

# Port State Control and Marine Pollution Prevention: A Canadian Perspective

Mary R. BROOKS  
Associate Professor  
Centre for International Business Studies  
Dalhousie University  
Halifax, Nova Scotia, Canada

## 1. INTRODUCTION

Canada is one of the four largest oil importing regions of the world, sharing this honour with the US, Western Europe and Japan. In 1989, 31.4 million tonnes of crude oil and fuel oil were loaded or unloaded in Canadian international trade,<sup>1</sup> the majority via foreign flag. Canada's domestic traffic accounted for another 6.5 million tonnes of these commodities. In spite of this, Canada has not had a marine pollution catastrophe of the magnitude of the *Amoco Cadiz* (220,000 tonnes spilled) or the *Atlantic Empress* (257,000 tonnes spilled), although its own *Kurdistan* (7,000 tonnes spilled) and *Arrow* (9,000 tonnes spilled) incidents remain firmly fixed in the public's eye.<sup>2</sup> More recently, Canadian awareness has been raised by the *Nesucca* (875 tonnes spilled) and *Exxon Valdez* (36,000 tonnes spilled) incidents on the West Coast; both of these took place in US waters but the environmental damage spilled into Canadian waters and sparked public outrage.

These highly visible incidents coupled with the importance of the fishery and tourism to Canada's economy and the aging of Canada's tanker fleet led to an interdepartmental review by Environment Canada, the Department of Fisheries and Oceans and the Canadian Coast Guard (CCG) of the systems in place to prevent as well as respond to marine spills. This in turn prompted the creation of the Public Review Panel on Tanker Safety and Marine Spills Response Capability on June 9, 1989 chaired by David Brander-Smith, Q.C. During the period of the Panel's hearings, the US government introduced the *Oil Pollution Act of 1990*, which mandated a phase-in of double hulls for tankers traveling in US waters. The act has subsequently become law thereby setting the legislation by which marine pollution issues will be addressed in the US in the near future.

This paper examines the position presented by the Public Review Panel and reviews the CCG's response to the Panel's Report and to the vessel-source oil pollution threat in general. It makes no attempt to address the marine response capability necessary to serve Canadian public interest but will focus primarily on the use of Port State Control as a tool of marine pollution prevention in the context of the Panel's technical recommendations and given the role played by human error in marine pollution.

## 2. THE PUBLIC REVIEW PANEL REPORT

On November 2, 1990 the Public Review Panel presented its report, *Protecting Our Waters*, to Canada's Minister of Transport. After 18 months of study and 31 public hearings, the Panel proposed 107 recommendations to deal with marine pollution in Canada. The recommendations covered a wide range of areas, examining the type and threat of marine pollution Canada will face, the measures necessary to prevent such pollution, the response capability need to deal with accidents which will inevitably occur and the legislative framework required to serve the Canadian public interest.

The Panel drew a number of conclusions:

- One catastrophic oil spill for which Canada is wholly unprepared can be expected

every 15 years.

- The overwhelming majority of tanker accidents are caused by human error.
- Canada is a signatory to an international agreement requiring inspection of 25% of all foreign tankers entering its ports but only 8% are inspected.

In spite of these conclusions the Panel's major recommendations focused on technical solutions, proposing a course of action which would see the levy of C\$2. per tonne on all oil and oil products transported in Canadian waters; this levy would be used to fund the recommendations of the report, two of which concerned the replacement of the entire Canadian tanker and tank barge fleet with double-hulled ice-strengthened vessels over a seven-year period (Recommendations 2-1 and 3-1). Although the report suggested that the levy be discounted 50% for double-bottomed and 100% for double-hulled vessels, it recommended that Canada require all tankers and tank barges entering Canadian waters in 10 years time be double-hulled (Recommendation 3-2) and that rigorous standards for chartered-in tonnage be implemented (Recommendation 3-4).

The principal solution to marine pollution proposed by the Public Review Panel was one focusing on hardware—double-hulled tankers—one philosophically acceptable to industry as, in low energy accidents, double hulls should not pollute. While the US has committed to phasing-in the requirement for double-hulled tankers via the *Oil Pollution Act of 1990*, there are other technical alternatives which might also be acceptable and many feel that the US was hasty in its choice. There is no consensus among the industry's technical experts as to what is the best design technology and the US National Research Council Committee on Tank Vessel Design has concluded that double hulls should only be viewed as an interim measure.<sup>3</sup> Interim measures often have a way of becoming the standard.

Canada is participating in an IMO Working Group which is examining proposals for environmentally safer tankers. The IMO's Marine Environmental Protection Committee has circulated to member governments its proposals for the introduction of double-hulled tankers and set up a study group to explore alternate designs. In the interim, the CCG is prepared to go ahead with the national phase-in of double-hulled tankers while considering the other "internationally-accepted" approaches which may come to the fore as further technical research progresses.<sup>4</sup> But marine pollution is not caused principally by hardware and prevention by design does not focus on the core problem—human error. It is therefore incumbent that the focus of marine pollution prevention must deal with the human element in shipping.

