Nuclear Free Local Authorities

briefing

Date: 4th March 2014 **No.120**

Subject: **Concerns over the transportation of nuclear materials by sea on 'Roll on, Roll off' vessels, the *Atlantic Cartier* fire emergency and wider issues for UK / Irish ports**

1. Overview of report

This report has been developed in co-operation with the NFLA Secretariat by the independent marine pollution consultant Tim Deere-Jones. It refers to a presentation given by Tim Deere-Jones to a NFLA English Forum seminar in Rotherham, and further research on a major fire emergency affecting the vessel 'Atlantic Cartier' at Hamburg port, Germany, which had contained radioactive materials. This vessel was operating in UK ports again just over three months after this incident. This report raises significant issues around the safety of certain types of radioactive material transports involving 'roll on roll off' vessels and wider concerns that national and international safety procedures are not sufficiently covering such transports. The NFLA is continuing to pursue such matters with maritime and fire trade unions and other NGOs, including Merseyside CND. This briefing summarises the concerns the NFLA are seeking to raise with the Maritime & Coastguard Agency, the UK & Irish Governments and the International Maritime Organisation. The briefing should be of interest to emergency planning officers, public and environmental health officers and coastal local authorities with container port facilities.

2. NFLA English Forum seminar, Rotherham, November 2013

This seminar partially focused on emergencies that might arise from the civilian maritime transport of radioactive materials through European shipping lanes. It briefly reviewed the cause, number and type of shipping accidents; the testing of radioactive packaging, some design features of dedicated nuclear cargo carriers, the potential outcomes of shipping accidents involving radioactive cargo and some of the implications for Coastal Local Authorities.

3. The Cargos

Irradiated Nuclear Fuel (INF) 3 cargos consist of Irradiated Fuels, High Level Wastes, Plutonium Wastes and Mixed Oxide Fuels with potentially unlimited radioactivity yields. INF 3 cargos are carried in specially designed, high security "flasks" and purpose built ships. There have been between 40 and 50 such transports since 2004. Information on the routes and destinations of specific INF 3 cargos is generally provided, though security considerations may restrict information until after the voyage is completed.

INF 2 & 1 cargos consist broadly of similar sourced materials as INF 3 but with a lower radioactivity yield (not more than 2X10 million TBq); these materials are also carried in specially designed "flasks". However, these cargos may be carried on general cargo vessels, 'RoRo' (roll on roll off) ferries and container ships, provided they are fitted with modified systems for fire fighting and temperature control. To date, NFLA has been unable to find any data on the yearly number of INF 2 & 1 movements around the British and Irish Isles.

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International Marine Dangerous Goods Level 7 (IMDG7) cargo may consist of “fissile materials” likely to undergo criticality, such as enriched uranium and other forms of nuclear fuel which may contain various isotopes of uranium and plutonium in any combination. IMDG7 cargos may also consist of radioactive medical, industrial and research materials. IMDG7 cargos must be carried in designated packages, but these packages are not designed, built or tested to such a high standard as the INF flasks. IMDG7 cargos may be carried on a wide range of vessels including general cargo vessels, ferries, container ships etc. To date, NFLA have been unable to find any specific data on the number of IMDG7 movements. Information on the routes and destinations of specific IMDG7 cargos does not seem to be available.

4. Potential Hazards

There are a range of “External Hazards” which may affect the safe transport of radioactive cargos through UK waters and adjacent sea areas.

The coastal waters of North West Europe are identified as one of seven global Marine High Risk Areas (MHRAs) where, over a recent 5 year period, a total of 388 ships were lost (179 as a result of “foundering”, 148 as a result of “wrecking” and 61 as a result of “collision”).

MHRAs have such high casualty rates as a result of a combination of extreme weather conditions, the high density of shipping (especially in “choke points” such as the Dover Straits and the Kattegat, and congestion areas associated with the approaches to busy ports).

There are also a number of “Internal Hazards” arising from on-board errors including machinery failure, engine breakdown, fires, navigation equipment failure and human error.

