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**United States
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DEPARTMENT OF TRANSPORTATION

U. S. COAST GUARD

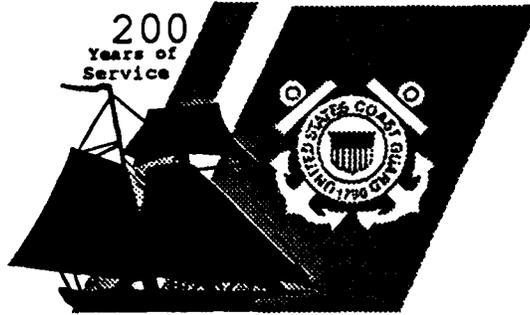
STATEMENT OF CAPTAIN THOMAS E. THOMPSON

ON THE NONINDIGENOUS AQUATIC NUISANCE ACT OF 1990

HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES

**SUBCOMMITTEES ON OCEANOGRAPHY, FISHERIES AND WILDLIFE
CONSERVATION AND COAST GUARD AND NAVIGATION**

14 JUNE 1990



CAPTAIN THOMAS E. THOMPSON
CHIEF, PORT SAFETY AND SECURITY DIVISION
OFFICE OF MARINE SAFETY, SECURITY AND ENVIRONMENTAL
PROTECTION
UNITED STATES COAST GUARD

Captain Thomas E. "Ted" Thompson became Chief, Port Safety and Security Division in the Office of Marine Safety, Security and Environmental Protection in June 1989. He is responsible for implementation of the MARPOL agreements and Coast Guard programs concerning the safety and physical security of the nations ports and waterways.

Captain Thompson is a 1968 graduate of the Coast Guard Academy located in New London, Connecticut. After three and a half years aboard two different Coast Guard High Endurance Cutters, which included an eleven month deployment in Vietnam, he was assigned as a ship repair superintendent at the Coast Guard Yard, Curtis Bay, MD. Captain Thompson then completed two years of post graduate education receiving a Masters Degree in the disciplines of both Naval Architecture and Marine Engineering, and Nuclear Engineering from the University of Michigan. His subsequent assignment to Coast Guard Headquarters was his first tour in the Office of Marine Safety, Security and Environmental Protection which has been his speciality for the past fifteen years.

Following three field tours which included the Eighth District Merchant Marine Technical Staff and Marine Inspection Office in New Orleans, and assignment as Executive Officer, Marine Safety Office Anchorage, Alaska, Captain Thompson reported to the Port Safety and Security Division in August 1988, where he became the Division Chief in June 1989. Captain Thompson and his family currently reside in Alexandria, VA.

DEPARTMENT OF TRANSPORTATION

U.S. COAST GUARD

STATEMENT OF CAPTAIN THOMAS E. THOMPSON

ON THE NONINDIGENOUS AQUATIC NUISANCE ACT OF 1990

HOUSE OF REPRESENTATIVES

COMMITTEE ON MERCHANT MARINE AND FISHERIES

14 JUNE 1990

GOOD AFTERNOON, MR. CHAIRMAN AND DISTINGUISHED MEMBERS OF THE SUBCOMMITTEE. I AM CAPTAIN TED THOMPSON, CHIEF OF THE PORT SAFETY AND SECURITY DIVISION, OFFICE OF MARINE SAFETY, SECURITY AND ENVIRONMENTAL PROTECTION AT COAST GUARD HEADQUARTERS. THANK YOU FOR THE OPPORTUNITY TO SPEAK TO YOU REGARDING THE NONINDIGENOUS AQUATIC NUISANCE ACT OF 1990 AS WELL AS OUR RECOMMENDATIONS ON HOW TO CONTROL THE INTRODUCTION OF NONINDIGENOUS SPECIES INTO U.S. WATERS.

