

REPORT OF SUBGROUP B  
ON REVIEW OF  
THE GREAT LAKES WATER QUALITY AGREEMENT  
30 APRIL 1977

Enclosure (1)

ENTRANCE TO THE SERVICE AGENCY

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INTRODUCTION

In connection with the Fifth Year Review of the Great Lakes Water Quality Agreement of 1972 (GLWQA), Subgroup B was designated to conduct the review of Vessel Design, Annex 3; Vessel Wastes, Annex 4; and Shipping Sources, Annex 5. Four work groups were established to conduct appropriate reviews.

Two separate two-day meetings were held in Cleveland, Ohio on 3, 4 March 1977 and 25, 26 April 1977. Each group reviewed the "Joint Canadian/United States Coast Guard Report of Progress Toward Achievement of the Goals Established by the Great Lakes Water Quality Agreement of 1972 - February 1976." This report, jointly developed by similar work groups in Ottawa on 28, 29 January 1976, was used as a ready reference which was revised and updated in the light of new or additional information developed during the review sessions.

Three Great Lakes states participated directly in the 3, 4 March 1977 discussions and a communication was received from one State during the 25, 26 April 1977 discussions. A public workshop was held in Cleveland, Ohio on 25 April 1977. Although only two interested parties participated, the views expressed were completely in agreement with previously expressed concerns.

The discussions of the applicable portions of Article V, GLWQA and Annexes 3, 4, and 5 which follow lead to the consolidated recommended revisions shown in enclosure (3).

## GENERAL CONCLUSIONS

1. The Annex 3 recommended revisions are generally made to take into consideration changes in various laws and regulations which more definitively recognize the increased concerns of the potential of pollution from shipping sources.
2. Several states and public interest groups are strongly opposed to the provisions of Annex 4 which allow the discharge of sewage from vessels. No major recommended changes are made since the current language of the Annex 4 is broad enough to permit necessary restrictions.
3. The Annex 5 recommended revisions stress the periodic conduct and reporting of reviews, the establishment of priorities for needed studies, the specific assignment of responsibility for studies with established completion dates.

## DISCUSSION

### 1. Vessel Design, Construction and Operation (reference Annex 3)

Title of Annex should be changed to "Oil and Hazardous Polluting Substances from Vessels" to bring it in line with other annexes.

#### (A) Definitions (ref. annex 3 par. 1 & 2)

Definition of tanker changed to mean a vessel designed for the carriage of liquid cargo in bulk.

Even with the change, the definitions as used in the laws and regulations of both Parties are fully compatible with definitions in the reference paragraphs.

Minor differences between the definition used by the two Parties do exist, for example, the term "tank vessel" is used in U.S.A. regulations to designate both bulk oil and bulk chemical carriers, whereas in Canadian regulations the differentiation is made. The expression "harmful quantity of oil" is not employed in either the Canada Shipping Act or Regulations. As the discharge of oil or oily mixtures from ships is prohibited, the need to use this expression does not arise. U.S.A. regulations use the same definition for "harmful quantity of oil" as the Agreement.

Depending on outcome of EPA/USCG discussions, discharge from approved oil process equipment of 15 ppm of oil or less will not be considered a harmful quantity even if a sheen is present. If so, the U.S. regulation wording will be changed which will put it in conflict with the Agreement definition. Changing the Agreement definition will not be incompatible with the Canadian Shipping Act or Regulations as they prohibit

the discharge of oil. There may be incompatibility with Canada's intentions, however.

(B) General Principles (Annex 3 para. 3)

Editorial change in paragraph 3b to add "of the vessel" after "person in charge".

Both Parties have addressed themselves to the principles contained in the reference paragraph. Both Parties have regulations prohibiting the discharge of oil, oily mixtures and hazardous polluting substances from ships. In accordance with the Canada Shipping Act, the term pollutant is used in place of hazardous polluting substances. Under the Federal Water Pollution Control Act the term hazardous substance is employed.

