


Care Crampton
USCG

AGENDA C-2
APRIL 1988

M E M O R A N D U M

TO: Council, AP and SSC Members

FROM: Clarence G. Pautzke
Executive Director 

DATE: April 6, 1988

SUBJECT: MARPOL Annex V Proposed Regulations

ACTION REQUIRED

Review measures proposed to implement marine discard provisions of MARPOL Annex V.

BACKGROUND

As related to the Council at the January meeting, legislation implementing Annex V to the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL) was signed by the President on December 29, 1987. The Council was provided a copy of the legislation in January. A copy of Annex V along with a summary is Item C-2(a).

The Coast Guard is taking the lead in the development of regulations implementing Annex V. A representative from the Coast Guard will brief the Council on these efforts and provide draft regulations.

**Annex V to MARPOL - International Convention for the Prevention of
Pollution from Ships**

The disposal into the sea of plastics (including ropes and nets) is prohibited.

Packing material which floats is prohibited within 25 nautical miles of land (territorial sea baseline).

Food wastes and other garbage is prohibited within 12 nautical miles, unless passed through a grinder and screen less than 25mm, in which case, it is still prohibited within 3 nautical miles.

Offshore mineral exploration platforms are prohibited from dumping anything into the sea, except garbage beyond the 12 nautical miles that has passed through a grinder. "Garbage" does not include fresh fish and parts thereof.

These restrictions apply to all ships except for purposes of safety to the vessel and crew and the accidental loss of fishing nets provided reasonable precautions have been taken to prevent such loss.

The government shall ensure port facilities for reception of garbage

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION
FROM SHIPS, 1973

ANNEX V

REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM
SHIPS

REGULATION 1

DEFINITIONS

For the purposes of this Annex:

(1) "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 which are defined or listed in other Annexes to the present Convention.

(2) "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of the present Convention "from the nearest land" off the north eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in

latitude 11°00' South, longitude 142°08' East to a point in latitude 10°35' South,

longitude 141°55' East, thence to a point latitude 10°00' South,

longitude 142°00' East, thence to a point latitude 9°10' South,

longitude 143°52' East, thence to a point latitude 9°00' South,

longitude 144°30' East, thence to a point latitude 13°00' South,

longitude 144°00' East, thence to a point latitude 15°00' South,

longitude 146°00' East, thence to a point latitude 18°00' South,

longitude 147°00' East, thence to a point latitude 21°00' South,

longitude 153°00' East, thence to a point on the coast of Australia in latitude 24°42' South, longitude 153°15' East.

(3) "Special area" means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required. Special areas shall include those listed in Regulation 5 of this Annex.

REGULATION 2

APPLICATION

The provisions of this Annex shall apply to all ships.

REGULATION 3

DISPOSAL OF GARBAGE OUTSIDE SPECIAL AREAS

(1) Subject to the provisions of Regulations 4, 5 and 6 of this Annex:

(a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags is prohibited;

(b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case if prohibited if the distance from the nearest land is less than:

(i) 25 nautical miles for dunnage, lining and packing materials which will float;

(ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;

(c) disposal into the sea of garbage specified in sub-paragraph (b)(ii) of this Regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with openings no greater than 25 millimetres.

(2) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

REGULATION 4

SPECIAL REQUIREMENTS FOR DISPOSAL OF GARBAGE

(1) Subject to the provisions of paragraph (2) of this Regulation, the disposal of any materials regulated by this Annex is prohibited from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources, and from all other ships when alongside or within 500 metres of such platforms.

(2) The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder from such fixed or floating platforms located more than 12 nautical miles from land and all other ships when alongside or within 500 metres of such platforms. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimetres.

REGULATION 5

DISPOSAL OF GARBAGE WITHIN SPECIAL AREAS

(1) For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area and the "Gulfs area" which are defined as follows:

(a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar and the meridian of 5°36'W.

(b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8'N.

(c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N.

(d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°8.5'N, 43°19.6'E) and Husn Murad (12°40.4'N, 43°30.2'E).

(e) The "Gulfs area" means the sea area located north west of the rhumb line between Ras al Hadd (22°30'N, 59°48'E) and Ras al Fasteh (25°04'N, 61°25'E).

(2) Subject to the provisions of Regulation 6 of this Annex:

(a) disposal into the sea of the following is prohibited:

(i) all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags; and

(ii) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;

(b) disposal into the sea of food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land.