TO BEGIN, LET ME BRIEFLY DISCUSS THE GLOBAL ASPECTS OF THIS PROBLEM. THERE IS GROWING CONCERN THAT THE INTRODUCTION OF NONINDIGENOUS SPECIES BY SHIPS', PARTICULARLY THROUGH THEIR BALLAST WATER HAS AFFECTED THE ECOSYSTEMS AND ECONOMIES OF COUNTRIES AROUND THE WORLD. IN ORDER TO PREVENT FURTHER NONINDIGENOUS INTRODUCTIONS, TWO COUNTRIES, CANADA AND AUSTRALIA, HAVE INITIATED VOLUNTARY CONTROL PROGRAMS WHICH IMPACT DOMESTIC AND FOREIGN FLAG SHIPS IN INTERNATIONAL TRANSPORT.

IN AUSTRALIA, AS FAR AS WE KNOW, FIVE NONINDIGENOUS AQUATIC SPECIES HAVE BEEN INTRODUCED IN PORT AREAS: THE JAPANESE SHRIMP, GOBY FISH, MUSSELS, EUROPEAN SHORE CRABS, AND TOXIC DINOFLAGELLATES. THE GREATEST CONCERN IS WITH THE

TOXIC DINOFLAGELLATES WHICH CAUSES PARALYTIC SHELLFISH POISONING. A DINOFLAGELLATE IS A TYPE OF ALGAE THAT IS UNICELLULAR AND HAS A WHIP-LIKE FLAGELLA. SOME TYPES OF DINOFLAGELLATE MAY ACCUMULATE IN VERY LARGE NUMBERS AND PRODUCE A "RED TIDE". MANY KINDS OF FISH AND OTHER MARINE ANIMALS ARE OFTEN KILLED DURING THE TIME OF THE "RED TIDE." IN ORDER TO PREVENT A SPREAD TO THEIR POPULATION, THE AUSTRALIAN GOVERNMENT HAS INTRODUCED AN EXPENSIVE HEALTH MONITORING PROGRAM AND HAS CLOSED SOME SHELLFISH FARMS ON OCCASION SINCE 1986.

THE POSSIBILITY OF THE INTRODUCTION OF VIRAL BACTERIAL AND FUNGAL DISEASES INTO AUSTRALIA'S EXPANDING AQUACULTURE PROGRAM THROUGH BALLAST WATER CONTINUES TO BE A GREAT CONCERN. AS A RESULT, THE AUSTRALIAN GOVERNMENT HAS INTRODUCED A VOLUNTARY BALLAST WATER CONTROL PROGRAM. THE EMPHASIS OF THEIR PROGRAM IS TO MINIMIZE THE DISCHARGE OF WATER AND SEDIMENT FROM BALLAST TANKS AND HOLDS USED TO CARRY BALLAST. VESSELS ENTERING AUSTRALIAN PORTS HAVE THREE OPTIONS. FIRST, THE VESSEL CAN PROVIDE A CERTIFICATE VERIFYING THAT THE SHIPS' BALLAST WATER AND SEDIMENT ARE FREE OF TOXIC ORGANISMS; SECOND, THE VESSEL CAN REBALLAST AT SEA OR PERFORM SOME TYPE OF IN-HOLD WATER TREATMENT; THIRD, UPON ARRIVAL INTO PORT, THE VESSEL'S MASTER MAY CERTIFY THAT THE VESSEL WILL NOT DISCHARGE BALLAST WHILE IN PORT. ALTERNATIVELY, THE VESSEL MAY DISCHARGE ITS BALLAST TO AN APPROVED ON-SHORE TREATMENT FACILITY AND/OR DISCHARGE BALLAST TANK SEDIMENT INTO APPROVED DISCHARGE AREAS.

