ANNEX XIII

THE ISSUE OF PRIOR CLEANING BEFORE DISMANTLING

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Annex XIII

The issue of prior cleaning before dismantling

I. Definitions

Complete cleaning:

Removal of all pollutant or hazardous substances for workers or the environment to make a ship intrinsically non-hazardous for all subsequent dismantling and recycling operations, but without requiring any significant dismantling of the ship which would weaken its structure making it unfit for storage or subsequent towing on high seas.

Dismantling:

Operation conducted for the complete demolishment of a time-expired ship, to separate and isolate hazardous or pollutant substances and to recycle a maximum amount of recyclable materials or equipment, under conditions paying heed to the health of workers and to the environment.

II. Prior analysis

Ship safety management:

In principle, a distinction must be made between the safety management phase of a defunct ship and the actual cleaning phase. Irrespective of the method used, cleaning prior to dismantling or dismantling with no prior cleaning, the owner - for safe management of the ship after its withdrawal from service, or the dismantling facility - before starting any work on the ship, must take a certain number of precautions to prevent the endangering of workers, the spillage of products contained in the ship or the triggering of any casualty. If a ship is able to arrive at the dismantling site under its own means, the initial safety management phase can only be carried out on its arrival after this final voyage.

Maintained intactness of buoyancy:

If a ship is completely cleaned before dismantling, on first analysis it is to be considered that the ship must maintain most of its buoyancy and in particular its general characteristics of structural resistance, stability and floatability so that it can remain afloat in the event of possible towed sea transport between the two successive operations on the ship (pollutant removal and dismantling). Nevertheless, as indicated in Appendix 1 of Annex XIV, a ship of average size which has lost its essential seagoing properties (stability, structural resistance, floatability, towability) could in theory still remain transportable by barge or specialised ship as far as the dismantling site, but probably at a prohibitive cost having regard to its residual value.

Under the conditions of this initial analysis, only dismantling or demolition operations which do not definitively jeopardize these seagoing properties can be contemplated for the conducting of this prior cleaning phase. If this were not the case, the prior cleaning operation would lead to limited opportunities for subsequent dismantling operations of the ship, and could place the crew in charge of the last voyage in a dangerous situation if the ship were to make this last voyage under its own propulsion means.

Operating constraints for prior cleaning:

It is easily understood that the prior cleaning of interest to us here is the cleaning made before a ship's last voyage to the dismantling site and that perfect cleaning of this type would most probably make the ship unfit for self-propelled navigation. This assumption also means that most cleaning work must be conducted inside the ship taking into account existing compartmenting constraints, the lack of power supply, lack of fire fighting means and lack of ventilation normally available onboard a ship in service (prior safety management of the ship).

Efficient initial cleaning, that is safe for personnel and the environment requires the prior identification and location, and often the certain, exhaustive quantification of risks and hazardous substances in order to be able to take appropriate individual and collective measures to protect workers and the environment during this cleaning phase. This assumes possible access to all volumes on board and the capability to take samples and to conduct necessary dismounting operations for this survey. Unfortunately this is an assumption that will only rarely materialise.

The preparations for this work and its conducting may involve operating times (including the prior safety management phase) and costs due to the restraints and constraints of accessibility, which lie fully out of proportion with the costs which would be entailed if dismantling were to be carried out simultaneously.

Possible synergies between cleaning and preparation for dismantling:

Depending on the method followed for dismantling (horizontally per deck or vertically in sections) and the planned ship cutting techniques (cutting by blow torch or melting equipment (arcair) / cold cutting using hydraulic cutters or diamond wire), the type of surveys and the time needed for their conducting, prior to this cutting and the corresponding cleaning work, are very different. They are directly determined by the complexity and the inner equipment of the ship to be dismantled.

However, during a prior cleaning operation, advantage may be taken of on site surveys to make preparations for hot cutting operations in full safety, if this is the technique chosen. For cold cutting (hydraulic cutters, diamond wire) the benefit of this survey is less extensive since man operations inside the ship and operations to ensure ship safety are less determinant owing to the fact that there are very few onboard workers and accessibility is improved.

