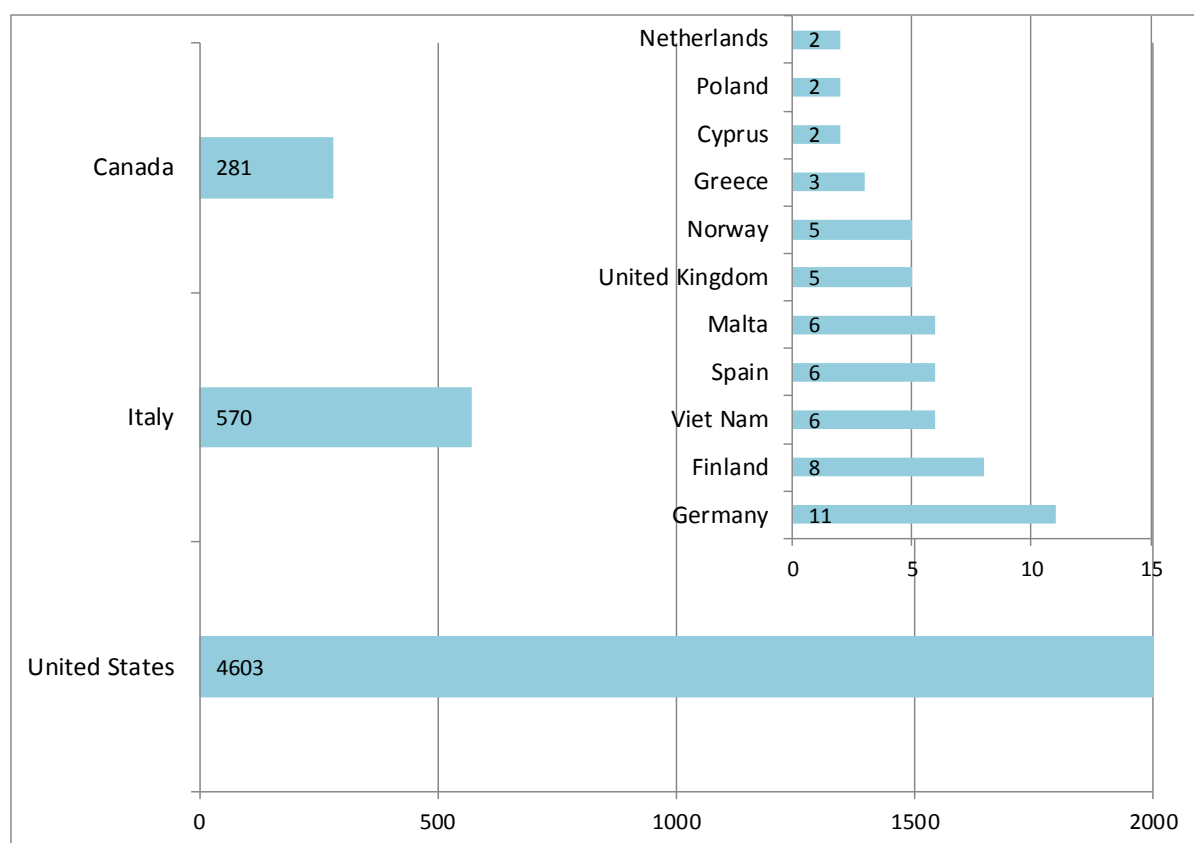


Figure 2 – Number of requests processed by EU CDC (Message type 4)

Figure 2 shows a very low use of the LRIT system in particular by the EU Member States. USA is still the country which makes most requests to the EU CDC to get EU LRIT positions.