At such time as the Annex required by Article V, 1(i) of the Agreement is complete and a list of hazardous polluting substances identified, both Parties will take the appropriate action to apply the principles of this paragraph of the Agreement to the substances so listed.

With regard to the reporting of discharges to designated officials as reference in subparagraph 3(b) of Annex 3 both Parties have fully implemented this provision through legislation and regulations.

(C) Programs (ref. Annex 3 para. 4)

Paragraph 4 has been retitled Oil and rewritten to take into account substantive changes proposed by the working group which was worked into the basic format of the Agreement. It is proposed as follows:

3. Oil - The programs and measures to be adopted for the prevention of discharges of harmful quantities of oil shall include the

following:

- (a) Compatible regulations for design, construction, and operation of vessels based on the following principles:
- (i) each tanker shall have a suitable means of containing on board cargo oil spills caused by loading and unloading operations;
  - (ii) each vessel shall have a suitable means of containing on board fuel oil spills caused by loading and unloading operations, including those from tank vents and overflow pipes;
  - (iii) each vessel shall have a capability of retaining on board oily wastes accumulated during vessel operation;
  - (iv) each vessel shall be capable of off-loading contained oily wastes to a reception facility;
  - (v) tankers shall be provided with a means for rapidly and safely stopping the flow of cargo oil during loading and unloading operations in the event of an emergency;
  - (vi) suitable deck lighting shall be provided to illuminate all cargo and fuel handling areas if the loading and unloading operations occur at night;

(vii) hose assemblies used aboard vessels for oil loading and unloading shall be suitably designed, marked, and inspected to minimize the possibility of failure;

(viii) oil loading and unloading systems shall be designed, marked, and inspected to minimize the possibility of failure.

(b) Programs to ensure that merchant vessel personnel are trained in all functions involved in the use, handling, and stowage of oil and in procedures for abatement of oil pollution.

(D) Paragraph 5 has been retitled Hazardous Polluting Substances and rewritten for the same reason as paragraph 4. It is proposed as follows:

4. Hazardous Polluting Substances - The programs and measures to be adopted for the prevention of discharges of hazardous polluting substances shall provide for -

(a) Compatible regulations for the design, construction and operation of tankers using as a guide the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk as established through the Inter-Governmental Maritime Consultative Organization (IMCO). Additionally -

(i) each tanker shall have a suitable means of containing on board cargo hazardous polluting substances spills caused by loading and unloading operations;



- (ii) each vessel shall have a capability of retaining on board hazardous polluting substances wastes accum<sup>u</sup>lated during vessel operation;
  - (iii) each vessel shall be capable of off-loading contained hazardous polluting substances wastes to a reception facility;
  - (iv) tankers shall be provided with a means of rapidly and safely stopping the flow of cargo hazardous polluting substances during loading and unloading operations in the event of an emergency; and
  - (v) tankers shall be provided with suitable deck lighting to illuminate all cargo handling areas if the loading and unloading operations occur at night;
- (b) identification of vessels carrying cargoes of hazardous polluting substances in bulk, containers and package form;
  - (c) identification in vessel manifests of all hazardous polluting substances carried as cargo;
  - (d) procedures for notification to the appropriate agency by the owner, master or agent of a vessel of all hazardous polluting substances carried as cargo in the vessel; and

- (e) programs to ensure that merchant vessel personnel are trained in all functions involved in the use, handling and stowage of hazardous polluting substances and in procedures for abatement of hazardous polluting substances pollution.

The United States Pollution Prevention Vessel and Oil Transfer Facilities regulations are fully compatible with the programs and measures under the reference paragraph. These regulations are being amended to reflect numerous comments and field experiences showing that certain changes should be made.

The Canadian Oil Pollution Prevention Regulations are presently compatible with the programs and measures regarding oil transfer, loading and off-loading systems, hose assemblies and the means for rapidly and safely stopping the flow of oil during transfer operations. Regarding the provisions of subparagraph 4(c) dealing with the training of merchant vessel personnel, pollution prevention procedures and regulations are now being incorporated into the syllabuses for certificates of competency as master and mate. A knowledge of the handling procedures for oil cargoes has been included in these syllabuses for many years. A proposed amendment to the Canadian Oil Pollution Prevention Regulations has been drafted in order to cover the items contained in proposed clauses 4(a) (1)-(viii) of Annex 3.