### 3. HUMAN ERROR IN MARINE POLLUTION ACCIDENTS

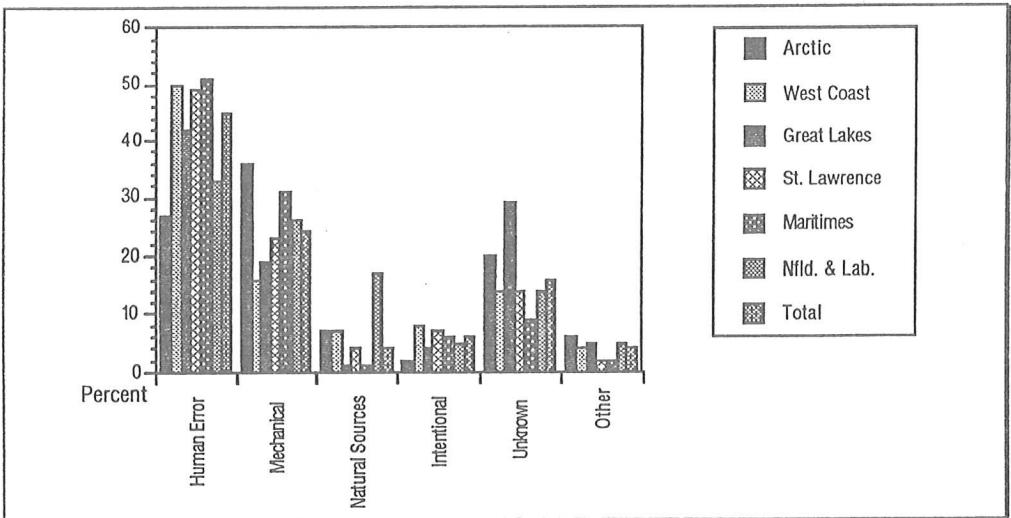
A recent and dramatic example of the toll that human error can take is illustrated by the casualties associated with the collision of the ferry *Moby Prince* and the tanker *Agip Abuzzo* in Genoa harbour in April 1991; distraction of the ferry's crew by a soccer game on television ultimately led to the loss of life for all but one of its 72 passengers and 67 crew. The investigations are not yet complete but human error played its role. In a second example, the US National Transportation Safety Board's investigation into the *Exxon Valdez* incident concluded that the most immediate factor in the vessel's grounding was the failure of the third mate to manoeuvre the vessel properly due to fatigue and excessive workload.<sup>5</sup> Recently the UK P&I Club concluded from an analysis of claims that human error was to blame in nearly 60% of claims exceeding US\$100,000.<sup>6</sup>

One must be careful in stating that human error is a cause of the majority of accidents; how can the human element in shipping casualties be separated from other circumstances surrounding the event? Most records kept do not provide adequate information to identify any pure role which can be categorized as human error. A pilot study undertaken in the UK found that over 90 percent of collisions and groundings and over 70 percent of contacts and explo-

sions involved human factors.<sup>7</sup> Based on this initial work, more recent qualitative research undertaken by the Tavistock Institute of Human Relations for the UK's Department of Transport, Marine Directorate<sup>8</sup> concluded that human involvement in shipping casualties is very high and that human involvement does not necessarily imply human responsibility for the incident. Although there is a significant body of literature examining the relationship between crew size, working conditions aboard ship and the incidence of marine accidents, the US National Research Council has concluded that there are simply not enough data to conclude that any causal relationship exists between crew size and the incidents of marine accidents.<sup>9</sup>

The Public Review Panel noted that Canadian statistics show that 75% of oil spills are caused by human error, a conservative level when compared with Quinn and Scott's estimates of 90% in the UK.<sup>10</sup> In Canada, human error is a primary factor while mechanical failure is secondary in incidents of marine pollution. In Canada, the regional estimates vary from a low of 27% attributable to human error in the Arctic to a high of 51% in the Maritimes (see Exhibit 1). It has been said that in Canada "Fatigue and incompetence are the two biggest causes of accidents."<sup>11</sup> According to the Canadian Coast Guard, the majority of spills in Canadian waters are operational; of these, the majority are due to human error.<sup>12</sup> In spite of this, only three recommendations of the panel—Recommendations 3-5, 3-6, and 3-19—address the human factor in marine pollution.

**Exhibit 1: Causes of Chemical and Oil Spills in Canadian Waters**



Source: Adaptation of the data provided in Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Protecting Our Waters*, Ottawa: Supply and Services (EN21-91/1990E), p. 9.