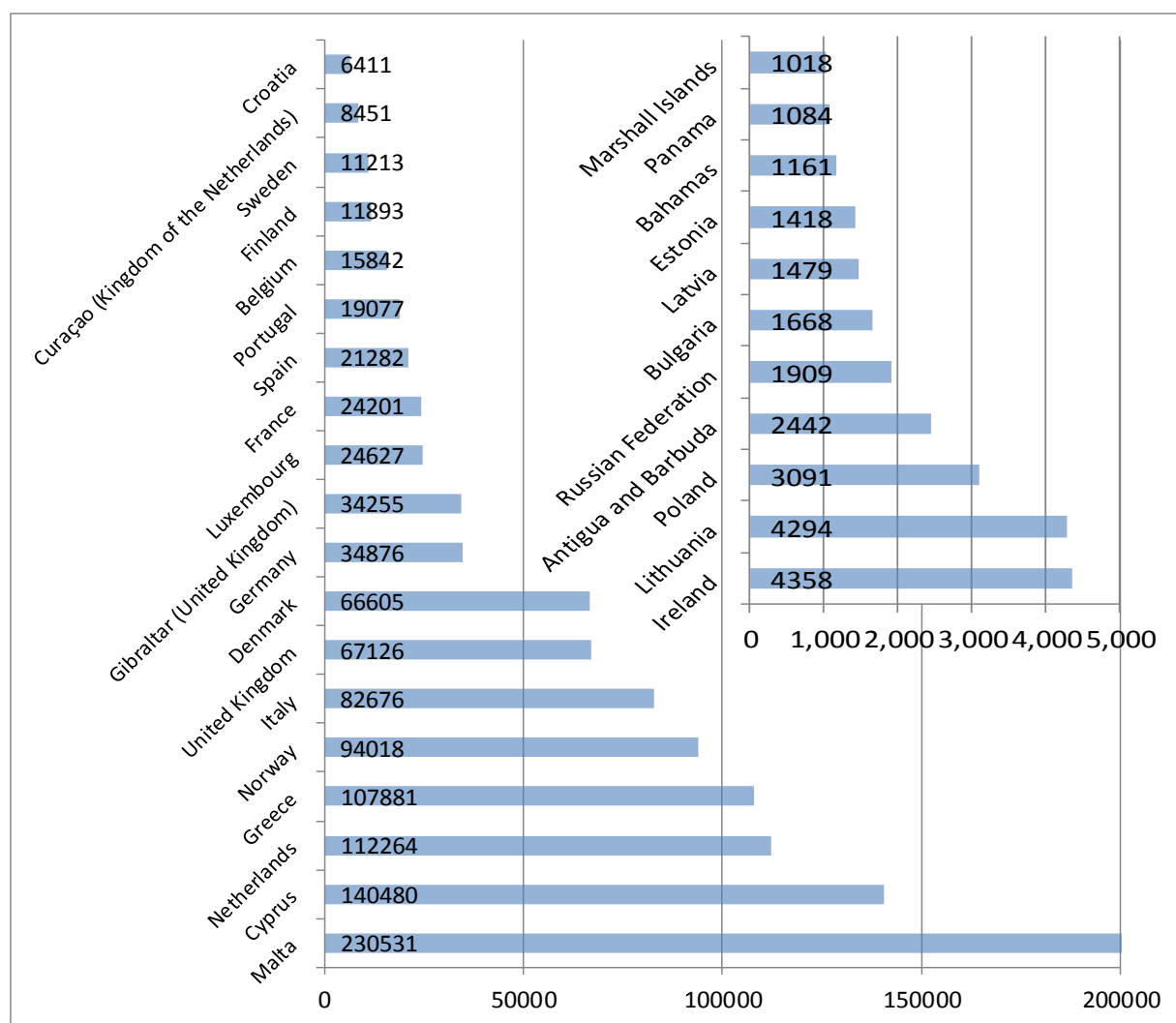


Figure 3 – Number of reports received by the EU CDC (Messages type 1 and 2)

Figure 3 reflects the number of position reports per flag:

- resulting from the requests shown in figure 2;
- resulting from standing orders, so it includes positions from European ships and non-European ships passing through European waters.

Countries with less than 1000 position reports are not included. Malta, with almost 20% of the EU CDC fleet, is as a consequence the country with the highest number of position reports received.

2.5.3. SAR requests activity per Flag

For the month of December:

- figure 4 shows the SAR and SARSURPIC requests made by LRIT Users. Countries with less than 4 requests are not included.
- figure 5 shows the related position reports (message type 3). Countries with less than 20 positions received are not included.