CLOSER TO HOME, RECENTLY, THE ZEBRA MUSSEL HAS BECOME A PROBLEM IN THE GREAT LAKES. THIS SMALL BIVALVE MOLLUSK WAS FIRST RECOGNIZED AS A PROBLEM IN 1988 AND IS ALSO SUSPECTED OF BEING INTRODUCED THROUGH THE DISCHARGE OF SHIPS'

BALLAST WATER. THIS PARTICULAR PROBLEM WAS THE SUBJECT OF THE ANNUAL JOINT CANADIAN COAST GUARD/U.S. COAST GUARD MEETING IN JULY 1988 ON THE "PROGRESS TOWARD ACHIEVING THE OBJECTIVES ESTABLISHED BY THE GREAT LAKES WATER QUALITY AGREEMENT OF 1978." THE CANADIAN GOVERNMENT, IN FULL CONSULTATION WITH THE U.S., THE GREAT LAKES FISHERIES COMMISSION, AND REPRESENTATIVES OF COMMERCIAL SHIPPING, COMPLETED THE DEVELOPMENT OF VOLUNTARY GUIDELINES FOR CONTROLLING THE DISCHARGE OF SHIP BALLAST WATER IN THE GREAT LAKES IN APRIL 1989. UNDER THESE GUIDELINES, THE MASTERS OF SHIPS VISITING ALL GREAT LAKES PORTS ARE REQUESTED TO PROVIDE THE ST. LAWRENCE SEAWAY INSPECTORS WITH A COMPLETED BALLAST WATER EXCHANGE REPORT. THIS REPORT DETAILS WHERE BALLAST WATER WAS TAKEN ABOARD THE VESSEL AND WHETHER OR NOT IT WAS EXCHANGED AT SEA IN ACCORDANCE WITH THE GUIDELINES. IF THE SHIP DID NOT PERFORM AT-SEA BALLAST EXCHANGE, THEN IT WOULD BE REQUESTED TO DO SO NEAR MONTREAL IN THE ST LAWRENCE RIVER. THE CANADIAN COAST GUARD IS IN THE PROCESS OF EVALUATING THE COMPLIANCE RATE AND EFFECTIVENESS OF THE VOLUNTARY GUIDELINES.

IN VIEW OF THE HEALTH AND ECONOMIC IMPACT OF THE INTRODUCTION OF NONINDIGENOUS SPECIES ON THE U.S. AND OTHER COUNTRIES AROUND THE WORLD, THIS MATTER HAS BEEN RAISED AT THE INTERNATIONAL MARITIME ORGANIZATION'S (IMO) MARINE ENVIRONMENT PROTECTION COMMITTEE (MEPC). IMO IS THE UNITED NATIONS' SPECIALIZED AGENCY FOR MARITIME AFFAIRS. IN 1988, MEMBER GOVERNMENTS AS WELL AS NONGOVERNMENTAL ORGANIZATIONS WERE INVITED BY IMO TO SUBMIT RELEVANT INFORMATION REGARDING THIS PROBLEM. THE MOST RECENT MEPC SESSION AT IMO IN MARCH 1990 CONCLUDED THAT THE INTRODUCTION OF NONINDIGENOUS SPECIES IS AN INTERNATIONAL PROBLEM WHICH REQUIRES AN INTERNATIONAL SOLUTION. THE FOLLOWING COURSE OF ACTION WAS TAKEN; FIRST, THE MEPC AGREED TO FORM A WORKING GROUP AT ITS NEXT MEETING IN

NOVEMBER 1990; SECOND, IMO MEMBER STATES AND NONGOVERNMENTAL ORGANIZATIONS HAVE BEEN REQUESTED TO PROVIDE RESEARCH INFORMATION AND PROPOSED SOLUTIONS FOR CONSIDERATION BY THE WORKING GROUP IN DEVELOPING INTERNATIONAL STANDARDS; AND THIRD, PENDING THE INTRODUCTION OF AN INTERNATIONAL APPROACH, MEMBER STATES AND NONGOVERNMENTAL ORGANIZATIONS ARE REQUESTED TO ENCOURAGE SHIP OWNERS AND OPERATORS TO COMPLY WITH CURRENT VOLUNTARY GUIDELINES FOR CONTROL OF BALLAST WATER DISCHARGES. THUS FAR THE ONLY VOLUNTARY GUIDELINES ARE IN AUSTRALIA AND THE GREAT LAKES; CANADA'S GUIDELINES ALSO COVER THE U.S. SIDE OF THE GREAT LAKES.