It is not sufficient to note the human error factor in oil spills, it needs to be the focus of prevention. The problem is not one facing solely Canadian ships; foreign crews are as likely, if not more so, to cause an accident. Foreign-flag owners are putting greater and greater pressure on their crews to do that which is least expensive and reduces port time the most. Of considerable concern to Canadians is the danger of marine pollution as a by-product of the US legislation which also focuses on the double-hull solution. The US National Research Council

Committee on Tank Vessel Design recognized in its report that operators of single hull tankers after the year 2015 might choose to tranship outside US waters.<sup>13</sup> This poses a very real threat to the waters of Canso harbour, a common transshipment point for many bulk cargoes, the Bay of Fundy, and the Straits of Georgia and Juan de Fuca.

The CCG recognizes that "other actions ... are of at least equal importance"<sup>14</sup> to technical improvements. One of these is enhanced investigatory powers and enforcement capability. And therefore, of direct relevance, is an understanding of the legislation intended to prevent marine pollution and that governing working conditions at sea, as well as the investigatory and enforcement capability resident in Canada for both.

## 4. LEGISLATION

### 4.1 Legislation Governing Marine Pollution

Legislative regimes governing marine pollution are of three varieties. First there are those rules which govern the design, construction, equipment and operation of ships and are intended to prevent or limit the discharge of pollutants. Second, there are rules pertaining to liability and compensation in the case of damage caused by the polluting parties. Finally, there are those which are related to dealing with the situation after the event, focusing on spills response and salvage. Regimes related to response and liability have not been included in the following discussion as the key issue in this paper is prevention.

The first convention to deal specifically with the problem of oil pollution was the *International Convention for the Prevention of Pollution of the Sea by Oil, 1954*. Designed to minimize oil discharges from routine operations by controlling the pumping of oily water mixtures from the bilge, the convention was developed with the premise that oil discharge was inevitable. The convention left enforcement entirely up to the flag state and ships were not required to have the equipment to monitor quantities of oil. Although amended in 1962 and 1969, the agreement was essentially voluntary and environmentally "virtually useless."<sup>15</sup>

In response to the *Torrey Canyon* disaster, the *International Convention for the Prevention of Pollution from Ships, 1973* (MARPOL) was adopted. The oily waste provisions of MARPOL '73 and its related Protocol of 1978 apply to all vessels, not only to tankers. Although tanker spills are the most feared, minor spills from the daily operations of all ships account for far more marine pollution making MARPOL a very powerful and important tool in the Port State's legislative arsenal. MARPOL requires every vessel over 400 grt. to have separators for discharges from machinery spaces and establishes comprehensive discharge guidelines. In addition all tankers over 150 grt. must have equipment to monitor the rate of discharge of oily water from tank-washing and ballast operations. Today MARPOL includes Annexes 1-5 to deal with respectively oil, chemical in bulk, packaged chemical, sewage, and garbage. Fifty-seven nations have adopted MARPOL '73/'78 accounting for 85% of the world's tonnage in 1990. Canada is not yet a party to the convention but, by adopting amendments to the *Canada Shipping Act (CSA)* in 1987, Parliament laid the groundwork for eventual accession. (The Public Review Panel recommended accession to all 5 annexes in Recommendation 5-1.)<sup>16</sup>

The *International Convention for the Safety of Life at Sea, 1974* (SOLAS) and its Protocol of 1978 replaced and superseded earlier conventions of 1948 and 1960. SOLAS is the leading convention establishing standards for the design and construction of vessels, as well as those for machinery, and navigational, firefighting and lifesaving equipment. SOLAS has been adopted by 106 nations including Canada, Japan, the US, the USSR and all MOU states. At least here, Canada is on an equal footing with the major parties to the Memorandum of Understanding (MOU) on Port State Control (PSC), which will be discussed later.

While there are several overlapping pieces of Canadian legislation designed to address the problem of marine pollution, it is primarily via the *Canada Shipping Act (CSA)* and the *Arctic Waters Pollution Prevention Act (AWPPA)* that the safety of navigation, the operation of ships, construction and equipment, and the prevention of ship-source pollution are regulated domestically. The Review Panel also notes, however, that marine pollution prevention and compensation appears in a plethora of other Canadian legislation—*Fisheries Act*, *Canadian Environmental Protection Act*, *Oil and Gas Production and Conservation Act*, *Western Arctic (Inuvialuit) Claims Settlement Act*, *Canada Ports Corporation Act*, and *St. Lawrence Seaway Authority Act*.<sup>17</sup>

The CSA applies to all ships in Canada's internal waters and its territorial sea and to Canadian ships in all other waters. Both the pollution control provision and those provisions relating to the safe operation of ships apply to all Canadian waters and fishing zones (200 miles) except where the AWPPA applies. Neither the CSA nor the AWPPA imposes on a polluter the duty to remedy the damage and the Panel has recommended such a provision be added to both pieces of legislation (Recommendation 5.8). It is clear to all that the legal situation needs to be rectified and there is little, if any, debate concerning the Review Panel's recommendations in this regard. There only remains the political will necessary to do so.