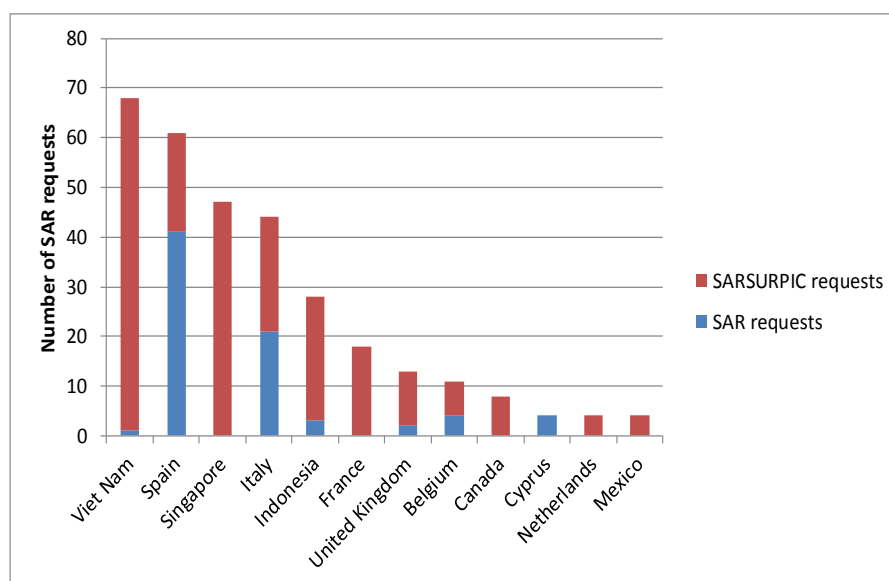


Figure 4 – Number of SAR Requests per Flag

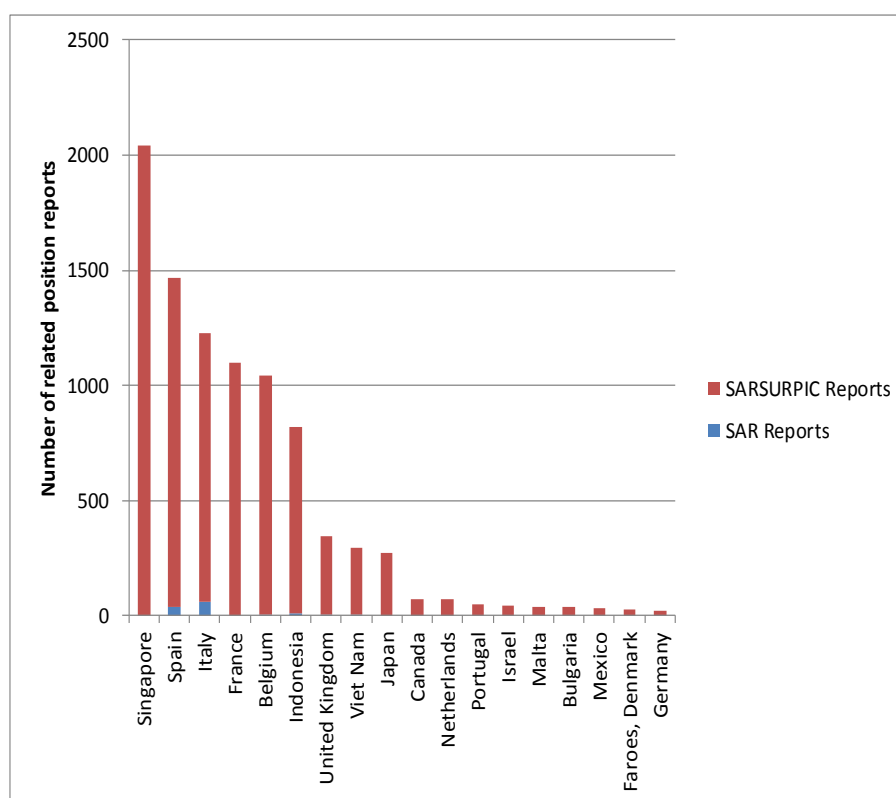


Figure 5 – Number of related position reports received

The SAR SURPIC is a request which is now well known and used by SAR operators. Singapore was the biggest requestors of SAR positions in December.

2.5.4. Evolution of messages exchanged

Position requests are this quarter around 5200 per month, which is an important increase of around 12% compared with Q3. Most of these requests come from the USA. More specifically, each EU ship entering the US coastal standing order receives two requests sent by the US DC to change the user from Coastal to Port.

Compared with Q3 2014, the average number of position reports has raised, due to better ship reporting.

Figures showing these data are in § 3: Annexes § 3.4.2 Evolution of Messages exchanged.

2.6. FINANCIAL FIGURES

Figures 6 to 8 below highlight the EU CDC Participants' Paid Consumption, the messages provided and sold by the EU CDC per buying Data Centre and the overall business financial balance, during Q4 2014.

This quarter, EMSA covered almost €340K of consumption costs, more than 11% than usual. The remaining costs which are paid by the EU CDC Participants amount to €9.7K. The few relevant buyers of non-mandatory messages are Norway, Ireland and Curaçao (Figure 6).

By far, the biggest buyer of EU CDC data was the USA which bought around half the amount sold. It is followed by the Data Centre of Canada (Figure 7).

The EU LRIT CDC provided (EU CDC sells) almost €75K of LRIT messages to other DCs (Figure 8).