SEVERAL AREAS OF THE U.S. HAVE BEEN AFFECTED BY THE INTRODUCTION OF NONINDIGENOUS SPECIES BY SHIPS' BALLAST WATER. THE ZEBRA MUSSEL IN THE GREAT LAKES, AND THE ASIAN CLAM IN SAN FRANCISCO BAY HAVE AFFECTED THE ECOLOGICAL BALANCE AND HAVE HAD ECONOMIC IMPACTS IN THOSE AREAS. BECAUSE MOST OF THE VESSELS THAT CALL AT U.S. PORTS ARE FOREIGN FLAG, THE U.S. IS TAKING AN ACTIVE ROLE AT IMO TOWARD THE DEVELOPMENT OF UNIFORM GLOBAL STANDARDS. WE ARE ALSO WORKING WITH CANADA IN FORMULATING A BILATERAL PROGRAM FOR THE GREAT LAKES. THE PROPOSED LEGISLATION CALLS FOR IMPLEMENTATION OF MANDATORY REGULATIONS TO BE IMPLEMENTED FOR EITHER BALLAST WATER EXCHANGE OR AN ALTERNATIVE BALLAST WATER MANAGEMENT METHOD. DUE TO THE NATURE OF THIS PROBLEM, THERE MUST BE A PROGRAM THAT ENCOMPASSES ONE HUNDRED PERCENT OF THOSE VESSELS CAPABLE OF INTRODUCING NONINDIGENOUS SPECIES BY BALLAST WATER.

IN ORDER TO ACHIEVE AN ORDERED, WELL THOUGHT OUT, AND EFFECTIVE PROGRAM, AN IMPLEMENTATION PROGRAM CONSISTING OF THREE DISTINCT PHASES SHOULD BE CONSIDERED. PHASE ONE WOULD CONSIST OF ESTABLISHING A VOLUNTARY PROGRAM IN

THE GREAT LAKES THAT DOVETAILS WITH THE CANADIAN PROGRAM. THIS CAN BE IMPLEMENTED QUICKLY FOR THE FIRST YEAR AFTER PASSAGE OF THE LEGISLATION. SINCE THE GREAT LAKES IS A UNIQUE AREA IN WHICH THE TWO COUNTRIES SHARE JURISDICTIONS, THIS PROGRAM WILL RESULT IN A STANDARDIZED APPROACH AND PREVENT THE IMPRESSION THAT THE U.S. IS TAKING UNILATERAL ACTION ON AN ISSUE THAT AFFECTS BOTH NATIONS. PHASE TWO WOULD CONSIST OF A MANDATORY BALLAST WATER EXCHANGE PROGRAM FOR THE GREAT LAKES DURING THE SECOND YEAR. THE MANDATORY BALLAST WATER EXCHANGE PROGRAM WOULD TAKE INTO CONSIDERATION THE RESULTS OF THE CANADIAN STUDY DURING PHASE ONE. PHASE THREE, DURING THE THIRD AND SUBSEQUENT YEARS, WOULD MANDATE A NATIONWIDE BALLAST WATER EXCHANGE PROGRAM OR PURSUE SOME OTHER ACCEPTABLE ALTERNATIVE THAT ENSURES THAT BALLAST WATER DISCHARGED FROM VESSELS IS FREE FROM NONINDIGENOUS SPECIES. THE INTENT WOULD BE TO EMPLOY PERFORMANCE-ORIENTED, RATHER THAN ENGINEERING-SPECIFIC, CRITERIA. THE PHASE THREE PROGRAM WOULD INCLUDE THE RESULTS OF RESEARCH INTO THE CONTROL OPTIONS AND THE RESULT OF THE INTERNATIONAL STANDARDS.

