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QUEEN MARY

LIMITED ACCESS STUDY

FOR
PORT OF LONG BEACH

Prepared By

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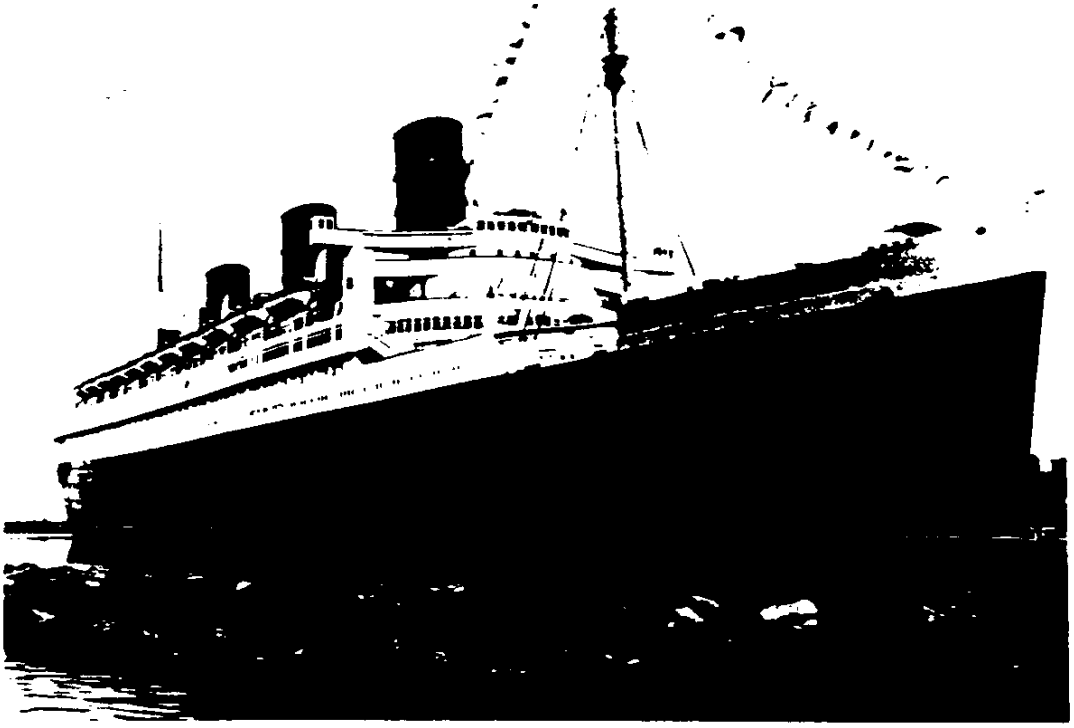

QUEEN MARY

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1.0 QUEEN MARY - LIMITED ACCESS PROPOSAL

1.1 Introduction

The Queen Mary was shipchecked by a team of Rados engineers to verify drawings and compartment configurations. As part of accomplishing this task, specifications and drawings were researched and all interior hull, structure, compartments and decks were inspected in areas accessible. It is important to note that due to the restricted time period allotted and the budgetary restrains imposed, numerous areas of the structure were inaccessible due to interferences such as wood decks covering steel plating; interior and wood paneling; materials containing asbestos, tanks containing ballast, the unavailability of inspection of underwater portion of hull structure, etc.

Using the technical information provided by the inspection engineers, our estimating department has generated a "Rough Order of Magnitude" (ROM) estimated cost of needed repairs, and modifications. The purpose of this undertaking is to provide the City and the Port of Long Beach, technical and financial information in order to assist in making the best decision possible.

The Rough Order of Magnitude (ROM) estimates developed from the investigation of the structures and systems, provides information in a range of costs, because of the lack of time developing more thoroughly detailed engineering information. Given this limited time frame, it is not possible to accurately estimate from available drawings and specifications, the necessary costs involved.

Past experience has proven that retrofits (repairs, modifications and conversions) in areas that are not accessible and of which engineering drawings are not available, will provide uncertainties until actual demolition and cleaning uncovers unknown conditions that might exist.