III. Particular case of partial prior cleaning

This annex is essentially based on the approach that logically considers the general case of complete prior, systematic cleaning applied to all pollutants. However, consideration could also be given to partial cleaning, as required by a dismantling site's limited technical or volume capacity to treat one or more pollutants, or even to treat part of the volume or weight of this or these pollutants. In this case it is evident that there is no room for dogmatism and that it is through pragmatism and by mutual agreement between the owner and the dismantling facility, including on issues of costs and time, that this decision must be taken. In this case, the problem is an intrinsic condition of the chosen industrial dismantling process and there is really no other alternative, otherwise we would return to the initial debate: full prior cleaning or no prior cleaning before a ship is sent to a dismantling site.

IV. Summary of advantages and disadvantages

The summary set forth below is based on a detailed analysis of the main hazardous substances and equipment which may be found on board a ship.

Theoretical feasibility:

Aside from the very particular case of boilers or fire-protected parts whose asbestos protection sometimes forms an integral part of the ship's structure, numerous surveyed hazardous substances and equipment can theoretically be given prior cleaning without substantially jeopardizing the integrity or viability of the ship.

This merely theoretical feasibility is to be moderated by practical feasibility and the implications of pollutant removal on the buoyancy of the ship. To access the entirety of surfaces and volumes of a ship which may contain hazardous substances, those in charge of cleaning the ship will no doubt be compelled to dismount structures which will then have to be re-mounted to guarantee the ship's buoyancy before it embarks on its last voyage to the dismantling site.

Also, it must be borne in mind that complete prior cleaning before this last voyage has two particular consequences:

- It is logically understood that the ship will no longer be able to navigate under its own means, since safety measures prior to cleaning and the removal of some components containing pollutants (electric cables, batteries, safety gases, dismounted fluid circuits…) will have deprived the ship of its own propelling means.
- Taking safety measures prior to pollutant removal involves costs and time. The probable removal of bunker fuel and parts dismounted to enable cleaning work will reduce the market value of the ship. The ship's loss of propelling means requires the recourse to long and costly towing. Surveys and verifications of the ship's viability before its final voyage will be probably be necessary and will entail costs and implementation time. To summarize, aside from any economic comparison of a strict cleaning strategy with regard to dismantling, the above-cited operations indeed amount to additional charges and time delays which partly detract from the value of the ship.

Comparison of advantages and disadvantages:

Two issues of feasibility are to be considered however with respect to the technical and economic efficacy of the process, and particularly with respect to the safety of man and the environment:

- Some cleaning operations such as the removal of powder asbestos (asbestos that is non-contained) or the removal of some pollutants or equipment that is mobile by nature (batteries, electric and electronic equipment), have to be carried out before the start of any dismantling to decontaminate the item to be dismantled, to provide safe access for workers and avoid the dispersal of these pollutants during the dismantling operation. The removal of these substances can be conducted indifferently either after taking necessary initial safety measures or right at the start of dismantling without involving any notable additional risks, time delays or costs.
- Other cleaning operations require preparatory work to a greater or lesser degree and over a longer or shorter time period (surveys, ventilation, dismounting, isolation, docking…) or they are technically feasible but are either of no particular advantage or would impose fewer human, technical and economic constraints if conducted as dismantling progresses. Also, it must be borne in mind that this theoretical feasibility of prior cleaning is often accompanied by the conducting of longer, more dangerous, more difficult man labour of

which part would be unnecessary (through the technique used for subsequent recycling of metals) or would be largely facilitated (accessibility, mechanisation,…) if conducted simultaneously with the actual dismantling operation.

V. Respective positions

NGOs generally recommend full, prior cleaning before dismantling which, with respect to the regulations on waste shipments contained in the Basel Convention, would allow the dismantling of all ships in any region of the world after all hazardous substances have been removed. With this attitude they avoid coming into open conflict with developing countries, providing them with the assurance of continuity in the supply of defunct ships to be demolished.