THE U.S. COAST GUARD RECOGNIZES THAT THE INTRODUCTION OF NONINDIGENOUS SPECIES INTO U.S. WATERS IS A PROBLEM THAT NEEDS DEFINITIVE ACTION. ACCORDINGLY, THE COAST GUARD SUPPORTS TITLE I OF H.R. 4214. HOWEVER, I WOULD LIKE TO COMMENT ON A FEW ASPECTS OF THE LEGISLATION. THE CURRENT PROPOSAL MANDATES THAT THE COAST GUARD IMPLEMENT REGULATIONS NOT LATER THAN SIX MONTHS AFTER THE ENACTMENT OF THIS ACT. THE SIX MONTH TIME PERIOD TO PROMULGATE REGULATIONS IS TOO SHORT, GIVEN THE COMPLEXITY OF THIS ISSUE AND THE EXTENSIVE TIME PERIOD REQUIRED IN THE REGULATORY PROCESS AS A RESULT OF THE ADMINISTRATIVE PROCEDURES ACT.

THE PROPOSED LEGISLATION ALSO REQUIRES THAT THE COAST GUARD IMPLEMENT

REGULATIONS REQUIRING VESSELS TO CARRY OUT A HIGH SEAS EXCHANGE OF BALLAST WATER OR USE AN ALTERNATIVE BALLAST WATER MANAGEMENT METHOD TO DISCHARGE THEIR BALLAST PRIOR TO ENTERING U.S. WATERS. ALTHOUGH BALLAST WATER EXCHANGE AT PRESENT SEEMS TO BE THE MOST PROMISING ALTERNATIVE, THERE ARE ISSUES WITH REGARD TO SHIP'S SAFETY, ECONOMICS, AND BIOLOGICAL EFFECTIVENESS THAT NEED TO BE ADDRESSED PRIOR TO MAKING A FINAL DETERMINATION.

FIRST, CAN HIGH SEAS EXCHANGE OF BALLAST BE DONE WHILE THE VESSEL IS UNDERWAY OR MUST THE VESSEL STOP? SHIFTING BALLAST DURING A VOYAGE CAN BE EXTREMELY DANGEROUS DUE TO THE POTENTIALLY LARGE FREE SURFACE EFFECT. THE FREE SURFACE EFFECT IS CAUSED BY THE SHIFTING FORCES OF LIQUID IN A PARTIALLY FILLED TANK AND WILL DECREASE THE STABILITY OF A VESSEL. IN ADDITION, THE OPERATION WOULD HAVE TO BE CONDUCTED SO AS TO MINIMIZE HULL BENDING STRESSES IN ORDER TO AVOID STRUCTURAL DAMAGE.

ANOTHER SAFETY ISSUE INVOLVES CREW FATIGUE AS A RESULT OF THE EXTRA WORKLOAD. A RELATED ECONOMIC ISSUE HAS TO DO WITH THE IMPACT OF THE WORKLOAD ON VESSEL MANNING REQUIREMENTS. ALSO, THE IMPACT ON VESSELS ENGAGED IN COASTWISE DOMESTIC VOYAGES NEEDS TO BE ADDRESSED. FOR EXAMPLE, WE MUST BE CONCERNED WITH VESSELS THAT TAKE ON BALLAST IN PHILADELPHIA AND TRANSIT THROUGH THE CHESAPEAKE AND OHIO CANAL TO BALTIMORE. WILL THEY BE REQUIRED TO GO TO SEA AND EXCHANGE BALLAST PRIOR TO ENTERING BALTIMORE SO THAT NO NEW INTRODUCTIONS WILL OCCUR?

LASTLY, THE ACTUAL BIOLOGICAL AND ECOLOGICAL EFFECTIVENESS OF BALLAST WATER EXCHANGE MUST ALSO BE DETERMINED. RARELY IS THERE 100 PERCENT EXCHANGE OF

WATER WHEN VESSELS DO EXCHANGE BALLAST WATER AT SEA; IT IS POSSIBLE, FOR EXAMPLE, FOR ORIGINAL WATER TO REMAIN AT THE BOTTOM OF BALLAST TANKS AND IN VARIOUS COMPARTMENTS EVEN AFTER A "COMPLETE" EXCHANGE HAS BEEN MADE. BALLAST TANKS USUALLY CONTAIN SEDIMENTS WHICH CAN BUILD UP OVER SEVERAL BALLASTING OPERATIONS IN PORT, AND WHICH MAY CONTAIN NONINDIGENOUS SPECIES.