Rados International Corporation is pleased to submit for your review and consideration, the findings of the Limited Access Study.

1.2 Securing of All Areas Below the Promenade Deck

1.2.1 Review Specifications and Drawings

Available specifications and drawings were reviewed for the intent of closing all areas below the Promenade deck. Not all of the drawings were found, but in those instances, vendor and/or maintenance personnel reports were used.

Time constraints negated the possibility of an extended search for drawings or extended shipcheck. But all areas of this report are based on specifications, drawings or reports which we, therefore, assumed to be fact.

1.2.2 Investigation and Report of Queen Mary Limited Access.

It is the intent of this report to address two areas of concern:

1. The closing and preservation of the areas below the Promenade deck will involve shutting down all non-essential services. Although closed, all areas of the vessel will be available for inspection and maintenance.

2. Deferred maintenance which involves work on the vessel, detailed later in this report, which is necessary for the safety of the vessel and tourists/crew. Regardless of the final disposition of the vessel, this program should be considered mandatory.

Each of the above concerns is detailed later in this report.

1.3 Retaining the "R" deck Galley.

1.3.1 Review specifications and drawings. This phase will be the same as Part I, Phase I.

1.3.2 This phase will be the same as Part I, Phase II with the exception of the "R" deck Galley.

1.4 Maintenance Personnel Adjustment.

With limited access imposed and the deferred maintenance items completed, the number of maintenance personnel could be reduced.

1.5 Conclusion

The conclusion of this report is based upon the scope of work study outlined in the following sections. The following estimate includes the costs to upgrade the Queen Mary to satisfy safety requirements. These are included where applicable.

Rados International Corporation
R.O.M. estimate

Total Section 1.2 Securing all areas below the Promenade Deck.

1.	Closing and Deactivation (Mothballing not included)	$ 104,000.00
2.	Yearly savings (Utilities)	($ 577,120.00) per year
3.	Deferred Maintenance	
	Priority 1	$ 4,710,000.00
	Priority 2	$ 110,000.00
	Priority 3	$ 45,000.00

Total Section 1.3 Retaining "R" Deck Galley.

1.	Closing and Deactivation (Mothballing not included)	$ 84,000.00
2.	Yearly savings (Utilities)	($555,520.00) per year
3.	Deferred Maintenance	
	Priority 1	$ 4,710,000.00
	Priority 2	$ 110,000.00
	Priority 3	$ 45,000.00

Totals Section 1.4 Maintenance Personnel Adjustment.

This would represent a savings of approximately:
($1,000,000.00) per year

This estimate is based solely on reduced personnel. The maintenance material cost is not considered to be part of this study.

2.0 QUEEN MARY - PROPOSAL DETAILS

The following sections describe, in detail, the tasks involved in the closing of the vessel below the Promenade Deck and those items that Rados International Corp. feels would be necessary to satisfy the safety requirements of the Port of Long Beach and the Unified Building Codes, to the extent possible.

The Deferred Maintenance Program is separated from the closing of part of the vessel to allow the costs to be protracted at the discretion of the Port of Long Beach.

The term Deferred Maintenance Items, as used throughout this report, refers to those items that have been neglected over the years that are required to make the facility safe and usable. Rados has taken the position that, regardless of the final disposition of the vessel, these items must be completed to insure the safety of the vessel and personnel.

2.1 HULL/STRUCTURE

2.1.1 Introduction.

It is the intent of this section to describe the necessary modifications to allow all areas of the vessel below the Promenade Deck to be closed. Options that may allow additional flexibility are also offered for consideration by the Port of Long Beach.

2.1.2 Assumptions and Limitations.

1. All activity existing on the Promenade Deck and above will be maintained.

2. All gangways below the Promenade Deck will be rendered useless for guest ingress and egress.
   Total gangway width remaining:
   Guest: 22 ft. wide.
   Unified Building Code occupancy: 1100 max.

3. Handicap access will not be considered.
   This may cause some problems with the Unified Building Code but the option would be cost prohibitive.