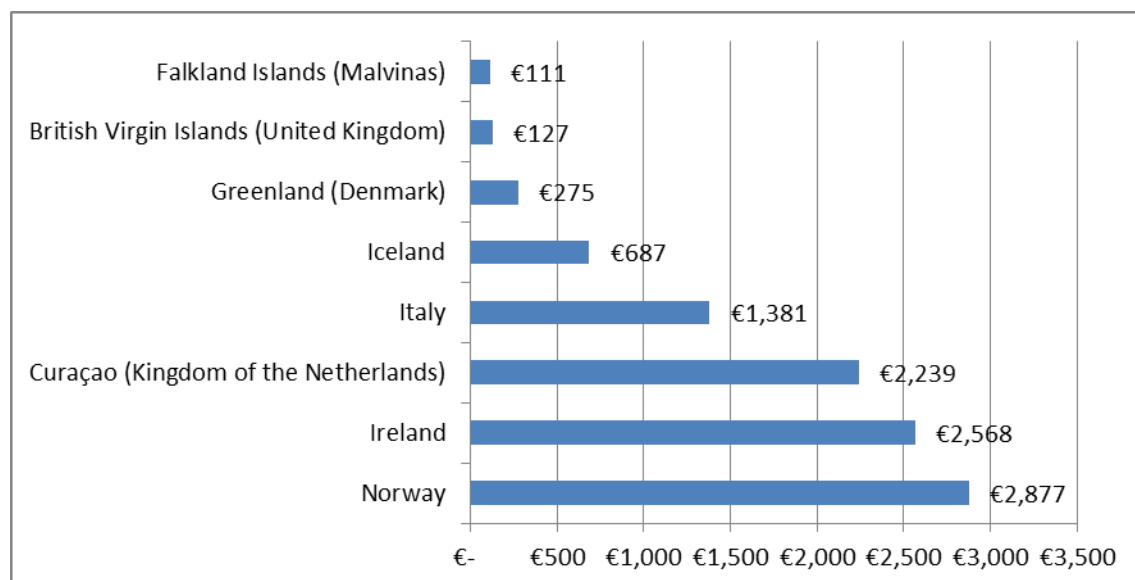


Figure 6 – EU CDC Participants' Paid Consumption

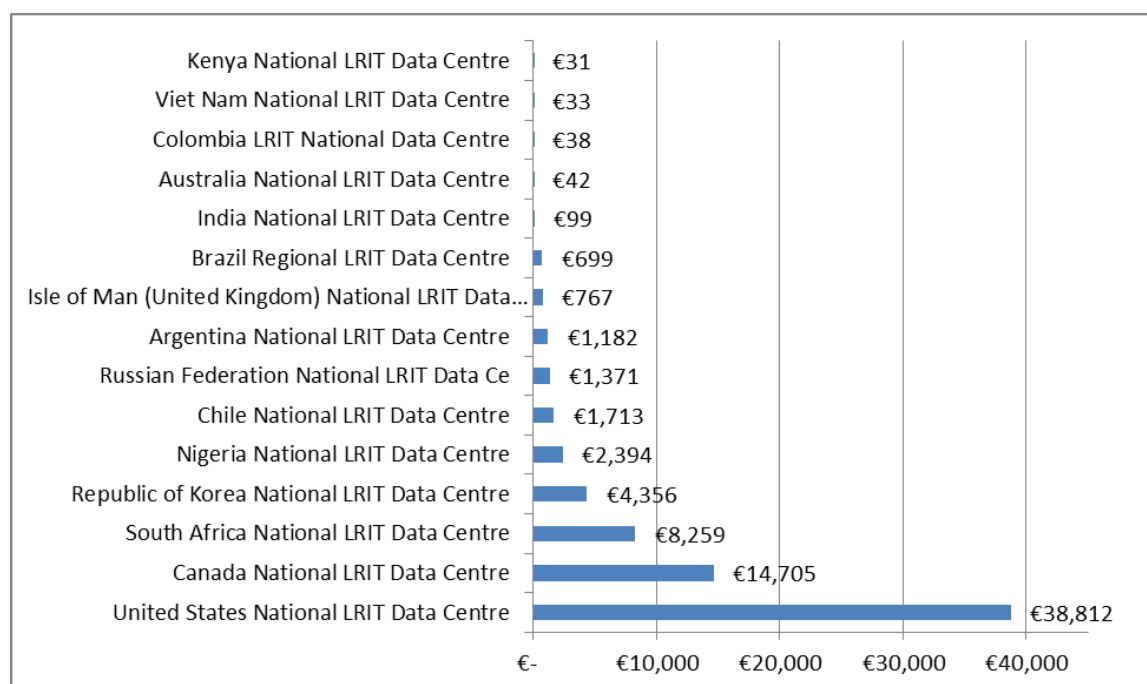


Figure 7 – Messages Sold by the EU CDC per Buying Data Centre

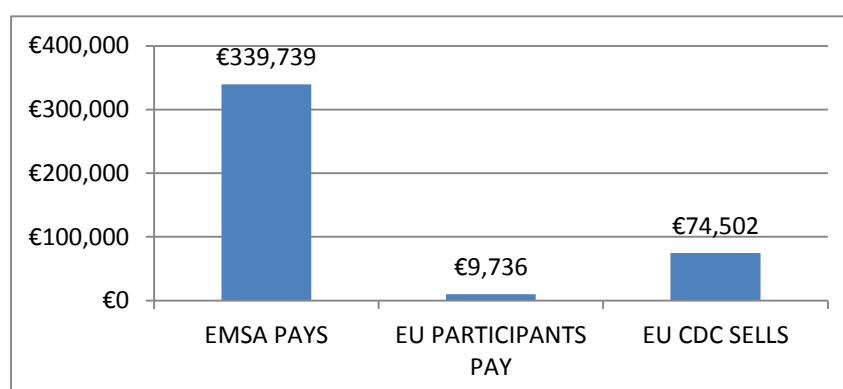


Figure 8 – Overall LRIT Business Financial Monthly Balance

Legend:

- *EMSA pays*: for all costs of mandatory periodic reports (periodic 6-hour reporting from EU ships), SAR messages and ship integration for Member States and EFTA countries.
- *EU CDC participants pay*: for ship integration and LRIT messages for overseas territories, and for all non-mandatory messages (on-demand), including reports from standing orders. This includes messages from other Data Centres through the IDE and from the EU ASP.
- *EU CDC sells*: all messages concerning ships belonging to the EU LRIT CDC that are requested by other DCs.

2.7. CONCLUSION

- This quarter, the EU CDC is stable in terms of performance, and is compliant with the IMO requirements.
- Following an ASP campaign in October to improve the percentage of ships' terminal reporting properly, the reporting rate peaked at over 92% for the first time since the set-up of the EU CDC.