5. Maritime Incidents that may give rise to release of radioactivity.

5.1 Fires

Shipboard fires occur as a result of a number of factors.

Inboard fires, originating within the vessel, are usually caused by a combination of human error and/or engine room mishaps. Thus, over a ten year period (1991 to 2000) there were five actual fires and 3 incidents likely to cause fire (broken/leaking fuel and oil pipes in engine room) on UK registered INF 3 carriers (the PNTL fleet), some caused by component failure, the others by human error.

External fires are (excepting terrorism or acts of war) almost invariably caused by collision. Such fires may last for extended periods and give rise to explosions and sinking of the vessels involved.

The majority of collision-generated fires occur in “choke points” or “congestion zones”.

5.2 Fire safety testing of radioactive packages

INF flasks designed for the transport of INF 3 materials with unlimited potential radioactivity yield, are subjected to fire survival testing to the following criteria of the International Atomic Energy Agency (IAEA):

- the flask must be engulfed in uniform flame at a temperature of 800 degrees C;
- the flask must be engulfed in flame of that temperature for 30 minutes;
- the flask is then allowed to cool before any fire fighting measures are deployed.

Packages designed to carry lower grades of radioactive materials may not be subjected to such rigorous design, build and testing regimes.

5.3 Characteristics of shipboard fires

There is an industry consensus that the average shipboard fire reaches 800 degrees centigrade lasting for several hours. In the case of collision-generated fires involving liquid or gaseous hydrocarbon cargos, temperatures may reach between 1000 and 2000 degrees centigrade and last for many days (e.g. super-tanker *Atlantic Empress*: this had a 15 day duration and 2 major explosions before it sank).

5.4 Treating shipboard fires

There is a general consensus that rapid response to fire is paramount in both inboard and externally caused shipboard fires. The vast majority of merchant vessels now have on-board fire fighting systems which are relatively effective at dealing with the smaller scale fires, especially those in enclosed spaces such as interior, enclosed spaces. Engine rooms and hold spaces may be fitted with oxygen excluding systems (CO2 etc). However, on some occasions such systems do not prevent very serious situations from developing (e.g. the chemical tanker *Multitank Ascania* had an engine room fire treated with hand held extinguishers and CO2 dumping; nevertheless the fire duration was reported as 30 hours and the consensus that the risk of explosion and pollution was "narrowly averted").

"External" sourced fires are rarely controlled in an effective manner by internal systems. Collision-generated gas or liquid hydrocarbon fires are a case in point. The normal at-sea fire-fighting response is immediate and involves a major application of water or foam. It is widely understood that vast quantities of water may be needed and that "cooling" may be an essential prerequisite to extinguishing and use of foam. Modern shipping fire response may also include the use of dedicated "cooling agents" such as "Pyrocool".

5.5 Industry recommended actions for INF carriers (Shipboard Emergency Plans)

A. Develop procedures for dealing with "unexpected temperature rise at the surface of the flask";

B. alter course so that the cargo and the ship is "upwind of" of the fire;

C. consider moving vessel to a 'Place of Refuge' in order to facilitate emergency responses and cargo transfer.

These instructions are aimed at the preservation of the integrity of the vessel and cargo and the safety of the vessel and the crew. They are not intended to preserve the health and safety of those on other ships or on adjacent or downwind shorelines. To date, the NFLA has not seen any specific recommendations for actions intended to preserve the health and safety of those on other vessels, shorelines or the marine environment in such situations.

5.6 Possible outcomes of shipboard fires

Fires create a cocktail of combustion by-products consisting of ashes, soot, gases and unburned or partially burned particulates. In the case of a breach, or destruction, of the INF or IMDG 7 "packaging", such (radioactive) material will be available for potential injection into the atmosphere by way of thermal suspension (hot air rising) or blowing wind. (Many materials in the nuclear fuel production chain exist in powder form and are thus particularly susceptible to thermal suspension if the "packaging" is breached). Therefore a contaminated atmospheric "plume" may be created.