#### 4.2 Legislation Governing Seafarers

Working conditions and manning requirements are normally the purview of the flag state, with domestic legislation setting the standards. Over the years, the port state has accepted the levels established by the flag state as meeting domestic standards when a foreign ship calls. However, many countries are concerned that each nation meet certain minimal standards with respect to working conditions and manning standards and so a body of international law has developed. The International Labour Organization has developed 34 conventions focusing on working conditions at sea and the International Maritime Organization has established standards through its 1978 *Convention on Standards of Training Certification and Watchkeeping (STCW '78)*. Canada has adopted the STCW '78 Convention; but unfortunately this convention has not found universal favour (although its very minimalist standards are inadequate for modern ship safety). Adoption of the ILO conventions has been spotty; of these ILO 147 is the most important and remains unadopted by Canada along with 21 others. Given the importance of the human factor in marine accidents, Canada needs to adopt ILO 147 and this was not included in the recommendations of the Public Review Panel.

Not only is it important to have the legislative jurisdiction to be able to act, it is also important to have the mechanism in place to investigate compliance with the legislation as well as the means to enforce public penalty should compliance not be found. The mechanism proposed is Port State Control along the lines of the European MOU.

#### 5. THE USE OF PORT STATE CONTROL

Where once the establishment and maintenance of standards on merchant ships was largely the responsibility of the country of ship's registry, in many cases that responsibility has now devolved to coastal states and host ports. The objective of Port State Control, which seeks to redress some of the problems of substandard shipping, has been defined as the "inspection and control of ships entering a port by the State in which the port lies, for the enforcement of international standards of shipping safety and pollution prevention."<sup>18</sup> Under the principle of PSC the port country accepts the responsibility for enforcing internationally-accepted standards of shipboard operation regardless of the flag of registry and the maritime practice of that registry. Under this principle, deficient ships can be detained until remedial action is taken. The right of the coastal state to intervene for its own protection is enshrined in the 1982 *Law of the*

*Sea Convention.* Port State Control will never replace flag state regulation; its primary function is to complement flag state efforts to ensure safe ships and clean seas.

The impetus for Port State Control can be traced to one catastrophic oil spill. On March 17, 1978, the heavily laden VLCC *Amoco Cadiz* grounded on the Brittany coast of France, spilling 221,000 tonnes of crude. The ship was owned by Amoco International Oil Company, a subsidiary of US multinational Standard Oil, and Amoco was subsequently found negligent in the maintenance and repair of the vessel, and in the failure to adequately train its crew. This disaster focused Europeans on the problems of ship-generated marine pollution and served as the driving force promoting the adoption of PSC principles in Europe. In July 1982 the Paris Memorandum of Understanding was signed by 14 European nations, including nine Member States of the European Community. Since then a number of countries have implemented PSC, including Canada.

The objective of the MOU is to assist in securing compliance of ships with international standards regarding the safety of life at sea, the prevention of marine pollution, and the working and living conditions on-board ship. The standards are those established by the conventions listed in Exhibit 2 and are referred to as the "relevant instruments" of the MOU.

### Exhibit 2: International Conventions and Amendments Enforced Through PSC

*International Convention on Load Lines*, 1966  
*International Convention for the Safety of Life at Sea*, 1974 (SOLAS'74); amended by the Protocol of 1978 ■  
*International Convention for the Prevention of Pollution from Ships*, 1973, modified by the Protocol of 1978 (MARPOL'73/78) ■ ●  
*International Convention on Standards of Training, Certification and Watchkeeping for Seafarers*, 1978 (STCW'78) ✓  
*Convention on the International Regulations for Preventing Collisions at Sea*, 1972. (COLREG'72)  
*Merchant Shipping (Minimum Standards) Convention*, 1976 (ILO 147) ■ ● †

Notes: These instruments have been ratified by all 14 MOU parties—Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden and the UK—as well as the co-operating Maritime Authorities of Canada, the US and the USSR, except as indicated:  
 ■ Not ratified by Canada; ● Not ratified by Ireland; ✓ Not ratified by the United States; although US Coast Guard has gone on record as supporting this instrument. (USCG (1989), *Report of the Tanker Safety Study Group*, October, p. 41, para. 1.); † Not ratified by the USSR.

Source: The Memorandum of Understanding on Port State Control, *Annual Report 1989*.