4. A portion of the items of Deferred Maintenance have been, or are currently being completed.

2.1.3 Securing of all areas below the Promenade Deck.

The following items and listed options will represent the modifications necessary to the hull and structure to complete this task.

2.1.3.1 Add security closures gates.

All stairs and ladders leading from the Promenade Deck down will be closed with security gates for access by security and maintenance personnel only.

$26,000.00

2.1.3.2 Pest control and air circulation.

Closing off the areas below the Promenade Deck and stopping air circulation will present problems with mildew and condensation,

however open port lights and vent openings allow pests to enter the closed spaces and breed.

Port lights should be secured open and screens installed.

$ 50,000.00

New air circulation openings installed in areas without port lights.

$ 8,000.00

Clean and Preserve the Galley.

$ 20,000.00

2.1.3.3 **Option - Additional occupancy.**

Offered as an option, the gangways at "A" Deck could be retained with access from the Promenade Deck to the "A" Deck in the area of the gangways.

This option would increase the maximum occupancy by approximately 750, for a total of 1850 guests, without adding significant costs. However security could become a problem.

2.1.4 **Retaining the "R" Deck galley.**

The retention of the "R" Deck galley will have no significant effect on the items listed above.

2.1.5 **Reduced maintenance personnel.**

The maintenance personnel could be reduced from the current level of 28 to approximately 14.

The current operating operating cost for maintenance personnel is approximately:

$2,000,000.00 per year.

This could be a savings of approximately:

($1,000,000.00) per year.

However, it should be understood that the reduction in maintenance personnel can only be accomplished if the deferred maintenance items are accomplished.

2.2 MACHINERY/PIPING

2.2.1 Introduction

2.2.1.1 Heating, Ventilation and Air Conditioning

For the limited access portion of the ship, about 29% of the HVAC equipment will need to be in operation. This 29% comprises about 60% of the now used 800 tons of air conditioning. These quantities are not all used for the promenade deck and above. A large portion also serves below the Promenade deck, but must be retained because some systems serve both areas and to keep systems in balance.

Due to a very limited time frame available, the mechanical survey of shipboard HVAC equipment consisted of a search and review of as-built drawings, diagrams and operating procedures and a spot check examination of the supply and exhaust fans, air handling units, fan coil units, chilled water cooling coils, steam heating coils and their associated components.

The approximate totals presently installed on board the Queen Mary that serve the limited access area are: (some are disconnected and/or not used).

1. Air Handlers = 5
2. Fan Coil Units = 12
3. Supply Fans =18
4. Exhaust Fans = 21

Savings for this section will be the reductions in Electrical power only. (See Section 2.3 of this report)

2.2.1.2 Central chill water plant and steam plant.

The central energy plant has been designed to provide 2700 tons of refrigeration to the Q.M./Spruce Goose complex as mentioned in the introduction, plus a cogeneration plant capable of producing 500 tons of refrigeration to the Spruce Goose dome. This 2700 ton capacity is provided by three (3) 800 ton units and one (1) 325 ton unit.

According to figures provided by the current tenant, Disney, the maximum refrigeration load used during peak periods has been 800 tons, thus only one of the 800 ton units is needed at any one time and the rest of the units are on standby. Alternating the 800 ton units periodically will provide even wear and tear, and also keeps all units in service.

Steam supply is provided by two (2) 800 H.P. Water tube boilers with a capacity of 27,500 #/STM/HR @ 150 PSI.

In summary, the central energy plant is more than adequate and in good condition.

Savings for this section will be the reductions in Electrical power only. (See Section 2.3 of this report)

2.2.1.3 Sewage System

The ships sewage is collected throughout the ship and led to three collection tanks, two located on "F" deck, Port and Starboard. Each has a capacity of 1870 gallons (250 cubic feet). Two 500 GPM sewage pumps service each of these tanks. The third tank is located at frame 65 centerline, and has a capacity of 1197 gallons (160 cubic feet). This tank is serviced by two 2100 GPM pumps.

Due to the reduction in hotel use, under limited access, one of the three existing tanks can be by-passed, thereby slightly reducing costs for power and maintenance.