3. ANNEXES

3.1. List of acronyms and abbreviations

Acronyms or abbreviations	Description
ASP	Application Service Provider
CSP	Communication Service Provider
EMSA	European Maritime Safety Agency
EU CDC	European Union Cooperative Data Centre
IDE	International Data Exchange
IMO	International Maritime Organization
NCA	National Competent Authority
QoS	Quality of Service
SAR	Search and Rescue
Ship DB	Ship Database
UWI	User Web Interface
N/A	Not Applicable

Table 7 – List of acronyms and abbreviations

3.2. Definitions

According to IMO MSC .1/Circ. 1259/Rev.6, the definitions of internal routing and message types 1 to 6 are the following:

Type	Name	Description/Purpose
N/A	Internal Routing	Regional or Cooperative LRIT Data Centres internally route LRIT information transmitted by ships entitled to fly the flag of the Contracting Governments establishing or participating such centres (LRIT information does not go through the IDE)
1	Periodic position Report	Regular periodic position reports
2	Polled position report	Position report as a result of a one-time poll request
3	SAR position report	Position report as a result of a SAR request
4	Position request	Request by an LRIT user to poll, change the rate of transmission, or request for most recent and archived positions, for a given ship
5	SAR position request	Request by a SAR user to poll or request for most recent and archived positions, for a given ship
6	SAR SURPIC request	Request by a SAR user to get the most recent position in a specific geographical area, broadcast via the IDE to all DCs

Table 8 – Definitions

3.3. System performance

This section refers to messages delivered by the EU LRIT CDC and gives further details on the QoS for the quarter.

3.3.1. Global QoS

Figure 9 illustrates the IMO-QoS for the quarter.

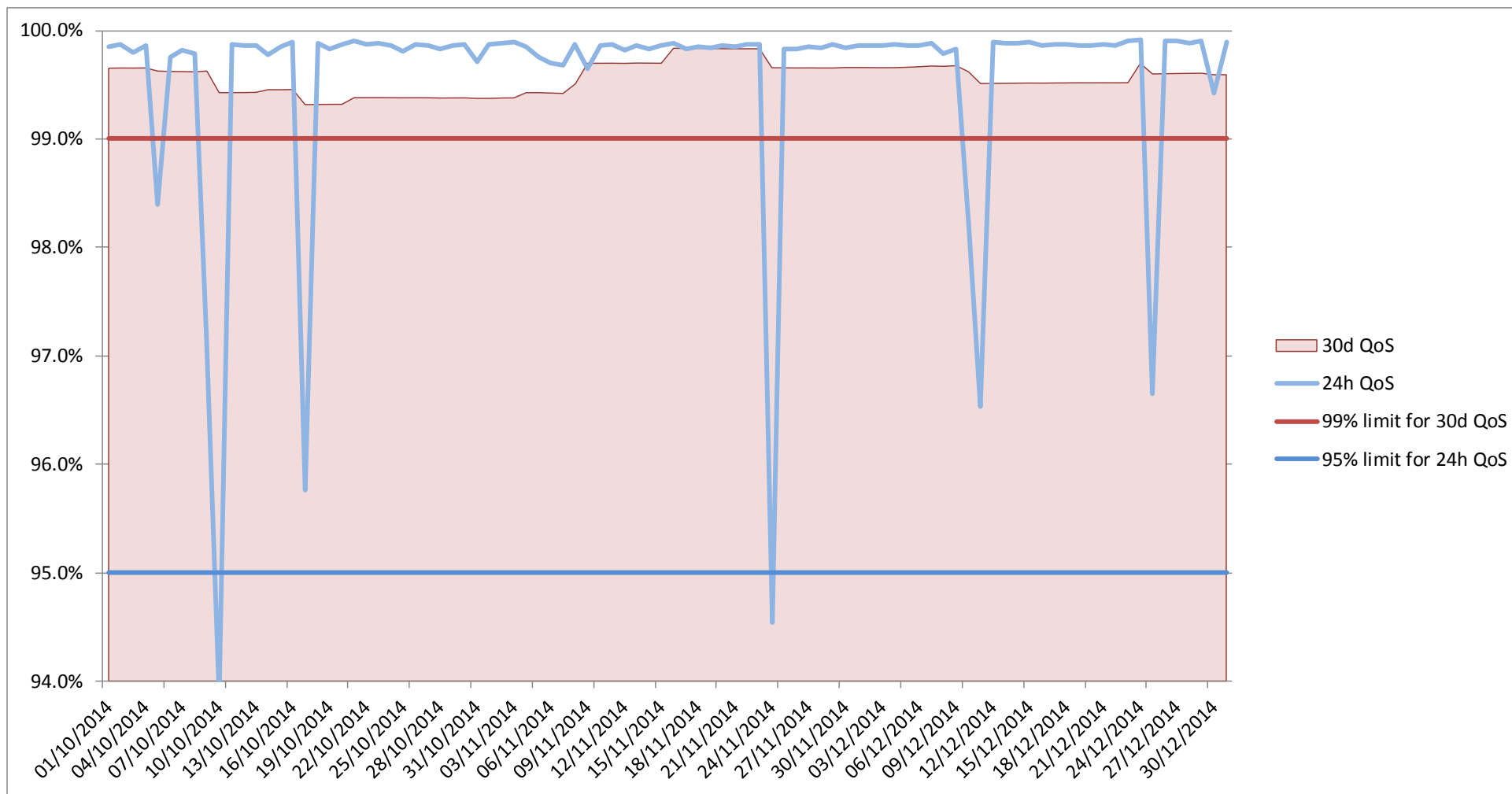


Figure 9 – IMO-24h and 30d QoS

Figure 9 displays two breaches in the 24h QoS. This is a consequence of 2 major incidents the 10 October and 24 November: see section 3.5.