A further amendment to these Regulations is now being prepared in order to require that a licensed operator be in attendance on unmanned oil barges when oil transfer operations are in progress.

Although knowledge of cargo handling procedures has been a part of

U. S. Merchant Officer License requirements for years, the Coast Guard has drafted new standards for the qualifications of Tankerman. These proposed Tankerman regulations require specific qualifications standards which will encompass experience, firefighting training, formal classroom training and examinations for all persons who serve as the person in charge of a transfer or tank cleaning, including those licensed officers who are now considered qualified on the basis of holding a license. Additionally, they will provide for recertification at 5 year intervals. The standards were published as a proposed rule on 25 April 1977.

Since July 1973 all applicants for U. S. Merchant Marine License and certificates have been required to demonstrate their knowledge of pollution laws and regulations, procedures for discharge containment and cleanup and methods for disposal of sludge and waste material from cargo and fueling operations.

Additionally, a manual for Safe Handling of Inflammable and Combustible Liquids and other Hazardous Products has recently been revised for use as a guide for those persons involved in the transport or transfer of these products.

At such time as the Annex required by Article V, 1(i) of the Agreement is complete and a list of hazardous polluting substances is identified, both Parties will take appropriate action to apply the programs listed in paragraph 5.

(E) Additional Measures

Amended to read:

**5.** Additional Measures shall be taken as necessary by both Parties to ensure the provision of adequate facilities for the reception

and treatment of oil and hazardous polluting substances waste from all vessels.

Title 46, United States Code of Federal Regulations, applies requirements which, with the exception of the provisions contained in subparagraph 5(a) of Annex 3 (proposed 5(b)), are fully compatible with the reference paragraph.

In Canada, the proposed Chemical Carrier (Steamship) Regulations were drafted and circulated to the industry and other interested agencies for comment. A second draft of the proposed Regulations has now been drafted and is now being examined for legal form and draughtmanship. This second draft will eventually be circulated for further comment. In addition to the provisions of the IMCO Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk, the proposed Regulations would also specify the procedures to be followed when dangerous chemical cargoes are being loaded and unloaded. All dangerous chemical cargoes carried would have to be identified on the ship's manifest and information on the nature of the cargo would also have to be carried on board.

All ships passing through the St. Lawrence Seaway are now required to notify the Seaway Authority in order to identify cargoes carried, however no specific provision has been made with respect to the placarding provisions proposed in subparagraphs 5(a) and 5(b) of Annex 3.

Definite pros and cons exist regarding the placarding of vessels and both Parties feel that this subject warrants continuing study.

(F) Article 5(e) (iv) should be amended to reference Annexes 3 and 4.

2. Control of Vessel Waste Discharges

(A) Definitions (ref Annex 4, paragraph 1)

It is recommended the definition of "garbage" be reviewed and that consideration be given to replacing it with the definition in Annex V of 1973 Convention for the Prevention of Pollution from Ships (i.e., "garbage" means all kinds of victual, domestic, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically, except those substances that are defined or listed elsewhere in the Agreement). This meaning encompasses the intent of the present one in the Agreement without becoming at all restrictive. It would also and appropriately, bring the Agreement more into concert with another international accord. The definitions used in the laws of both Parties parallel those in this Annex with the exception that neither Party addresses "waste water". Additionally, the two definitions of "sewage" do not include animal waste or fecal material from hospital facilities, although disposal of these for disease prevention is covered by both Parties in other regulations.

(B) Compatible Regulations (ref Annex 4, para 2)

It is recommended that the phrase "within one year from the entry into force of the Agreement" be deleted, as it is no longer applicable.

(i) Garbage

The United States Refuse Act and the Canadian Garbage Pollution Prevention Regulations both prohibit the discharge of garbage from vessels.