(3) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

(4) Reception facilities within special areas:

(a) The Government of each Party to the Convention, the coastline of which borders a special area, undertakes to ensure that as soon as possible in all ports within a special area, adequate reception facilities are provided in accordance with Regulation 7 of this Annex, taking into account the special needs of ships operating in these areas.

(b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to sub-paragraph (a) of this Regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this Regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.

(c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available shall fully comply with the requirements of this Regulation.

REGULATION 6

EXCEPTIONS

Regulations 3, 4 and 5 of this Annex shall not apply to:

- (a) the disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or
- (b) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or
- (c) the accidental loss of synthetic fishing nets or synthetic material incidental to the repair of such nets, provided that all reasonable precautions have been taken to prevent such loss.

REGULATION 7

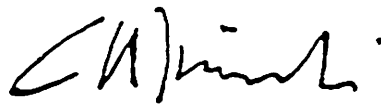
RECEPTION FACILITIES

(1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.

(2) The Government of each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

Certified true copy of the English text of Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, done at London on 2 November 1973, the original of which is deposited with the Secretary-General of the International Maritime Organization.

For the Secretary-General of the International Maritime Organization:



LONDON, 19 December 1986.

ANNEX V

WHY is the Coast Guard implementing Annex V?

WHAT does Annex V require?

WHO will be affected by Annex V?

WHERE does Annex V apply?

WHEN will Annex V come into force internationally?

HOW will the Coast Guard implement Annex V?

WHY?

- Mandates of MARPOL 73/78 and Congress

Annex V of MARPOL 73/78 and P.L. 100-220, "The Marine Plastic Pollution Research and Control Act of 1987" mandate regulations to implement Annex V.

- Environmental Concerns

There is a growing body of evidence that the routine discharge of plastics by ships is becoming a serious environmental problem. These materials have been attributed to causing the deaths of many marine mammals when they are ingested, by blocking breathing passages and digestive tracts. In addition, "ghost fishing" occurs when unmanaged fishing nets continue to catch fish and entangle marine mammals, without producing any economic benefit. It is estimated that over one million birds and over 100,000 marine mammals and sea turtles die each year from ingestion of, or entanglement in, plastic debris. Approximately 30,000 Northern Fur seals die annually from entanglement in netting and a 50% population decline of this species has been reported to have occurred according to some studies.

- Cost to Local, State and Federal Governments

Many states and localities have in recent years spent inordinate amounts of taxpayer dollars to clean litter attributed to marine sources from beaches. The State of Texas reported that they spent over \$14 Million in one year to clean up beach litter.

- Cost to Commercial Fishing Interests

Ship generated garbage can also bring about adverse economic effects to commercial fishing interests. One of the largest costs for the commercial fishing industry, is the loss of fishing gear and the depletion of fishery stocks. Fisherman have reported substantial losses of fishing gear attributed to fouling of hooks and lines on discarded commercial gill nets. Lost fishing gear may also deplete fishery stocks; gillnets have been reported to continue fishing after they were discarded, indiscriminately catching fish and other economically important marine life. Alaskan fishermen also reported losses of over \$100,000 in damages caused by marine debris.

Annex V will affect the following communities:

- Commercial vessel owners and operators
- Fishing vessel owners and operators
- Recreational boat owners
- Port authorities
- Facility owners and operators
- Marina owners and operators
- State and local jurisdictions
- All public vessels (USCG, USN, NOAA, MARAD, etc.)
- Foreign vessels in U.S. waters

Annex V applies to "ships" as defined in the Convention:

"a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms."

Breakdown of Ships to which Annex V applies:

Cargo/Misc Vessels (including MODU's)	2080
Passenger (Subch. T)	4568
Passenger (Subch. H)	131
Public Vessels (Inspected)	61
Tank Barges	4116
Tank Ships	283
Other	28
Commercial Fishing Vessels	35,000
Recreational craft	10,000,000
Public Vessels	1250
Oil Platforms	4000

10,500,000+

Note: Although public vessels are specifically excluded from the requirements of Annex V, the bill amending the Act to Prevent Pollution from Ships (APPS) requires all U.S. public vessels to comply with Annex V within five years of the effective date of the Act, or by December 31, 1993.



WHAT?

Annex V and/or PL 100-220:

1. Regulate the Discharge of Ship-Generated Refuse by:

- Prohibiting the discharge of all plastics.
- Limiting the discharge of other types of "garbage":

Dunnage, lining and packing materials which will float may only be discharged beyond 25 nautical miles from nearest land; and

Food wastes and other garbage, including crockery, rags, glass, metal, bottles, etc. are to be discharged beyond 12 nautical miles from nearest land, except that if these have been ground so that they can pass through a 25 mm. screen, they may be discharged beyond 3 nautical miles from nearest land.