3.3.2. Delivered periodic position reports QoS (type 1)

	October	November	December
Monthly IMO-30d QoS (target 99%)	99.39%	99.66%	99.60%
Number of Reports that did not meet the 15 min limit	5,611	3,027	3,628
Percentage of Reports out of the 15 min limit	0.61%	0.34%	0.40%
Total number of Reports	921,519	895,014	912,859
Average Latency in minutes	2.85	2.68	3.02

Table 9 – Delivered periodic position reports QoS figures

These are mainly the mandatory position reports, sent every 6 hours.

3.3.3. Delivered on-demand position reports QoS (type 2 and type 3)

A poll is the action of sending a position request to a shipborne equipment and waiting for a ship position report or a receipt message. IMO defined that this action should not last more than 30mins to receive a position report.

The table below lists only the polls made to EU LRIT CDC ships, in order to measure the EU LRIT CDC QoS. Reports as a result of polls originated by other DCs are not listed here, to avoid measuring the QoS of other DCs.

	October	November	December
Monthly IMO-30d Poll QoS (target 99%)	94.91%	91.76%	98.79%
Number of Reports that did not meet the 30 min limit	11	14	3
Percentage of Reports out of the 30 min limit	5.09%	8.24%	1.21%
Total Number of Reports	216	170	248
Average Latency in minutes	6.51	4.43	3.50

Table 10 – Delivered on-demand reports QoS figures

3.4. Messages by source

3.4.1. General

The figure below shows the analysis of positions by source, for December.

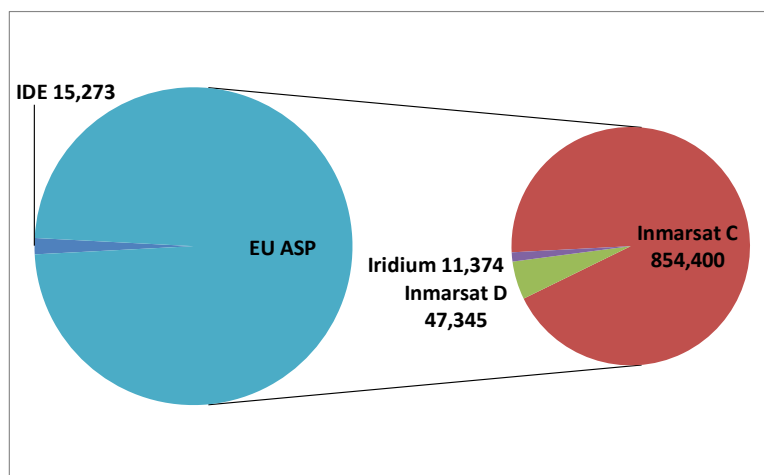


Figure 10 – Position Reports by Source (Message Type 1, 2 and 3)

The 3 pie charts below show the position requests by source, for December.

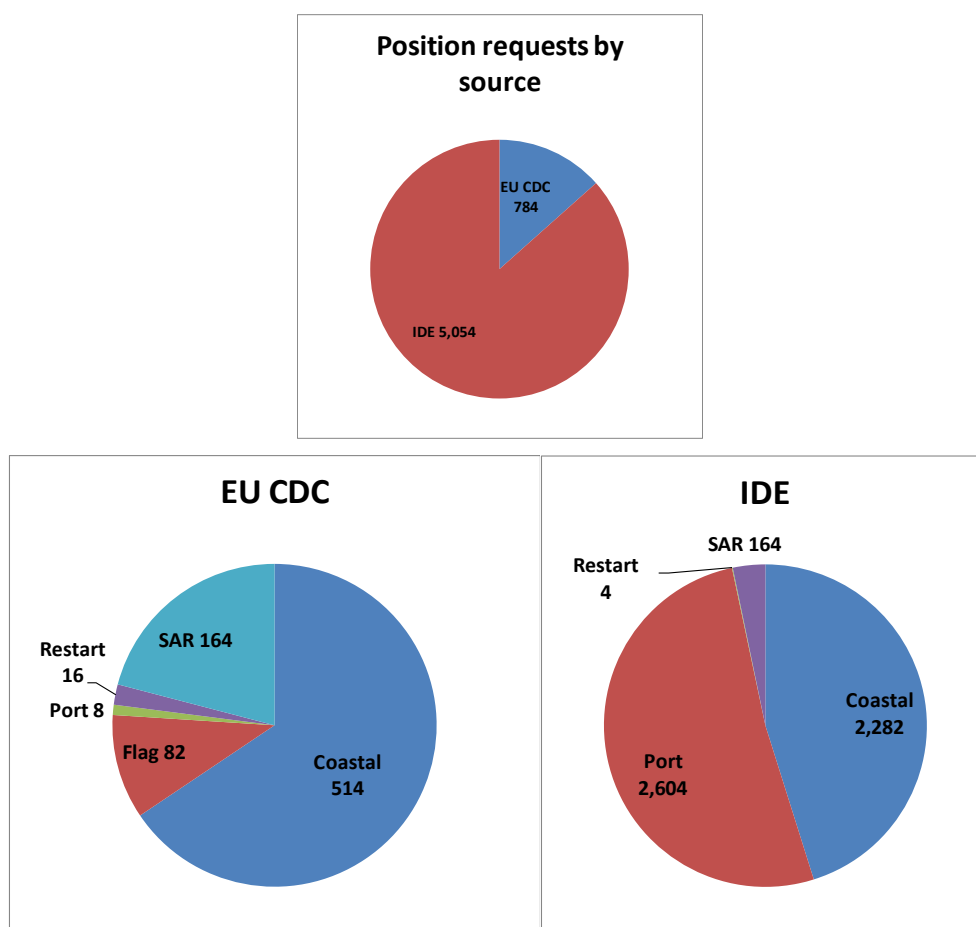


Figure 11 – Position Requests by Source (Message Type 4, 5 and 6)

3.4.2. Evolution of messages exchanged

This section illustrates the evolution of the message flow of the EU CDC.