Tim Deere-Jones notes that, judging from the reported INF flask testing regime the application of water, foam and cooling agents to an INF flask during the fire, and for some time after it's exposure to significant temperatures, may be contra-indicated. At the very least it appears that the resilience of a flask to sudden cooling may be untested. This may militate against the deployment of an adequate and appropriate fire fighting response.

In the case of a breach, or destruction, of the INF or IMDG 7 "package", fire response may generate the production of large volumes of contaminated water, foam and cooling agents, thus polluting the marine environment.

5.7 Considerations for Coastal Local Authorities

There are a number of key considerations for coastal local authorities when considering the effects of an accident involving such a shipment:

- the calculation/modelling of the concentrations and isotopic content of any plume;
- the calculation/modelling of the direction, distance, spread, dilution/diffusion and fallout/washout characteristics and potential of any plume;
- the monitoring/analysis of isotopic content and concentration of sea surface, water column, inter-tidal, sub-tidal, terrestrial environments and the atmosphere (especially onshore winds);

- the monitoring/analysis of marine, inter-tidal and terrestrial foodstuffs;
- the monitoring/analysis of surface waters, potable waters, human occupation and amenity environments;
- public health risks - the identification/monitoring/analysis of any exposure pathways leading to contact (skin), inhalation and ingestion (foodstuff) doses ;
- public health prevention/mitigation strategies - shelter, evacuation, population movement restrictions and decontamination. Food bans, harvest and closure orders, disposal of waste/contaminated materials. Similar measures as used after the Chernobyl disaster?
- the economic and social impacts of the incident (short, medium and long term).

6. Collision Scenarios

The large majority of collisions arise as a result of human error compounded by machinery or technology failure. The large majority of collisions also occur in "choke points" and/or congestion zones.

Collisions may generate subsequent fires, loss of steering, sinking, grounding, breach of cargo hold, damage to cargo hold contents, overboard loss of on-deck containers, breaching of on-deck containers, marine and atmospheric pollution.

Some examples of collision scenarios include the following:

A. In the Caribbean Sea, 1979: 2 fully laden super tankers *Aegean Captain* and *Atlantic Empress* collided, were locked together and drifted out of control and immediately burst into fierce flames. The *Captain's* crew managed to quell her fires and the vessels were separated after about 20 hours. The *Empress's* on board fire fighting systems could not quell the flames and the ship was abandoned, continued to burn for another 15 days, suffered a series of explosions and eventually sank.

B. In the Dover Straits, 2003: Car carrier *Tricolour* sinks after collision with container ship *Kariba.* Two days later the sunken *Tricolour* is struck by general cargo vessel *Nicola*. Several days later sunken *Tricolour* is struck by kerosene carrier *Vicky*.

C. In the Kattegat Straits, 2009: A major 'choke point' between Denmark and Sweden. Containership *Kapitan Lus* carrying Uranium Dioxide nuclear fuel collided with methane carrier and was holed below water line. There was a wide post incident consensus that a major fire was "narrowly avoided". Both vessels made to port safely.

D. UK registered INF 3 carriers were involved in at least 2 actual contact collisions and one "hazardous incident" near miss in a five year period during the 1990s.

7. INF 3 ships collision resistance

During the 1970s, the Pacific Nuclear Transport Ltd (PNTL) ships, which transported MOX fuel from Sellafield, were designed with special features that were intended to provide collision resistance sufficient to prevent the INF Flasks carried in the cargo holds from being damaged. The first generation of five PNTL vessels were built to survive the impact of a 24,000 tonne vessel travelling at 15 knots. No alternative information has been provided for the recently launched PNTLs (Pacific Heron and Pacific Egret), and so it may be presumed that these 2 new vessels have been built to at the least withstand similar collision impact forces.

However, it must be noted that since the 1970's the wider world merchant fleet has undergone an enormous change with regard to the size and speed of other type of vessel types e.g.