(ii) Waste Water

Both Parties consider waste water to be a low priority item at this time. A study as to the composition of ship's waste water has been conducted in Canada and is presently being evaluated.

(iii) Sewage

In accordance with the United States Marine Sanitation Device Standard and the Canadian Great Lakes Sewage Pollution Prevention Regulations, each Party considers that the principles embodied in their regulations are fully compatible with the provisions of the Agreement. However the provisions of the legislation of the Parties create a significant problem in that the United States legislation allows for State no-discharge programs. This has been highlighted by the U.S. EPA determination that adequate facilities for the pump-out and treatment of vessel sewage from all vessels are reasonably available in Michigan waters and Wisconsin waters, except Lake Superior, the Mississippi River and the Norther 80 miles of the St Croix River, thereby permitting them to prohibit the discharge of sewage (treated or untreated) from all vessels into their waters. This could have the effect of prohibiting the use of continuous flow-through treatment devices as provided for in the Canadian regulations, with certain U. S. designated waters normally used by Great Lakes shipping (U.S., Canadian and foreign-flag ships). Minnesota has an application pending for<sup>a</sup> similar determination in her waters and other States may follow suit. Canadian officials are concerned with regard to the environmental, economic and practical impact of this action on Canadian shipping trade and water quality standards. It should be noted that in Canadian Great Lakes waters, the Boating Regulations of the

Province of Ontario covering those waters prohibit the discharge of sewage (treated or untreated) from pleasure craft.

The states' rationale for no discharge, stated by Michigan in a letter dated April 1, 1977 from the National Resources Commission to the Department of State, is based on the mobility of the vessels, the areas frequented by the vessels, and the difficulty of adequate onboard maintenance and operation of the waste treatment or control facilities. In other words, although some presently certified USCG flow-through MSDs provide satisfactory treatment of sewage under laboratory conditions, the states feel that the MSDs will not function reliably on vessels for any length of time, that the vessels are too mobile to permit any meaningful monitoring of effluents, and that the vessels often travel in areas where inadequately treated discharges may affect domestic or municipal water intakes.

The April 1 letter also stated the Commission's disappointment over the promulgation of rules by Canada permitting the discharge of treated sewage from vessels on the Great Lakes.

Further, the Commission fully intends to prohibit the discharge of sewage (treated or untreated) from vessels into Michigan waters, in a reasonable manner, pursuant to the authority granted to Michigan by the EPA under Section 312(f)(3) P.L. 92-500 (FWPCA).

However, a suit by the Lake Carriers Association has, effectively, enjoined Michigan from exercising their authority to prohibit sewage discharges. The Lake Carriers have concerns similar to those expressed by Canadian officials. David Buchanan, at a public workshop held on April 25, 1977 in Cleveland, express the Lake Carriers concerns as follows:

- Most municipal treatment facilities that would handle the pump out from vessel sewage holding tanks have only primary treatment, while the treatment systems on the lake carriers use very nearly

secondary treatment.

- The municipal treatment facilities discharge in much greater amounts in concentrated areas.
- Accordingly, flow through treatment by a Type II MSD is considerably better for the environment than no-discharge (at least for the present).
- Further, holding tanks take away from precious cargo capacity and take valuable time for pumping out.

At the same workshop, James O. Cowden, representing Great Lakes Tomorrow, made a statement that, among other things, supports the state position of no-discharge of vessel sewage, and for the same reasons - vessel mobility and difficulty of adequate onboard maintenance and operation of devices.

A letter from the New York State Department of Environmental Conservation, dated April 11, 1977, also strongly supports the sewage discharge prohibition.

In an earlier meeting in Cleveland, on March 3-4 1977, a representative of the State of Ohio expressed support of the sewage discharge prohibition, but felt states would probably accept adequate treatment, at least for a time, except that they don't feel 50 or 150 mg/l of suspended solids is adequate.