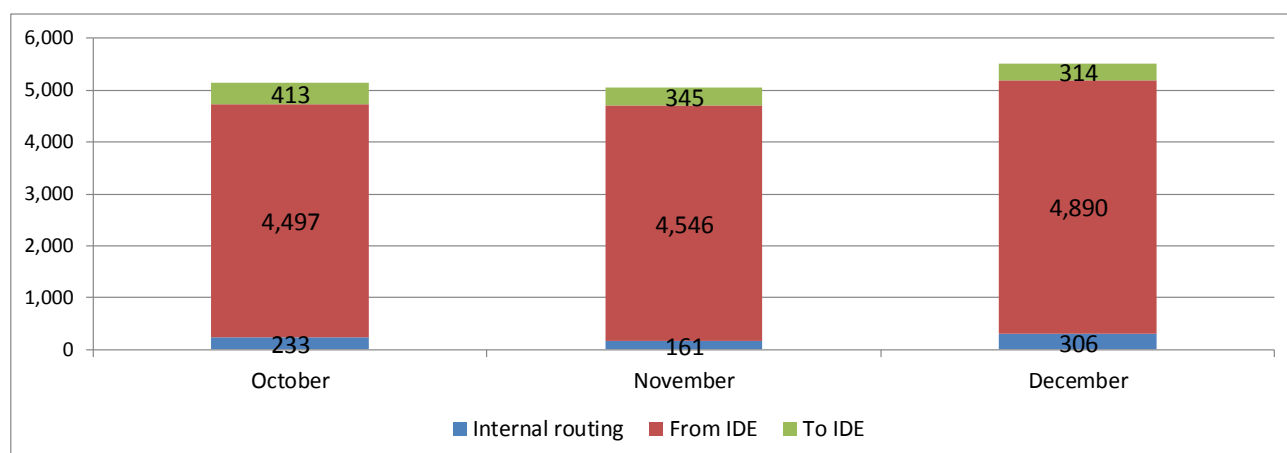


Figure 12 – Number of position requests (Type 4)

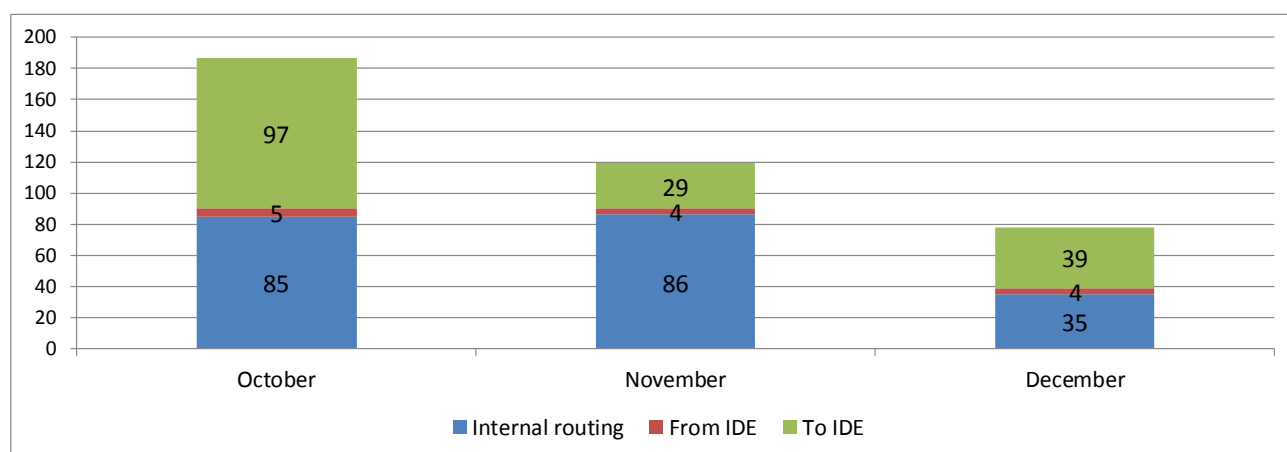


Figure 13 – Number of SAR requests (Type 5)