A. today's "super" oil tankers may weigh as much as 300,000 tonnes, with speeds of 16 knots;

B. "super" container ships may weigh as much as 150,000 tonnes, with speeds of 20 knots;

C. "super" gas tankers weigh as much as 164,000 tonnes, with speeds of 19 knots.

Vessels of these types and sizes are frequent users of the Irish Sea, English Channel and the North Sea.

8. Collision/impact testing of INF flasks

As with fire testing, the IAEA, have stipulated impact testing of INF flasks to the following standards:

- During flask "impact test" (accidental free fall and collision impact), the flask must be dropped from 9 metres onto an "unyielding target".
- During flask "penetration test", the flask must be dropped from 1 metre onto a 15cm steel bar (representative of a piece of rail line).

Report author Tim Deere-Jones has been unable to identify any scientific studies comparing the potential forces involved in collision impacts from the vessel types (super tankers, super container ships, super gas carriers) mentioned above, relative to:

- the collision resistance of the PNTL INF 3 carriers;
- the collision impact testing of INF flasks.

9. Sinking scenarios

Vessels may be sunk as a result of a number of factors. These include collision and being overwhelmed by heavy weather. These factors may be exacerbated by poor design, machinery failure (engine breakdown, loss of steering), poor maintenance and human error.

The UK's registered INF 3 (PNTL) carriers have been provided with partial double hulling features. However approximately 40% of the ships hulls remain single hulled. Published plans show that single hulled sections of these vessels contain both the primary and secondary back up "vital services" (power, navigation, communications).

10. Sinking case study

The approximately 60% double hulling features of UK INF 3 carriers do not provide an assurance that the vessels are unsinkable.

The chemical tanker *Ievoli Sun* sank in 2000 in the English Channel is an appropriate case study in this regard. It was 95% double hulled and similar in size to the PNTL vessels. It was also built to the International Maritime Organisation's (IMO's) stringent IBC Code. The vessel took on water during heavy weather and sank complete with a cargo of hazardous chemicals.

11. INF Flask testing

The IAEA have stipulated "immersion" testing of INF flasks to the following standards:

- the flask must "subject to conditions equivalent to immersion at 15 metres for 8 hours";
- the flask must be "Subject to conditions equivalent to immersion at 200 metres for 1 hour".

It should be noted that:

1. Depths of 15 metres are representative of relatively shallow sections of European near coastal waters, which may be broadly defined as having depths down to 50 metres.
2. Depths of 200 metres are representative of the deeper, offshore "shelf sea" areas of European waters such as the Celtic Deep, Celtic Sea, the centre of the Irish Sea; the Breton, Malin, Hebrides and West Shetland shelf seas; the Rinne off southern Norway and the offshore approaches to the Kattegat.

All of these sea areas are on known or potential routes of INF and IMDG7 cargos.

12. Salvage implications of sinking

It is stated that, in the case of the UK registered INF 3 carriers, the fleet operators have a standing salvage agreement with Smit Tak, one of Europe's leading salvage companies**.**

However, concern remains that salvage operations are potentially severely restricted by a range of complications including time scales of deployment, arrival on the scene of all required equipment, weather conditions and the danger of other shipping. It should also be noted that many cargos are carried inside the vessel and that INF 3 flasks are actually bolted securely to the inside of the cargo holds. Access to such cargo may require cutting work or destruction of the vessel's hull.

13. Salvage case study

The 'RoRo' ferry *Mont Louis* collided with another ferry in the North Sea on 25th August 1984. Its cargo includes 30 "packages" (drums) containing 12 tonnes of enriched Uranium Hexafluoride. The

Mont Louis rolled and sank in depths not exceeding 50 metres. The salvage effort was immediately instigated by Smit Tak.

However, due to adverse weather the salvage operation proved very difficult. On the 11th September *Mont Louis* began to break up in storm conditions. Uranium Hexaflouride drums escaped from the vessel during this break up. On the 29th September the stern of the wreck was raised from the seabed. Smaller pieces of the wreck and some of the cargo were recovered during subsequent days.