A significant feature of the MOU lies in its concept of "no more favorable treatment" whereby Port States can enforce even those relevant instruments to which the flag state may not be a party. (Article 4 of ILO 147 for example expressly provides for the intervention of the Port State on questions relating to the conditions of the crew on board a foreign ship irrespective of the ship's flag state's ratification status of the convention.) However, a Port State can apply only those relevant instruments which are in force and to which it is a party. It is this element which must be addressed if Port State Control is to be widely adopted and completely implemented in Canada.

The parties to the MOU practice PSC by means of the inspection process. Annex 1 of the MOU provides guidelines for surveyors conducting these inspections. Each country is committed to inspecting 25 percent annually of individual foreign flag merchant vessels which enter

its ports. The inspector is qualified and authorized by the Port State concerned, and the inspection consists of a preliminary examination of certificates and documents relevant to the conventions of importance to the MOU. A detailed inspection of the ship is only conducted in those cases where the documents are not in order, and there are clear grounds for believing that the ship does not comply with the standards. (The Port State may exercise control but must not deviate from the terms of the convention in carrying out its duties; the area of social conditions on board is therefore a vague area of influence.)

Many would argue that PSC can only be considered effective if there is evidence of a declining detention rate, and the number of minor deficiencies uncovered drops. Overall, the MOU reports that 436 ships were detained or delayed due to serious deficiencies in 1983-84 and that this has been followed by a decline until 1988 in spite of an increasing number of inspections. However the deficiencies continue to grow, with little change in their rough allocation over the years.

As can be seen in Exhibit 3, the effectiveness to date has been questionable given these particular criteria. To quote the MOU *Annual Report 1988*:

[A]fter some initial hesitation from various sides, the Memorandum of Understanding now seems to have acquired a general acceptance in maritime circles as a valid and useful instrument to maintain safety standards and acceptable working and living conditions for seafarers on board ships and to contribute to a clean marine environment.<sup>19</sup>

**Exhibit 3: Deficiency Record—MOU**

Major Deficiencies	Percentage of Total			
	1983-84*	1986	1988	1989
Ship's Certificates	9.53	9.98	7.85	6.37
Life Saving Appliances	25.81	24.08	25.74	25.25
Fire-fighting Appliances	18.83	17.52	17.33	17.33
Safety in General	10.38	14.04	11.79	11.86
Load Lines	5.32	4.92	5.22	4.77
Navigation	13.51	12.56	11.97	11.42
Subtotal	83.38	83.10	79.90	77.00
Other	16.62	12.76	14.69	17.17
Marine Pollution**	-	4.14	5.41	5.87
Total	100.0%	100.0%	100.0%	100.0%
Total Number of Deficiencies	8,352	15,709	15,110	18,608
Number of Detentions	436	307	295	344
Number of Inspections	9,847	11,740	11,224	12,459

Notes: \* In its early years, the MOU reported on a July 1-June 30 year.

\*\* Marpol Annex I & II plus deficiencies specific to tankers.

Sources: The Memorandum of Understanding on Port State Control, *Annual Report*, various years.

The inspection target has yet to be reached; although the percentage of ships inspected has grown, by 1988, the average for the MOU parties had only reached 18.2%.<sup>20</sup> The number of inspections has stabilized at approximately 11,500 over the 1986-88 period, only to grow to 12,459 in 1989. In 1988, the trend to a decline in the number of ships detained or delayed reversed direction, as a large number of ships of Iranian flag were released from the confines of the Persian Gulf at the end of the Iran-Iraq conflict. The relatively high percent of

deficiencies attributable to life saving appliances and fire fighting equipment is of concern as these deficiencies are indicative of generally poor maintenance standards. In order to strengthen the effectiveness of Port State Control in Europe and to ensure uniform standards application throughout the European Community, the Commission of the European Communities is committed to financing the continuing education of ships' surveyors and supporting seminars on relevant topics, such as ILO 147.<sup>21</sup>

However, there remains in Europe the problem of unevenness of coverage of Port State Control inspections. Certainly not all Member States have achieved the target of 25%—the average is 20%—although the UK has always exceeded the target.<sup>22</sup> In fact, the British Ports Federation has concluded that if the target inspection rate were met by all MOU parties, it would mean that 85% of all ships calling at European Community ports would be inspected.<sup>23</sup> Inadequate resources is the reason cited for target inspections not being met in Ireland, Spain and Portugal.<sup>24</sup>

Canada established a co-operation agreement with the MOU in 1987, following the lead of the US Coast Guard in 1986 and was itself followed by the USSR in 1988. Discussions are continuing between the MOU and Japan and it is hoped that these will bear fruit.<sup>25</sup> The Public Review Panel notes that Canadian PSC efforts have not yet reached an effective level. As PSC can serve as a preventative tool if globally adopted, the Canadian efforts need to be more closely examined.