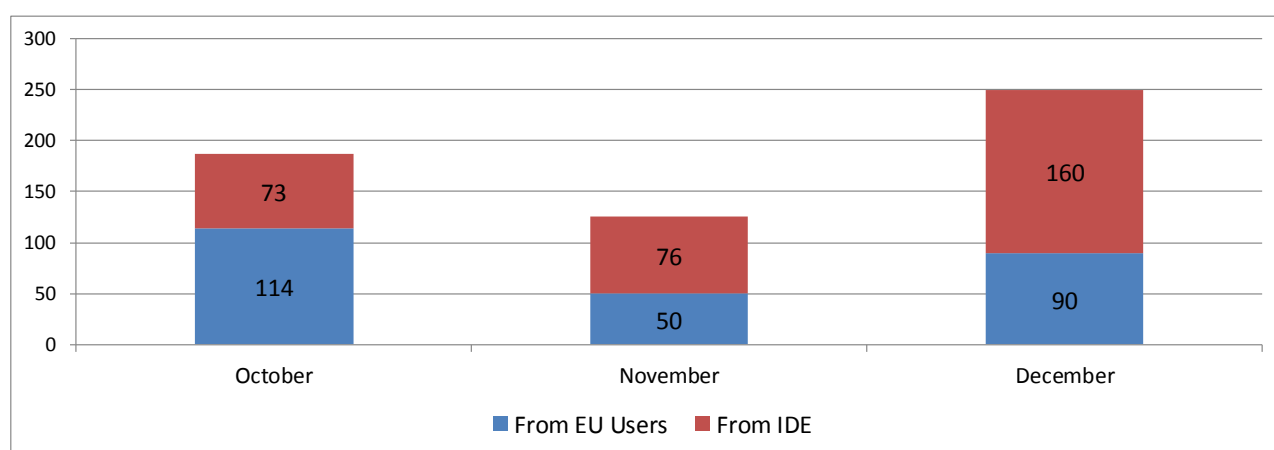


Figure 14 – Number of SARSURPIC requests (Type 6)

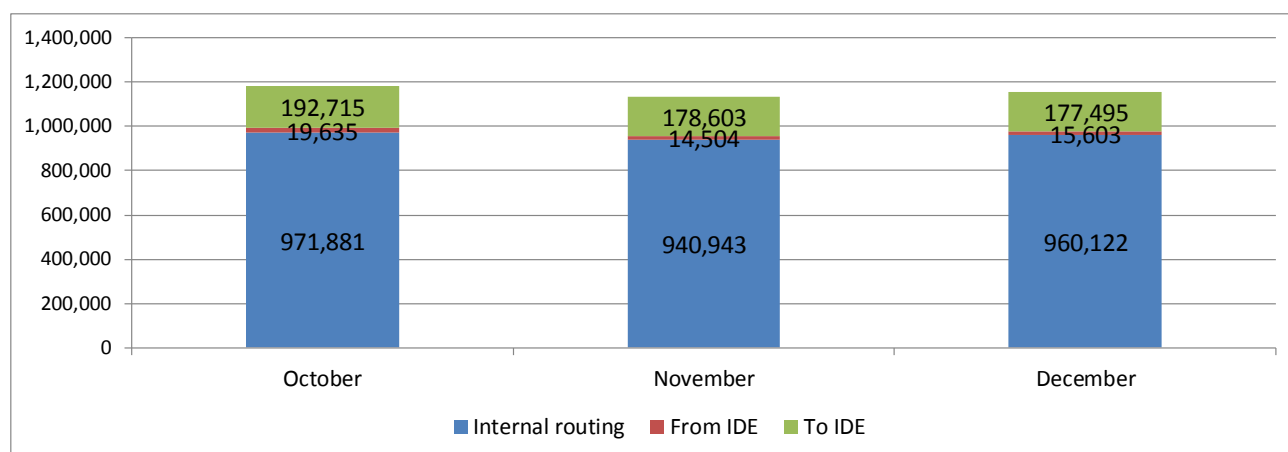


Figure 15 – Number of position reports (Type 1, 2 & 3)

3.5. Incidents and maintenance of the EU CDC

3.5.1. Incident management overview

Incidents in the EU CDC generate tickets in MSS through a monitoring tool called Task Monitor. Calls and emails from EU CGs also generate tickets. For this quarter and the previous one, table 11 shows the repartition of the tickets handled by the MSS:

	Q3 2014	Q4 2014
Number of LRIT CDC and Ship DB tickets out of total number MSS tickets	735 / 6558 (11.2%)	620 / 6460 (9.6%)
<u>Ticket escalation</u>		
Number of tickets handled solely by MSS:	695 (95%)	582 (94%)
Number of MSS tickets escalated to LRIT second line:	40	38
<u>Ticket per type</u>		
Administration and reporting:	44	17
Helpdesk (CGs, ASP...):	242	207
Monitoring and Incident management	3	3
(Task Monitor...), per priority:	446	393
	Critical:	Normal:

Table 11 – Incident management

During the fourth quarter 2014, the number of EU CDC and Ship DB tickets decreased around 16% compared with Q3, and reached the level of Q2. The increase during Q3 was due to adjustments following the transfer to EMSA ICT infrastructure.

Three of these 396 events had a major impact, as reflected in the next section.

3.5.2. Major incidents

A major incident is an event that has the following impact:

- IMO 24h QoS<95%; and/or
- Unavailability of the UWI for more than 1 hour.

Foreseen maintenances are not considered as incidents and are detailed in §3.5.3.

This quarter only two major incidents happened, the 10 October and 24 November, one due to a CSP outage and the other linked with an ASP outage. Messages were delayed in both cases. 24h QoS decreased respectively to 93.8% and 94.5%.

3.5.3. Maintenances performed

One main maintenance was done this quarter. To resolve the problem of slowness in the EU CDC database, the database was moved to a faster storage the 01/12/2014. This maintenance solved issues linked with queries taking too long to be completed. It generated no impact on the QoS.