($100,000.00) per year

2.2.1.4 Steam System

Steam is supplied to the vessel from two 800 H.P. boilers located in the central energy plant on shore for comfort heating, water heating and some cooking equipment. In a limited access arrangement, approximately 40% less steam is required, for comfort heating, 70% less for water heating, and none for cooking, which means one boiler can be on stand-by.

Savings for this section will be the reductions in Electrical power only. (See Section 2.3 of this report)

2.2.1.5 Fire Main

The firemain and sprinkling system must be retained in its entirety in order to provide fire protection for the vessel.

2.2.1.6 Gas Line

Since this line serves the Promenade Cafe and Chelsea Kitchen, it must be retained as is for the "Limited Access".

($100,000.00) per year

2.2.1.7 Water (Hot/Cold) System

Approximately 80% of the water supplied the ship is for hotel service and areas not required for limited access. Isolating this area will consist of closing valves serving the hotel rooms, thus eliminating maintenance in this area.

($200,000.00) per year

Hot water is served by two Aerco instantaneous water heaters using steam as the heating medium. One of these heaters can be placed on stand-by for limited access.

Piping is in fair to good condition. Piping shows evidence of past and present leaking in some areas.

A pressure test to locate leaks and defective piping should be made on the portion being retained (20%). Control valves not operating properly should be overhauled or replaced. Insulation is missing on some hot water piping.

2.2.1.8 Bilge System

The Bilge System, consisting of a main line which runs Fore and Aft with branch lines to various areas of the bilges, is served by three (3) pumps, one (1) forward and one (1) amidship, both on the Port side of the vessel, and one Aft on the Starboard side of the vessel. Two emergency diesel pumps, one not connected, are provided.

a. Pumps

Bilge system pumps (3) have been overhauled and are in good working condition per maintenance people. Rados International Corporation personnel did not see pumps in operation. The forward emergency diesel pump at about frame 225 is in good condition and is connected to the bilge main, but a second diesel pump Fwd, located approximately at frame 272 centerline, not been connected.

b. Piping

Piping installed during conversion is PVC mixed with original piping which is steel, and is in fair to good condition. All bilge wells are clean and have water to cover the suction strainer. Bilge piping forward of frame 260 is badly corroded, with some sections completely rusted out, making the system inoperative. Some piping has been replaced at some of the bilge wells. Watertight bulkheads which could ordinarily isolate various areas of the bilges are non-existent, subjecting the ship to total flooding in case of a catastrophic disaster.

c. Valves

Bilge suction valves in some areas are "frozen" making them inoperable. All valves must be overhauled to assure they are in proper working order.

2.2.1.9 Ballast System

The Ballast System presently installed on the ship is connected to the bilge main for transferring water to and from 12 individual valved wing tanks, 6 Starboard and 6 Port. However, this system is not being used. Ballasting is accomplished by using a hosed fill line from the ship's F.M. into the tanks on "D" deck, and drained by gravity or pump to the sea.

The ballast system as it is now connected lacks the flexibility to make it a viable system. This problem can be corrected by adding 7 valves and two short lengths of pipe, which would allow transfer to and from any two tanks.

The system must be retained in its entirety for draining and trimming the vessel.

2.2.1.10 Deck Drains

Clean drain pipes to insure free flow from origin to terminal. Provide and install strainer plates at scupper intakes to keep out foreign material.

Replace drain pipes in areas where pipe has rusted through.

2.2.1.11 Limited Access with "R" deck Galley

1. Air Conditioning — (3) additional HVAC units required to operate.
2. Sewage — same as without Galley.
3. Steam System — Additional steam is required to serve the Galley. (Negligible)
4. Firemain - Same as without Galley.
5. Gas Line — Same as without Galley.
6. Water — Slight increase in use of water.
7. Bilge and Ballast - Same as without Galley.