(C) Critical Use Areas and Containment Devices

(reference Annex 4, paragraphs 3 and 4)

Both Parties have taken these provisions into account in existing and proposed regulations. It was also noted that the Joint SLSA/SLSDC Regulations contain provisions for containment devices in critical use areas of the St. Lawrence Seaway. The SLSA and SLSDC have indicated informally, that they feel flow-through treatment devices, meeting at least USCG Type II standards, should be permitted on vessels



in the Seaway.

(D) Reception Facilities (new paragraph)

It is recommended a new para 5 be added as follows:

The Parties shall take action as necessary <sup>to</sup> ensure the provision of adequate facilities for the reception and treatment of garbage, waste water, and sewage from all vessels.

3. Safe and Efficient Handling of Shipboard Generated Wastes

(reference Article V 1(e) (iv))

United States statutes and regulations provide for the safe and efficient handling of shipboard generated wastes including oil, garbage, sewage and hazardous substances, when hazardous substances are designated. Waste water is not addressed for the reasons set forth in 2(B) (ii) above. The United States considers the provision of shoreside reception facilities for all shipboard generated wastes to be the responsibility of industry and state and local governments.

In Canada, provisions to ensure the safe and efficient handling of oil, either as cargo or bunker fuel, are now covered by Part III of the Oil Pollution Preventing Regulations. Part V of the proposed Chemical Carrier (Steamship) Regulations contain similar provisions with respect to the dangerous chemicals covered.

With respect to shore reception facilities for sewage, studies have been conducted by Environment Canada in order to assess the need for developing systems for the collection, treatment and/or disposal of sewage at major Canadian ports, to determine design considerations and to ascertain the economic impact.

Shore reception facilities for the disposal of garbage have now been provided in Canadian ports, either by the harbour authority on

a "user-pay" basis or by the shipping industry.

Recommendations in 1 and 2 establish a new requirement for both parties to take necessary action to provide reception facilities for all wastes from all vessels.

#### 4. Studies of Pollution from Shipping Sources

(references Article V 1(e) (iii) and Annex 5)

##### (A) Traffic Routes for Navigational Purposes

(reference Annex 5, subparagraph 1(b))

It was agreed by the Canadian Coast Guard and the U. S. Coast Guard that the initial step in formalizing the system of traffic routes on the Great Lakes would be for each administration to officially recognize the long standing Great Lakes Separate Courses recommended by the Lake Carriers Association and the Dominion Marine Association. Both the U. S. A. and Canada did this by issuing Notices to Mariners requesting all mariners to strictly observe these routes. This action formalized the Separate Courses which are printed on all Great Lakes charts. This formalized routing system is periodically reviewed and new tracks are developed and tracks are shifted where necessary to reflect changes in trade patterns. This form of review and study is considered adequate and efficient for the present.

Rules of passing are already dealt with in the Rules of the Road for the Great Lakes, as is speed. Further, speed restrictions have been imposed where necessary to promote safety or to reduce bank erosion. During ice conditions that affect the maneuverability of vessels, individual ship routing is provided where necessary and appropriate.

Both Coast Guards are holding discussions with all sectors of the marine industry with a view to revising the Rules of the Road for the Great Lakes so as to ensure compatibility with the revised international rules contained in the 1972 Convention. These Rules take into account technological development and are a significant improvement on the 1960 Rules. Specific rules for the conduct of ships in and near traffic separation schemes are provided in these new Rules.

By revising the Great Lakes Rules, the benefits of the modernized international rules can be applied to the Great Lakes. However, those special Great Lakes provisions which provide a yet higher degree of safety will be retained.

(B) Traffic Control

(reference Annex 5, subparagraph 1(c))

Canadian and United States officials consider that various levels or degrees of Vessel Traffic Management should be implemented in the Great Lakes. These range from a basic safety information system to a shore-to-bridge system whereby real-time information on ship movements is available through the use of shore-based surveillance equipment. No progress has been made since January 1976 regarding discussions to develop a technical plan for cooperative Canada/U. S. Vessel Traffic Control in waters of mutual interest. This technical plan, along with implementing domestic legislation in the United States, is required to provide a basis for developing full-time traffic control, where warranted.