A number of the Uranium Hexaflouride drums were mobilised (it is uncertain whether they floated or were moved by seabed currents) and were discovered on the Belgian coast. The last of the Uranium Hex drums was not recovered until October 4th (nearly 6 weeks after the original sinking).

The IAEA reported that one of the 30 Uranium Hex drums was found to have suffered a leak in one valve (attributed to storm damage) and that no “significant” leakage had occurred and that no “significant” radioactivity was detected. It may though be deduced that *some* leakage had occurred and that *some* radioactivity was detected.

14. Potential outcomes of sinking

The breach or loss of containers or packaging and the subsequent potential for marine pollution are a major possibility in the event of the sinking of a vessel.

Marine pollution plainly generates the potential for the contamination of seafood. It also poses the threat of shoreline pollution, the pollution of coastal amenity sites, damage to the local ecology and a small risk of sea-to-land transfer of radioactivity across the surf line.

15. Considerations for Coastal Local Authorities from sinking incidents

The considerations for coastal local authorities from sinking incidents include:

- the calculation/modelling of the concentrations and isotopic content of any marine plume;
- the calculation/modelling of the direction, distance, spread, dilution/diffusion and characteristics and potential of any plume;
- the monitoring/analysis of isotopic content and concentration of sea surface, water column, inter-tidal, sub-tidal and coastal zone terrestrial environments;
- the monitoring/analysis of marine, inter-tidal and coastal zone terrestrial foodstuffs;
- the monitoring/analysis of surface waters, potable waters, human occupation and amenity environments;
- the public health risks - identification/monitoring/analysis of any exposure pathways leading to contact (skin), inhalation and ingestion (foodstuff) doses;
- the public health prevention/mitigation strategies - population movement restrictions (prevention of access to marine and coastal areas), arrangements for decontamination of members of the public who have accessed those areas. Marine food bans, harvest and closure orders, disposal of waste/contaminated shoreline materials;
- economic and social impacts (short, medium and long term) to fishing, tourism etc.

16. Other scenarios

16.1 Loss of deck cargo -

A deck consignment of alpha/gamma emitting Californium (IMDG7 grade material) was lost from the vessel *SS Ardlough* during a storm in the Irish Sea 1987. The UK Department of Transport was unable to confirm:

- that the consignment package would float or sink;
- how long it might stay afloat or stay sunk;
- how long it might take for the packaging to be destroyed.

There was also no method for tracking the movement of the package in the marine environment, nor for predicting whether the package and/or its contents would come ashore or stay within the marine environment.

16.2 Grounding of vessel (the running aground/colliding with shoreline or submerged reef or other object) **-**

Grounding may give rise to fire or sinking or other collision type outcomes.

The considerations for local Coastal Authorities will be the same as those set out in previous paragraphs.

17. The *Atlantic Cartier* fire incident

17.1 Overview of incident

On May 1st, 2013 a fire broke out on the 'RoRo' vessel *Atlantic Cartier* whilst it was docked at Hamburg port. Three tugs, two fireboats and over 200 firefighters took several hours to fully control the fire and douse the flames to make it safe.

As well as containing a cargo of some 70 cars (30 of which were badly damaged), the *Atlantic Cartier* was also transporting 9 tons of uranium hexafluoride (UF6), a radioactive highly volatile and toxic compound most commonly used as an intermediate material in the production of nuclear fuel. The vessel also had 180 tons of flammable ethanol and 4 tons of explosives at the time the fire broke out. The nuclear fuel was being taken to the uranium-enriching facility in Lingen, Lower Saxony. Such radioactive material shipments through Hamburg port are quite regular. However, as noted above, if such radioactive materials catch fire they can be highly dangerous.

In this incident, local firefighters were made aware of the nuclear fuel quickly and managed to remove the relevant containers to a safe storage area, thus narrowly averting a significant radiation incident. It should be noted as well that whilst this emergency was taking place there was, quite close by, an opening outdoor service of the German Church Council at Hamburg's Lutheran Cathedral. This involved over 35,000 participants and the German President Joachim Gauck. The annual May Day parade was also taking place in the centre of Hamburg at which many thousands of people were participating in.