## 6. PORT STATE CONTROL IN CANADA

Responsibility for monitoring foreign flag shipping activity primarily rests with the Ship Safety Branch of the CCG. Its responsibilities are derived from the international conventions and domestic legislation in Exhibit 4. However, because Canada has not ratified MARPOL 73/78, ILO 147, or the Protocol to SOLAS, the Coast Guard is frustrated in its efforts to enforce these conventions on foreign flag vessels visiting Canadian ports. In particular, not having adopted ILO 147, Canada is especially restrained in preventing abuses of basic human rights regarding working and living conditions. The Review Panel's recommendations with respect to MARPOL have already been discussed but STCW'78 and ILO 147 are not directly related to marine pollution, at least as far as the Panel's mandate is concerned. This does not mean that the need to assess the standards achieved by vessels entering Canadian waters is not pressing; the operational safety of tankers is not only influenced by the vessel's operating condition but also by a number of other factors including crew fatigue, watchkeeping qualifications, crew training, and so on. Vessel inspections coupled with available on-line information systems can identify high risk tankers (i.e., those flagged in non-signatory nations, not classified with a member of the International Association of Classification Societies, older or with a previous record of deficiencies) and pooling of such information further enhances the preventative role afforded by PSC. The amendments necessary to promulgate STCW'78 in the CSA only represent the minimum agreed standards but not necessarily the most desirable in areas of crew training and certification. It is at least a start.

The Review Panel noted that inspections are critical to pollution prevention before the vessel enters Canadian coastal waters.

The value of tanker inspections is illustrated by the 1987 *Doddsland* incident. If the structural weakness of the newly built British vessel carrying 68 000 tonnes of crude oil had not been reported to the Canadian Coast Guard at the urging of its pilot, a catastrophe may well have occurred in the Gulf of St. Lawrence.<sup>26</sup>

Because inspections are so crucial, the question arises: Is the target rate met and how adequate are the inspections that are undertaken? This is a point on which the CCG and the Review Panel disagree. Statistics taken from *Protecting Our Waters* illustrate that the Canadian Coast



Guard is currently not meeting the 25% target inspection rate desirable.<sup>27</sup> In fact, the report notes that the average is only 6%! The CCG reports that it “inspects every Canadian tanker at least once a year ... [and] every foreign tanker on its first visit to Canada and at least once a year thereafter if it returns to Canada.”<sup>28</sup> Apparently, the statistics used by the Review Panel report all ship inspections and not just the inspection of tankers. (CCG inspections for 1991 are presented in Exhibit 5.) The tanker inspection rate reported by the agency responsible is clearly more in line with that required of a marine pollution prevention initiative. Non-tanker inspections suffer. But inspections are only part of the picture; response to deficiencies is the rest.

**Exhibit 4: The Basis for Existing Port State Control Powers in Canada**

Regulation 19 of Chapter I of SOLAS 1974/78;
Article 21 of the 1966 Load Line Convention;
Non-Canadian Ships Compliance Certificate Regulations;
Non-Canadian Ships Safety Order;
Navigation Appliance Regulations;
Ships Deck Watch Regulations;
Safe Manning Regulations;
Charts and Publications Regulations;
Certain Provisions of COLREG 1972;
Oil Pollution Prevention Regulations.

**Exhibit 5: 1991 Deficiency Record—CCG**

Major Deficiencies	1991 All Ships	
Ship's Certificates	2.83%	
Crew and Other Certificates	5.66%	
Life Saving Appliances	22.11%	
Fire-fighting Appliances	16.49%	
Safety in General	12.15%	
Load Lines	6.08%	
Navigation	20.11%	
Subtotal	85.43%	
Other	13.33%	
Marine Pollution*	1.29%	
Total	100.0%	
	<b>All</b>	<b>Tankers (%)</b>
Total Number of Deficiencies	2650	na
Number of Detentions	62	5 (8.07%)
Number of Inspections	1319	246 (18.65%)

Note: \* MARPOL Annex I and II and deficiencies specific to tankers.  
 Source: Canadian Coast Guard, Ottawa.

So how are deficiencies handled? In Europe, detentions serve notice to the ship-

owning/management community that ship safety is a serious matter. In Canada, in 1991, 38.6% of visiting tankers and OBOs were identified to have deficiencies but only 2% were detained,<sup>29</sup> a percentage less than the MOU's 2.8% for all ships in 1989 and the US's 3.1% for all ships in 1988.<sup>30</sup> The Public Review Panel notes that, in cases of deficiencies, "ship inspectors are inclined to use moral suasion rather than detention as a means of securing compliance, because of the high cost to owners of detaining vessels."<sup>31</sup> It is the threat of detention which makes Port State Control effective and moral suasion may not be sufficiently effective in communicating the message that tanker safety is paramount. Through Recommendation 3-3, the Public Review Panel supports the need for greater diligence in meeting Port State Control commitments. After all, if substandard shipping activity escalates, the costs of pollution clean-up and search and rescue activity will also increase.