2. Require the U.S. to ensure that adequate reception facilities are available.

- Annex V requires "each Party . . . to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them."
- The Act to Prevent Pollution from Ships (APPS) places the burden on persons in charge of ports and terminals to provide these or to ensure their availability.

3. Authorize the issuance of Certificates of Adequacy (COA's), but does not require them. Unlike Annexes I and II of MARPOL 73/78, Certificates of Adequacy are not required to be issued to all adequate reception facilities, but may be required for larger ports.

4. Require waste management plans, placards and refuse record books. PL 100-220 requires the following for ships designated by the Secretary but such requirements will not become necessary until 31 December 1989:

- "Shipboard management plans" (1-2 pages) which state how and where ships will discharge of their refuse
- Information placards similar to existing oil pollution prevention placards to notify the crew and passengers of the requirements of Annex V
- "Refuse record books" in which entries of discharges are to be made.

APPENDIX ITEM C-2

Table 1. MARPOL Annex V Summary of Garbage Disposal Limitations

Garbage Type	All vessels		*** Offshore Platforms & Assoc. Vessels
	Outside Special Areas	** In Special Areas	
Plastics - includes synthetic ropes and fishing nets and plastic garbage bags	Disposal prohibited	Disposal prohibited	Disposal prohibited
Floating dunnage, lining and packing materials	>25 miles off shore	Disposal prohibited	Disposal prohibited
Paper, rags, glass, metal bottles, crockery and similar refuse	>12 miles	Disposal prohibited	Disposal prohibited
* Paper, rags, glass, etc. comminuted or ground	>3 miles	Disposal prohibited	Disposal prohibited
Food waste not comminuted or ground	>12 miles	> 12 miles	Disposal prohibited
* Food waste comminuted or ground	>3 miles	> 12 miles	> 12 miles
Mixed refuse types	More stringent requirements apply.	More stringent requirements apply.	More stringent requirements apply.

- * Comminuted or ground garbage must be able to pass through a screen with mesh size no larger than 25 mm.
- ** Special areas are the Mediterranean, Baltic, Red and Black seas areas, and the Gulf's area.
- *** Offshore platforms and associated vessels includes all fixed or floating platforms engaged in exploration or exploitation of seabed mineral resources, and all vessels alongside or within 500m of such platforms.

WHEN?**31 DECEMBER 1988!**

Under the terms of MARPOL 73/78, Annex V will go into force internationally when nations representing 50% of the world's shipping tonnage and at least 15 nations have ratified. This occurred when the United States deposited our instrument of ratification at the International Maritime Organization on December 30th, 1987.

REGULATORY TIMETABLE

ANPRM	April 1988
NPRM	July 1988
Comment Period	August - September 1988
Final Rule	November 1988
Effective Date	December 31, 1988

WHERE?

Annex V will apply to ships on:

- the navigable waters of the United States
- all other waters . . . over which the United States has jurisdiction.

NOTE: The legislative history of PL 100-220 makes it clear that Annex V will apply to the full extent of the Exclusive Economic Zone (EEZ).

HOW?**EDUCATION**

- P.L. 100-200 requires NOAA and EPA, in consultation with DOT, to conduct a public outreach program to educate the marine community of the requirements of Annex V.
- For Coast Guard licensed and documented mariners, License and Merchant Mariner Document examinations may be revised to include questions relating to Annex V requirements.
- For recreational boaters, there could be CG Auxiliary involvement through including Annex V requirements in Boating Safety courses, safety presentations and courtesy exams.
- For commercial fishermen, educational efforts will be carried out through established trade organizations and professional trade journals.

INTER-GOVERNMENTAL AND PRIVATE SECTOR COOPERATION

- Key Federal Agencies involved in implementation of Annex V:
 - National Oceanographic and Atmospheric Administration
 - National Marine Fisheries Service (NOAA)
 - Animal and Plant Health Inspection Service (USDA)
 - U.S. Public Health Service (HHS)
 - Environmental Protection Agency
 - Mineral Management Service (DOI)
- Key Private Sector involvement:
 - American Association of Port Authorities
 - Coastal States Organization
 - National Fisheries Management Councils
 - Numerous environmental groups
 - National Solid Waste Management Association
 - Boating organizations

Coast Guard:

- May inspect/examine vessels and facilities in conjunction with normal boardings to check compliance with Annex V.
- May inspect fishing vessels in conjunction with normal boardings conducted to verify compliance with other international treaties;

- FINES AND PENALTIES

Criminal Penalties: Maximum \$50,000 fine and/or 5 years imprisonment;

Civil Penalties: Maximum \$25,000 civil penalty

- DENIAL OF ENTRY

As with the enforcement regimes of Annexes I and II, ships may be denied entry to a port or terminal if adequate reception facilities are not available.