1) Upper Lakes (above Long Point, Lake Erie)

The primary means of communications for navigation, vessel safety and traffic control on the Great Lakes is VHF-FM. The United States Coast Guard provides VHF-FM coverage for the United States waters of all Great Lakes; United States commercial coast stations also provide extensive coverage. Both systems provide compatible information to transiting vessels regarding weather, conditions of the waterways, status of aids to navigation and unusual hazards to navigation. All vessels transiting the Great Lakes are encouraged to have communication equipment with suitable frequency coverage to receive this information. In addition, the Canadian Coast Guard Marine Information Centre at Sarnia receives voluntary reports from

vessels at various Calling-in-points which permit the monitoring of vessel movements, thus facilitating pilot dispatch, icebreaker utilization and the investigation of overdue vessels. The United States Coast Guard monitors vessel movements only during the winter navigation season except as discussed below.

The United States Coast Guard maintains a full-time operations centre at its Great Lakes headquarters in Cleveland. During 1976, the Canadian Coast Guard established a full-time marine information centre at its Central Region Headquarters in Toronto. Included in the diverse duties of these two centres is the responsibility to relay and disseminate all information pertinent to the safe navigation of vessels including the status of aids to navigation, condition of waterways, requests for assistance, marine emergencies and casualties, pollution incidents, weather, unusual hazards to navigation and any other factors relevant to safe and efficient vessel navigation. The Canadian Coast Guard and the United States Coast Guard maintain a continuing dialogue to improve these services.

The United States Coast Guard operates a manned Vessel Traffic Service in the St. Marys River. The traffic Control Centre at Sault Ste. Marie is served by VHF-FM communications and surveillance by closed-circuit television, manned lookout and speed monitoring equipment. The United States Coast Guard considers this the most critical waterway under its cognizance on the Great Lakes.

Research and Development projects to update the capabilities of the St. Marys River Vessel Traffic Service include the replacement of the manned lookout by visibility monitoring equipment and the installation of magnetic detectors to indicate the passage of vessels at key locations.

Vessel Traffic has been gradually increasing in the Detroit/St. Clair River systems since 1970. Both the United States Coast Guard and Canadian Coast Guard agree that traffic control is warranted now and that the level of control will have to be increased as traffic volume and vessel size increase. Joint speed regulations are in effect and speed monitoring is conducted to promote safe navigation and to protect shore property and waterway improvements. A contingency plan (deposited with IJC) for traffic control in emergencies has been developed between our respective local organizations. The contingency plan provides for the United States Coast Guard to control traffic in Detroit River and for the Canadian Coast Guard to control traffic in the St. Clair River. United States Coast Guard studies indicate that a manned Vessel Traffic Service in the Detroit River is of lesser importance than services for other national waterways (including the St. Marys River). Two factors make navigation of the St. Clair River especially hazardous, however, and the Canadian Coast Guard plans to implement a manned Vessel Traffic Service there as soon as funds are available. One hazardous factor in the St. Clair River is the fast currents near the Blue Water Bridge caused by higher than normal water levels in Lake Huron. A mandatory no passing zone and security calls mitigate this hazard to some extent. The second hazardous factor is shoaling in the St. Clair Cutoff Channel. The channel width at the project depth of 27 feet has narrowed to less than 400 feet as maintenance dredging by the Canadian Department of Public Works has been forestalled because of difficulty in finding suitable disposal areas for the resulting mercury contaminated dredge spoils. Both the Canadian Coast Guard and the United States Coast Guard are concerned about the danger to vessels and the marine environment from possible collisions or groundings due to these channel restrictions. Currently, the danger

is reduced, to some extent, thru the use of voluntary security calls and reporting. There is no authority for local, mandatory regulations to control traffic in this area because the shoaling is not considered to be of a temporary, emergency nature.

In summary, both the Canadian Coast Guard and the United States Coast Guard are continuously evaluating the need for traffic control measures and are attempting to provide or improve manned Vessel Traffic Services in the restricted connecting waters of the Great Lakes.