## 7. THE COAST GUARD'S RESPONSE

The Canadian Coast Guard has developed a *Discussion Paper* in response to the Public Review Panel Report in order to stimulate discussion on the options for Canada. They have noted that the appropriate means of preventing marine oil and chemical spills requires a combination of technical and personnel improvements and Port State Control and have proposed enhanced investigatory capabilities and stiffer penalties for polluters.

The thrust of CCG's position is that those who place the environment at risk must accept the burden of responsibility of prevention, response and compensation. Although this approach may be practical and feasible politically, given the current fiscal climate in Canada, it can also be seen as a short-term expression of concern for Canadian financial resources and a shift of financial responsibility for public interest activities to the industry. This approach may not be in the best long-term public interest; it is not a particularly effective anchor for a program that will change the status quo.

The CCG accepts the Public Review Panel's recommendations for further development of the regulations concerning training and certification. It notes the human element in marine pollution and will be proposing improvements in standards of training and certification.<sup>32</sup>

## 8. CONCLUSIONS

This paper has examined the key aspects of marine pollution prevention as proposed by the Public Review Panel on Tanker Safety and Marine Spills Response Capability. It is disappointing, in face of the human factor in marine pollution accidents in Canada and worldwide, that the key recommendations of the Panel should focus primarily on the technical solutions with less emphasis on the human elements. This paper presented one alternate solution—Port State Control with complete investigatory and enforcement capability for the CCG. And this means legislative changes to support this position.

How does a country ensure safe and efficient transport? Safety comes from ensuring a well-trained and competent crew, able to communicate with each other and alert and enthusiastic. The responsibility for crewing and, therefore, for safety lies with management. But owners are often able to avoid liability and crewing choices carry only minimal risk. Moreover, manning standards vary by flag state and numerous flag states have proven to possess very little interest in ensuring that standards are met. This means that self-protection via flag state pressure is less likely to succeed than that arising from PSC activities. A uniform approach to PSC is certainly more desirable than a plethora of differing regimes—every shipowner's nightmare. But a standard regime is only possible if all parties ratify the instruments which provide them with jurisdiction and if they are capable of enforcing the principles. Although many would argue that ILO 147 and STCW'78 standards are too low, the lowest common denominator is superior to none. The US National Research Council's point of

view is that “internationally dictated manning scales are not desirable, however, since they would impose inappropriate standards on some ship operators, and would tend to freeze innovation for others.”<sup>33</sup>

The level of these standards is such that they should not be seen as threatening to innovation but protective of the human condition.

Japan’s research (via the Committee on the Modernization of the Manning System—COMOSS) indicates that reduced manning needs to be accompanied by the employment of **quality** seafarers. Yet training requirements fail to meet the needs.<sup>34</sup> In light of flag state reluctance to enforce the minimal standards available, some owners’ abilities to avoid responsibility, it falls to port states by default. Now that the Europeans have decided to limit their purview to European ports, Canada and the US although co-operating with the MOU will need to consider establishing their own regional MOU along European lines as one element in the fight for safe and efficient transport.

It should be recognized that certificates do not reflect a crew member’s experience and that no amount of training or certification is adequate if the crew is not familiar with a particular ship. PSC is not perfect. It does, however, place pressure on flag states to raise standards and ultimately should not be required if it is successful gaining greater participation in solving the problem of substandard shipping. In order to implement PSC fully and protect itself against substandard shipping, Canada should make the legislative changes proposed (Recommendations 5-1 through 5-5, 5-7 and 5-8 of the Panel’s report) as well as ILO 147, STCW’78 and the Protocol to SOLAS.

Neither PSC nor double hulls would have prevented the *Exxon Valdez* catastrophe. The US remains one of the more heavily regulated flag states and the size of the spill would not have been reduced by the double hull design; the vessel was neither old nor substandard. The blame for the disaster was laid clearly at the company’s feet. Technical solutions and human solutions will never completely solve the problem. The problem today is that many legislators do not understand the technical issues and do not therefore see any alternatives to the proposed double-hull solution. The goal is clear—safe, efficient transport—but the means is not. Legislators face the difficulty of identifying equivalencies and yet the public demands a decision. It is easy to mandate a technical solution; it is far more difficult to deal with the human element.