Third Party Notification:

- NMFS/NOAA: Through planned MOU with NOAA/NMFS, their personnel would examine fishing vessels and fisheries ports and terminals for compliance with Annex V
- APHIS: APHIS personnel will continue to inspect international arrivals of U.S. and foreign flag ships for compliance with their regulations. Violations of Annex V will be reported to the Coast Guard COTP's.
- MMS: Minerals Management Service personnel would report violations of Annex V to Coast Guard COTP's.
- CITIZEN POLLUTION PATROLS: These volunteer groups would report violations of Annex V to local COTP's.

WORKSHEET

FOR DETERMINING ADEQUACY FOR RECEPTION FACILITIES FOR SHIP GENERATED GARBAGE*

NAME OF TERMINAL/PORT/MARINA _____

ADDRESS _____

DRAFT

 telephone

 telex

I. DOMESTIC WASTE- Complete those sections corresponding to the vessel types visiting your terminal or port.

1kg= 2.2 pounds
 1 pound=.45 kg

1. HARBOR VESSEL SECTION:

Harbor vessels are considered vessels that do not leave the vicinity of the terminal /port and are, therefore, always in restricted waters.**

- A. ENTER number of harbor vessels using the terminal/port during a peak seven-day period _____ vessels
week
 - B. ENTER average duration of harbor vessel activity at terminal/port with persons aboard. _____ days
 - C. ENTER average number of persons on board a typical harbor vessel. _____ persons
vessel
 - D. CALCULATE domestic garbage resulting from harbor vessels. kg
week
- (Note: average generation rate on harbor vessels is assumed to be 1.0 kg/person-day) $A \times B \times C \times 1$

2. INLAND AND COASTAL WATERWAY VESSEL SECTION:

Inland and coastal waterway vessels are considered vessels which do not travel beyond the offshore limits and are usually in restricted waters.

- E. ENTER number of inland/coastal vessels entering the terminal/port during a peak seven-day period. _____ vessels
week
 - F. ENTER average duration of inland/coastal vessel stay at terminal/port (with persons aboard) plus average duration of voyage to terminal/port through restricted waters. _____ days
 - G. ENTER average number of persons on board a typical inland/coastal vessel. _____ persons
vessel
 - H. CALCULATE domestic garbage resulting from inland/coastal vessels. kg
week
- $E \times F \times G \times 1.5$
- (Note: average generation rate on inland/coastal vessels is assumed to be 1.5 kg/person-day)

* All formulae are based on the Marine Environmental Protection Committee paper 25/WP. 10 entitled, "DRAFT GUIDELINES FOR THE IMPLEMENTATION OF ANNEX V, REGULATIONS FOR THE PREVENTION OF POLLUTION BY GARBAGE FROM SHIPS."

** Restricted waters as used here means the "Navigable Waters of The U.S." as defined in 33 Code of Federal Regulations Part 2.05-25. [These waters include the Territorial seas (3 miles off shore), lakes, bays, sounds, rivers and intercoastal waterways.]

I. DOMESTIC WASTE (cont)

3. SEAGOING CARGO VESSEL SECTION:

DRAFT

I. ENTER number of seagoing cargo vessels entering terminal/port during a peak seven-day period.

_____ $\frac{\text{vess}}{\text{week}}$

J. ENTER average duration of seagoing cargo vessel stay in terminal/port plus average duration of voyage to terminal/port through restricted waters**.

_____ days

K. ENTER average number of persons on board a typical seagoing cargo vessel.

_____ $\frac{\text{persons}}{\text{vessel}}$

L. CALCULATE domestic garbage resulting from seagoing cargo vessels.

$\frac{\text{kg}}{\text{week}}$

$I \times J \times K \times 2$

(Note: average generation rate on seagoing cargo vessels is assumed to be 2.0 kg/person-day)

4. SEAGOING PASSENGER VESSEL SECTION:

M. ENTER number of seagoing passenger vessels entering terminal/port during a peak seven-day period.

_____ $\frac{\text{vessels}}{\text{week}}$

N. ENTER average duration of seagoing passenger vessel stay at terminal/port plus average duration of voyage to terminal/port through restricted waters**.