THERE APPEAR TO BE MANY VIABLE OPTIONS; HOWEVER, SOME MAY NOT BE REALISTIC FROM A PRACTICAL, EFFECTIVENESS, SAFETY, OR ECONOMIC STANDPOINT. OPTIONS MERITING FURTHER RESEARCH INCLUDE HIGH VELOCITY WATER FLOW, PLACING SCREENS AND FILTERS ON BALLAST PIPING, HEATING BALLAST WATER, TREATING BALLAST WATER WITH A CHEMICAL ADDITIVE, AND USING ULTRAVIOLET LIGHT OR ULTRASOUND AS A TREATMENT METHOD.

THE COAST GUARD HAS FORMED AN INTERAGENCY NONINDIGENOUS SPECIES WORKING GROUP COMPOSED OF THE U.S. FISH AND WILDLIFE SERVICE, THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, THE ENVIRONMENTAL PROTECTION AGENCY, AND THE NATIONAL MARINE FISHERIES SERVICE. THIS GROUP WILL BE CONDUCTING AN INDEPTH STUDY OF THE ALTERNATIVES TO DETERMINE THEIR ECONOMIC AND PRACTICAL FEASIBILITY. TO ACCOMPLISH THIS TASK, THE WORKING GROUP IS WORKING CLOSELY WITH THE INTERNATIONAL JOINT COMMISSION (CANADA/U.S.), THE GREAT LAKES FISHERIES COMMISSION, INTERESTED ORGANIZATIONS, AND THE INTERNATIONAL MARITIME COMMUNITY TO EVALUATE OPTIONS TO CONTROL THE INFESTATION OF U.S. WATERS BY NONINDIGENOUS SPECIES. A FINAL REPORT WILL BE SUBMITTED TO CONGRESS IN 1991.

THE FUNDING AUTHORIZED IN THE BILL SHOULD BE CHANGED TO "SUCH SUMS AS MAY BE NECESSARY." THIS APPROACH WILL GIVE THE DEPARTMENTS AND AGENCIES TIME TO

DEVELOP A COMPREHENSIVE PROGRAM THAT DETAILS OUR NEEDS MORE ACCURATELY. RECOMMENDATIONS ON IMPLEMENTING THIS PROGRAM SHOULD BE DEVELOPED IN THE COURSE OF THE ANNUAL BUDGET PROCESS.

TO CONCLUDE, THE PHASED PROGRAM I RECOMMEND WILL ALLOW FOR FURTHER RESEARCH AND DEVELOPMENT OF THE BEST AVAILABLE OPTIONS TO CONTROL THE INTRODUCTION OF NONINDIGENOUS SPECIES. BECAUSE THIS IS AN INTERNATIONAL PROBLEM, IT WILL ALLOW FOR THE DEVELOPMENT OF INTERNATIONAL STANDARDS THROUGH THE AUSPICES OF THE INTERNATIONAL MARITIME ORGANIZATION. HASTILY IMPLEMENTING A UNILATERAL PROGRAM BASED ON REACTIONS RATHER THAN A WELL CONSIDERED RESPONSE COULD PROVE TO BE COUNTERPRODUCTIVE. IN THE LONG RUN, A FULLY INTEGRATED INTERNATIONAL STRATEGY WILL BE MOST EFFECTIVE -- ONE THAT INCLUDES COORDINATED STRATEGIES FOR ALL INTRODUCTIONS OF AQUATIC ORGANISMS, INCLUDING THOSE FOR INTENTIONAL RELEASE OR FOR CULTURE, AS WELL AS THOSE INTRODUCED THROUGH SHIPS' BALLAST OR OTHER MEANS.

MR. CHAIRMAN, THIS CONCLUDES MY STATEMENT. I WILL BE GLAD TO ANSWER ANY QUESTIONS THAT YOU OR THE OTHER MEMBERS OF THE SUBCOMMITTEE MIGHT HAVE.