The shipping industry in Canada has stated its commitment to being a part of the marine pollution solution and to making improvements marine pollution prevention, response and compensation. But the Public Review Panel’s proposals do not go far enough in the area of international crewing and manning. The Tavistock Institute has concluded that, “The PSC system is one of the few practicable methods under current international legislation for controlling the conduct of foreign flag ships.”<sup>35</sup>

Those who oppose PSC argue: Is it fair to ask taxpayers to fund that which should have been taken care of by the flag state? But until a uniform and global message has been delivered, the question must be answered with a question: Is it fair to ask taxpayers to fund the cleanup of an accident which a PSC system might have prevented? This is particularly important for Canada as the *Oil Pollution Act of 1990* could encourage the use of Canadian ports for transshipment by operators seeking to avoid the US’ uncertain liability regime.

*Note: A longer version of this paper (Discussion Paper 104) is available from the Centre for International Business Studies. It contains a number of supporting exhibits as well as a list of the relevant recommendations of the Review Panel. The author would like to thank Michael Siltala, an MBA/LLB candidate, for his research assistance in developing this paper.*

## ENDNOTES

- 1 Statistics Canada, *Shipping in Canada* (Cat. 54-205), Ottawa.
- 2 Statistics Extracted from National Academy of Sciences (1991), *Tanker Spills: Prevention by Design*, Washington: National Academy Press and Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Protecting Our Waters*, Ottawa: Supply and Services (EN21-91/1990E), p. 8.
- 3 National Research Council (1991) *Tanker Spills: ... (Op. Cit.)*. This report details the wide range of alternate technical solutions to double hulls and calls for a research program to be implemented under the umbrella of the *Oil Pollution Act of 1990*.
- 4 Canadian Coast Guard, *Discussion Paper*, April 1991, p. 5-6.
- 5 NUMAST (1991), *Only Human? The Human Element in Shipping*, London: NUMAST.
- 6 *Lloyd's Ship Manager*, November 1991, p. 47.
- 7 Quinn, P.T. and Scott, S.M. (1982), *The Human Element in Shipping Casualties*, Tavistock Institute of Human Relations.
- 8 National Research Council (1990), *Crew Size and Maritime Safety*, Washington: National Academy Press.
- 9 Quinn, P.T. and Scott, S.M., *Op. Cit.*
- 10 Department of Transport (1990), *The Human Element in Shipping Casualties*, London: Her Majesty's Stationery Office.
- 11 Oceans Institute of Canada, *Seminar on the Findings of the Public Review Panel on Tanker Safety and Marine Spills Response Capability*, February 13-14, 1991, p. 28.
- 12 Mr. G.A. Christensen, telephone interview, January 1992.
- 13 National Research Council (1991), *Tanker Spills: ... (Op. Cit.)*, p. 177.
- 14 Canadian Coast Guard, *Op Cit.*
- 15 United Nations Economic and Social Commission for Asia and the Pacific (1982), *Guide-Lines for Maritime Legislation*, ESCAP: Bangkok, p. 353.
- 16 Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Protecting Our Waters*, Ottawa: Supply and Services (EN21-91/1990E), p. 82-3.
- 17 Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Op Cit.*, p. 89.
- 18 UK House of Lords Select Committee on the European Communities, *Community Shipping Measures*, London: HL Paper 90, Her Majesty's Stationery Office, 1990, p. 31.
- 19 The Memorandum of Understanding on Port State Control, *Annual Report 1988*, p. 3.
- 20 *Ibid.*, p. 19.
- 21 European Communities Commission, *A Future for the Community Shipping Industry: Measures to Improve the Operating Conditions of Community Shipping* (COM (89) 266), Brussels: Office for Official Publications of the European Communities, 1989, p. 24.
- 22 UK House of Lords Select Committee on the European Communities, *Op Cit.*, p. 17.
- 23 *Ibid.*
- 24 *Ibid.*, p. 18.
- 25 The Memorandum of Understanding on Port State Control, *Annual Report 1988*, p. 4-5.
- 26 Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Op Cit.*, p. 22.
- 27 *Ibid.*, p. 23.
- 28 Canadian Coast Guard, *Op Cit.*, p. 8.
- 29 Statistics supplied by Canadian Coast Guard, Ottawa.
- 30 US Coast Guard (1989), *Report of the Tanker Safety Study Group*, October 1989, p. 8.
- 31 Public Review Panel on Tanker Safety and Marine Spills Response Capability (1990), *Op Cit.*, p. 24.
- 32 Canadian Coast Guard, *Op Cit.*, p. 3-4.
- 33 National Research Council (1990), *Crew Size ... (Op cit.)*, p. 74.
- 34 Currently, there are adequate numbers of seafarers worldwide but there is developing a shortage of highly qualified ones. And there are problems with third world training efforts in meeting these needs. For an in-depth illustration of this last point see Brooks, Mary R. (1989), *The Seafarer in the ASEAN Region*, Singapore: Institute of Southeast Asian Studies.
- 35 Department of Transport (1990), *Op Cit.*, p. 9.