Yet, by late August 2013, the refurbished *'Atlantic Cartier'* was docking again in Liverpool Port, less than four months after it was involved in this major emergency fire incident in Hamburg Port.

17.2 Safety compliance of the *Atlantic Cartier*

Tim Deere-Jones has researched the safety compliance of the *Atlantic Cartier* for the NFLA and found that this vessel has a poor history of safety compliance. International Port State Control Inspections (PSCI) had also recorded a high number of deficiencies in various aspects of the vessel's management and maintenance.

Over the 5 year period 2008 to 2013 (inclusive) PSCI's recorded 20 deficiencies through ten inspections. These deficiencies have been related to:

- International Safety Management (ISM);
- Sea charts;
- The documentation of compliance with dangerous goods legislation;
- The safety of access to working areas;
- The 'Marpol' Annex 1 fire prevention;
- The vessel's speed and distance indicators;
- The vessel's safety of navigation (its voyage plan);
- The loadlines of the vessel;
- Its propulsion auxiliary engines;
- Accident prevention (onboard personnel);
- The vessel's certification and documentation;
- The vessel's operational procedures (its engines and equipment);
- Distress signalling.

In none of these inspections did the recorded deficiencies result in any detentions (thus the *Atlantic Cartier* was deemed fit to sail: despite the deficiencies). There are standards below which vessels should not fall or they will be "blacklisted" or "blackflagged" in European waters; such standards are now high for oil and chemical carriers but ***apparently far less so for non-INF nuclear/radioactive materials carriers***. The standards are vessel based but should plainly also be cargo based.

One of the major issues of concern here is that, whilst oil carriers are registered as oil carriers and built to specific, stringent, cargo-value standards, and chemical carriers are registered as chemical carriers and built to specific cargo value standards; vessels carrying non INF nuclear materials are not registered, or specifically designed and built as nuclear carriers. Thus, the *Atlantic Cartier* is registered only as a "Container Ro-Ro cargo Ship" despite the fact that the available evidence implies that the vessel is a frequent and regular carrier of fissile material.

Highly relevant to this is the fact that ISM (International Safety Management) deficiencies on the *Atlantic Cartier* have been reported twice in the last five years and MARPOL Annex 1 fire prevention deficiencies have also been reported twice in the last five years (the last such report being dated 17/11/2012).

17.3 *Safety deficiencies of Atlantic Cartier and connections to Liverpool Port*

It is a matter of record that one of the above noted ISM deficiencies was recorded by Liverpool Port authorities on the 1st September 2009. At the same time a deficiency in speed and direction indicator was also reported. It has also been recorded that Liverpool Port Authorities reported deficiencies in the Safety of Navigation (voyage plan) and GMDSS equipment operation on the 15th December 2009. *(GMDSS stands for Global Maritime Distress and Safety System and is similar to the technology that the PNTL fleet possess).*

Given the use of Liverpool port and the vessel's history of use as a uranium hexaflouride transporter, it is a matter of concern to the NFLA that the vessel may have been transporting fissile materials through the Irish Sea and other UK waters at the time that those deficiencies were uncovered by the Liverpool Authorities.

Further research by Tim Deere-Jones confirms that the voyage stage of the 2013 *Atlantic Cartier* transport (which ended in the fire incident at Hamburg) began in Liverpool (at the end of April 2013). This means the *Atlantic Cartier* was either loaded with the fissile uranium hexaflouride in Liverpool, or was already carrying it when the vessel entered UK waters. The Port Authorities records show the vessel left Liverpool, passed north of Anglesey, then went southward through the Irish Sea, into the English Channel. It passed through the Straits of Dover 26/27 April arriving at Hamburg on the 1st May 2013.