Unlike the pragmatic position taken by most existing ship dismantling sites, the major companies (Véolia, Suez…) give their support to the strategy of complete, prior cleaning. This industrial strategy effectively re-qualifies them to run for a promising activity which would be carried out in developed countries, whereas ship cleaning carried out simultaneously with dismantling would place them in an unfavourable position with regard to developing countries. The search for global economic efficiency of industrial operations (cleaning + dismantling) is not at all one of their concerns. The search for perfection in complete, prior cleaning could on the other hand lead to long, complex, costly work for which Western owners (the States in particular) will have to exhibit good examples.

For its part, the current draft IMO Convention on dismantling does not require prior cleaning before dismantling, provided that the recycling facilities chosen in the dismantling country have the technical capacity to treat the pollutants and hazardous substances concerned, and have been granted the approval of the local authorities to carry out such treatment.

VI. Conclusions

It appears obvious that the heed of regional or national regulations prohibiting the export or transfer of some hazardous equipment or substances such as asbestos, requires the partial removal of the products concerned before contemplating any export operation, and before initiating - outside the OECD - the complete dismantling of the said ship. With respect to other hazardous pollutants or substances the choice between their simultaneous or partial prior cleaning must be examined in relation to the capabilities of the dismantling site, and to resulting risks and synergies. In the event that the exporting of a ship is not envisaged for the dismantling phase, the advantage of first setting up a separate asbestos removal site or a site to remove all hazardous substances remains evident.

Moreover, this case not concerning all ships, it is possible that technical advantages or the protection of persons or the environment may lead the owner and the dismantling facility to make the fully justified, intermediate choice of partial cleaning, or even deferment of this phase to the ultimate demolition stage provided that the dismantling facility has the capability to treat all the pollutants and hazardous substances.

From the above it globally follows that it is highly improbable that it will be possible to carry out systematic, complete prior cleaning. Several technical factors appear to be determinant in the choice of whether or not to decide on partial pollutant removal before conducting the actual dismantling operation:

- The type of vessel and its specific architecture;
- Its condition at the time it is withdrawn from service;
- The pollutants and hazardous materials on board;

- The cleaning techniques available at the place where a ship is withdrawn from service and at the dismantling facility;
- The dismantling technique and the demolition tooling used by the dismantling facility;
- The technical capacities of the recycling facilities to treat secondary raw materials destined for recycling;
- The capability to carry out proper treatment of end wastes in countries in which ships are withdrawn from service and in dismantling countries.

In relation to the case under consideration, these factors may not relate and will weigh differently in decision making.

Also, taking into account a ship's content or configuration, the preparation and conducting of prior cleaning work may entail additional risks or risks that are out of proportion for operators or the environment, both during cleaning operations and during the final dismantling. By comparison, cleaning that is organized in coherence and harmony with dismantling may lift or strongly reduce these risks. In this case, it would be dangerous to show any dogmatism and lay down the requirement for complete prior cleaning.

Additionally, aside from the case of government-owned ships whose treatment must be exemplary, the true feasibility of a prior cleaning operation cannot full disregard the economic factor, in particular if the outcome of the two complete, separate operations (complete cleaning then dismantling) is a globally negative financial result. If this criterion were to be systematically forgotten, private ship owners could be led to following strategies which in the end would be counter-productive for the protection of workers and the environment, by seeking to offset the cost of prior cleaning by income from dismantling that is drawn from sub-standard dismantling sites.

There is also a myth to be cleared, since numerous persons are led to thinking that prior cleaning is the universal panacea making any dismantling a virtuous operation. However prior cleaning only relates to one of the sources of risk for man and the environment: hazardous substances and pollutants contained on board a ship. The endogenous risks of the ship, of the dismantling site and of its members are neglected for various reasons that are not always acknowledged. The dismantling of a ship that has previously been cleared of all hazardous substances may unfortunately constitute a danger both for the workers and for the environment if the industrial methods or tooling are not up to the task or are faulty. The organisation and preparation of the dismantling site, the training of workers, individual protection gear and general protections, emergency means and the prevention of casualties *inter alia* must certainly not be forgotten.

Given the large variety of ships, the extent of prior cleaning before dismantling must be examined on a case-by-case basis, in relation to health, environmental, economic and technical criteria. Nonetheless, the practical feasibility and the true advantage of complete prior cleaning, before a ship is sent to a dismantling site, are globally minimal and even unrealistic.