_____ days

O. ENTER average number of persons on board a typical seagoing passenger vessel.

_____ $\frac{\text{persons}}{\text{vessel}}$

P. CALCULATE domestic garbage resulting from seagoing passenger vessels.

$\frac{\text{kg}}{\text{week}}$

$M \times N \times O \times 2.4$

(Note: average generation rate on seagoing passenger vessels is assumed to be 2.4 kg/person-day)

5. TOTAL DOMESTIC GARBAGE SECTION:

Q. CALCULATE combined domestic weight of garbage generated by all vessels.

$\frac{\text{kg}}{\text{week}}$

$D + H + L + P$

DRAFT

II. CARGO ASSOCIATED WASTE

Complete this section only if your facility unloads dry bulk, break bulk, or containerized cargo.

- R. ENTER total amount of break bulk cargo received during a peak seven-day period. _____ $\frac{\text{kg}}{\text{week}}$
- S. ENTER total amount of dry bulk cargo received during a peak seven-day period. _____ $\frac{\text{kg}}{\text{week}}$
- T. ENTER total amount of containerized cargo received during a peak seven-day period. _____ $\frac{\text{kg}}{\text{week}}$
- U. CALCULATE total cargo associated waste. $\frac{\text{kg}}{\text{week}}$
 $\frac{R}{123} + \frac{S}{10000} + \frac{T}{25000}$

III. ALL OTHER GARBAGE WASTE

- V. ENTER average duration of a vessel stay (for all vessels in facility) at terminal/port plus average duration of transit through restricted waters**. _____ days
- W. ENTER average quantity of all other garbage waste generated daily from typical vessel. [This should include such wastes as scraped paint, rust waste, sweeping waste and engine room maintenance waste.] _____ $\frac{\text{kg}}{\text{vessel-day}}$
- X. CALCULATE all other waste per vessel. $\frac{\text{kg}}{\text{vessel}}$
 $V \times W$
- Y. ENTER average number for vessels (all types) at terminal/port during peak seven-day period _____ vessels
- Z. CALCULATE total ALL THER waste for all vessels. $\frac{\text{kg}}{\text{week}}$
 $X \times Y$
- AA. CALCULATE total garbage capacity demand from vessels visiting this facility. $\frac{\text{kg}}{\text{week}}$
 $Q + U + Z$

DRAFT

WORKSHEET EXAMPLE:

Thrifty Services owns a waterfront terminal which offloads 3 oceangoing oil tankers per week. These vessels arrive from the far east every week and stay in port for three days and then depart once again for the far east. Two of the vessels have a crew complement of ten persons. The remaining vessel only has a crew of eight. There is an eight hour passage through restricted waters before arriving at the terminal. Besides the domestic waste, vessels usually generate about 20 kilograms of other garbage per day. This garbage consists of sweeping waste, scraped paint waste, rust waste and engine room maintenance waste.

For this particular case, since the terminal only receives oceangoing vessels and those vessels only carry oil in bulk only sections I.3., I.5. and III. would be completed on the worksheet as shown below:

I. DOMESTIC WASTE (cont)

3. SEAGOING CARGO VESSEL SECTION:

- I. ENTER number of seagoing cargo vessels entering terminal/port during a peak seven-day period 3 vessels/week
 - J. ENTER average duration of seagoing cargo vessel stay in terminal/port plus average duration of voyage to terminal/port through restricted waters** 3.3 days
 - K. ENTER average number of persons on board a typical seagoing cargo vessel. 9.3 persons/vessel
 - L. CALCULATE domestic garbage resulting from seagoing cargo vessels. 92.1 kg/week
- (Note: average generation rate on seagoing cargo vessels is assumed to be 2.0 kg/person-day)

5. TOTAL DOMESTIC GARBAGE

Q. CALCULATE combined domestic weight of garbage generated by all vessels. 92.1 kg/week

$D+H+L+P$

III. ALL OTHER GARBAGE WASTE

- V. ENTER average duration of a vessel stay (for all vessels in facility) at terminal/port plus average duration of transit through restricted waters** 3 days
- W. ENTER average quantity of all other garbage waste generated daily from typical vessel. [This should include such wastes as scraped paint, rust waste, sweeping waste and engine room maintenance waste.] 20 kg/vessel-day
- X. CALCULATE all other waste per vessel. 60 kg/vessel
- Y. ENTER average number for vessels (all types) at terminal/port during peak seven-day period 3 vessels
- Z. CALCULATE the total of all other garbage waste for all vessels. 180 kg/week
- AA. CALCULATE total garbage capacity demand from vessels visiting this facility. 272.1 kg/week

$Q+U+Z$