Tim Deere-Jones's research has also found out that the Hamburg PSCI authorities inspected the vessel 2 days after the fire and recorded no less than 33 deficiencies in safety and operating standards including the following:

- emergency fire pumps,
- fire detection equipment,
- fire fighting equipment,
- fire prevention,
- fire dampers,
- other fire fighting equipment,
- availability/accessibility of fire fighting equipment.

The 3rd May 2013 PSCI also identified failures/deficiencies in a wide range of other categories including general safety, communications, magnetic compass operation, propulsion/auxiliary machinery, International Safety Management, and hull damage impairing seaworthiness.

The NFLA are very concerned that the available evidence shows that the *Atlantic Cartier* was not arrested, or detained in port until such time as the deficiencies/defaults/inspection failures were remedied, re-inspected and passed as compliant with all relevant standards. Thus, as has been the case in earlier years, it appears that the vessel was allowed to proceed despite the defaults and failures of safety compliance.

NFLA believes that binding legal arrangements need to be put in place to ensure that ANY vessel with ANY deficiency should not be allowed to carry fissile radioactive material of this type and volume. Such vessels (as soon as such deficiencies are uncovered) should be prevented from loading such cargo, or if already carrying: should be "arrested" or detained until such cargo is unloaded/transferred to a fully compliant vessel.

NFLA are planning, with CND, to inquire with those UK ports - where radioactive/fissile cargo (of such type and volume) is handled - as to what are their emergency arrangements in the event of such an incident.

18. Further NFLA actions since receiving this research

The NFLA Chair and NFLA Secretary have met with a senior official of the Rail Maritime and Transport (RMT) Union to discuss this report, and all were alarmed with its content. An earlier version of the report was also given to the Fire Brigades Union (FBU), who also noted concerns with the *Atlantic Cartier* incident. The RMT representative noted that the union would contact RMT sponsored Parliamentarians about the issue and also recommended further discussions with the marine trade union, Nautilus. The NFLA agreed to seek to contact coastal local authorities and port authorities. The NFLA plans to also submit this report to the Parliamentary Transport Select Committee, the Department of Transport and the Maritime and Coastguard Agency and ask a series of questions with the aim to seek improvements to marine nuclear transport safety. This action will take place shortly.

The NFLA Chair and NFLA Secretary have also met with officers in Merseyside & District CND, who have had a watching concern over marine nuclear transports from Liverpool dock. In a media release on the 27th February 2014, Merseyside CND publicised an open letter sent to the owners, management and employees of the Liverpool Port, Bibby Management.

The letter argues that the following procedures need to be implemented:

- that ships carrying dangerous cargoes into any port should issue a public notice about the potential dangers which they might cause;
- that the international transportation of uranium hexafluoride (UF-6) should cease from now on;
- that any ship carrying radioactive materials should have regular fire inspections;
- that any ship which fails to pass such tests should be prevented from sailing;
- that the ship owners and the ship management should be held legally responsible for any breach of these regulations;
- that any ship carrying radioactive materials should be subject to a new set of rigorous fire and safety standards regulations;
- that international shipping regulations are changed so that no radioactive materials can be transported on any ships which carry either explosives, or highly inflammable liquid gases.

Merseyside CND have also requested a meeting with representatives of Bibby Management as a first step towards implementing a new set of industry wide standards regarding the transportation of all radioactive materials by sea. NFLA supports the key points made in the letter as part of a wider initiative required by Government (the UK and Republic of Ireland Governments and devolved governments in Scotland, Wales and Northern Ireland, relevant marine transport authorities, port authorities and eventually to request for changes in the IMO's international arrangements).

This research provides considerable food for thought and discussion with the appropriate bodies noted above. NFLA also has a formal Memorandum of Understanding with the local government organisation, KIMO International, and plans to share this briefing with its Secretariat. KIMO is dedicated to the improvement of the marine environment along the North East Atlantic and has members in the countries where the *Atlantic Cartier* passed by. NFLA plans to consider with KIMO if this is a matter to raise with the OSPAR Intergovernmental Commission.

NFLA welcomes comments on this briefing – please email the NFLA Secretary on s.morris4@manchester.gov.uk if you have any comments to make.