2) Lower Lakes (below Long Point, Lake Erie)

Since the opening of the St. Lawrence Seaway, the St. Lawrence Seaway Authority, SLSA (Canada), and the St. Lawrence Seaway Development Corporation, SLSDC (US), have operated Traffic Control Services in their respective areas. In 1969 this service was expanded by the SLSA to include Lake Ontario and the eastern end of Lake Erie to Long Point. In 1974 Lake Ontario was divided into two sectors, the easterly sector serviced by the SLSDC, the westerly sector by SLSA. The traffic Control System is controlled from three Traffic Control Centres; St. Lambert (Montreal, Quebec), Massena, N.Y. and St. Catharines, Ontario. Lines of communications and detailed procedures have been implemented to provide the necessary liaison with Coast Guard, Search and Rescue Centres, and Marine Information Centres.

Vessels transiting this system are required to report their presence at a number of mandatory Calling-in-Points where they provide information such as destination, estimated time of arrival at the next Calling-in-Point and dangerous cargo. This information is recorded on visual plot boards and in one case (St. Catharines) recorded in a computer-based information and communications system.

Detailed plans are also in effect to deal with incidents resulting

in pollution.

Recently, visibility monitoring equipment has been installed for evaluation at some locations.

During periods of winter navigation these centres coordinate closely the use of icebreakers and expanded surveillance activity in assisting navigation through ice restricted channels.

The extensive system of traffic control procedures, information interchange, communications and surveillance systems result in an efficient and adequate traffic management system contributing to safe and expeditious movement of vessels. However, both the SLSA and the SLSDC work together and in cooperation with other government agencies, Coast Guards and the shipping industry to ensure that procedures and systems continue to be effective.

(C) Aids to Navigation System

(reference Annex 5, subparagraph 1(e))

A continuing review is conducted concerning the adequacy and effectiveness of navigation systems operated by the United States and Canada. The two aids to navigation systems are nearly identical with only minor operational differences that do not lead to any confusion on the part of the mariner. This similarity of the two systems is the result of many years of informal exchanges and close working arrangements between the two countries. Such exchanges will continue. At present, the existing systems are considered efficient and effective.

While the existing systems are considered effective, it is recognized that the future demands of navigation on the Great Lakes will require that they be revised and updated. The feasibility of year-round navigation was demonstrated on the four upper lakes during two winter seasons, 1974 - 1975 and 1975 - 1976. To improve winter navigation, a program to replace selected



floating aids with fixed structures has been initiated by both the United States and Canada. The rate at which this program can be pursued is, of course, dependent upon the resources being made available.

In addition, an all-weather radio aid to navigation system for the St. Marys River (mini Loran-C) has been built and is now being calibrated and verified. The system will improve navigation in the St. Marys River and correspondingly reduce the risk of pollution from vessel groundings and collisions. The project is experimental and, if successful, may be extended to other areas requiring highly accurate navigation.

Similarly, completion of systems requirements for a Precise All-Weather Navigation System for the St. Lawrence River is currently underway. Selection and field testing of a prototype system is scheduled for 1978-79.

The United States Coast Guard is providing general Loran-C coverage of the entire Great Lakes. Partial coverage exists now, the coverage will be improved in 1979, and full coverage in its final configuration will be available in 1980. This will provide an all-weather, radio navigation system of sufficient accuracy for all but the connecting waterways of the Great Lakes.

The aids to navigation systems are under continual review by the marine industries of both countries. Annually, Canadian Coast Guard and St. Lawrence Seaway Authority officials meet with the navigation committee of the Dominion Marine Association for discussions on aids to navigation matters. Similarly, the Lake Carriers Association carries on a dialogue with the United States Coast Guard and the St. Lawrence Seaway Development Corporation.

Both Canada and the United States through their respective Coast Guard

organizations are promoting a common buoyage system among countries in North and South America. This common buoyage system should be based on the basic systems and approach taken by both the United States and Canada.

The ongoing dialogue and reviews, which both countries maintain, effectively constitute a continuing study that is adequate to recognize and correct future shortcomings in the aids to navigation systems.