2.2.2 Summary

Total	2.2.1.3	Sewage System	($100,000.00) per year
Total	2.2.1.6	Gas Lines	($100,000.00) per year
Total	2.2.1.7	Water (hot/cold) System	($200,000.00) per year
WITH A TOTAL SAVINGS OF ≈			**($400,000.00) per year**

These figures may vary depending on use by maintenance personnel.

2.3 ELECTRICAL

2.3.1 Introduction

The objective of the Electrical Section is to document existing conditions and discrepancies of the Primary Power Distribution System and identifying areas which can be reduced or eliminated to reduce the power consumption of the facility.

The objective is somewhat diluted by the budgetary and time constraints of the contract. However, The information contained in this report was obtained from site inspections and from observations and reports of the maintenance personnel. This report is a relatively accurate representation of the conditions existing aboard the vessel at the time of survey. Other than lighting and outlet loads, the electrical system use is totally in support of other machinery and systems, i.e. Air Conditioning: fans and pumps, Bilge System: pumps, etc. As these systems are shut down, the electrical use decreases.

For the purposes of this report, two options will be discussed and budgetary costs offered only on Option 1, that is, limited access and shutting down of all nonessential services. Option 2, although a relatively expensive option, may be the most cost effective in the long term.

2.3.2 Assumptions and Limitations

1. The current power consumption of the facility, taken from reports aboard the vessel, would average approximately 800 MWH per month, over the course of a year.

2. The current cost of power is approximately $90./MWH.

3. All reductions in service will be represented in percentages of the current services.

Baseline calculation for use throughout this report:

Average power consumption	≈	800 MWH/Month
Approximate cost @ $90./MWH		
Total cost	≈	**$ 72,000.per month**
	≈	**864,000.per year**

2.3.3 OPTION 1

This Option will discuss the two areas of concern by the Port of Long beach. That of (1) Securing all areas below the Promenade deck, with limited access to those areas for inspection and maintenance, and (2) for securing all areas below the Promenade deck with the exception of the "R" deck galley.

2.3.3.1 Securing all areas below the Promenade Deck

The lighting and outlet loads in the affected areas will decrease by the frequency of use, but cannot be disabled. These loads will be active for inspection and maintenance in the affected areas. We will therefore, assume a nominal decrease of .5% for those loads. The saving in machinery loads, air conditioning, pumps, heating, etc., is reported from the Machinery Section of this report to be approximately 40%. The demand factor of 50% placed on those loads would decrease the loads by approximately 20% of total.

2.3.3.1.1 Summary

Total electrical cost		≈	$ 72,000.
Savings			
Lighting & Outlet	.5%		
Machinery	20.0%		
TOTAL	20.5%	≈	14,760.
New Cost		≈	57,240./Month
		≈	686,880./Year
With a total savings of		≈	**($ 14,760.) per month**
			($177,120.) per year

These figures may vary depending on use by maintenance personnel.

2.3.3.2 Retaining the "R" deck Galley

The lighting and outlet loads would not vary from the above summary to any measurable extent. Therefore, .5% will be used.

The savings in machinery loads reported in the Machinery Section is approximately 35%. The demand factor of 50% placed on those loads would decrease the loads by approximately 17.5% of total.

2.3.3.2.1 Summary

Total electrical cost	≈		$ 72,000.
Savings			
Lighting & Outlet	.5%		
Machinery	17.5%		
TOTAL	18.0%	≈	12,960.
New Cost	≈		59,040./Month
	≈		708,480./Year
With a total savings of	≈		**($ 12,960.) per month**
			($155,520.) per year

These figures may vary depending on use by maintenance personnel.

2.3.4 OPTION 2

The facility is currently operating, using approximately 27% of the available power from Edison, i.e.

Power capacity at the vessel: 7500 KVA
Present demand as reported by Disney: 2039 KVA

Utility companies typically charge for available power installed when not used over 50%. However, at the Queen Mary, no additional charges have been reported. With further reductions, due to the limited access, it is possible that Edison would impose those charges, in which case the cost of power would increase above the present level.

If the above charges are levied, it may be cost effective to ask Edison to decrease the available service, and therefore, reduce the monthly costs. This would involve the ripout of existing services and installation of a lesser service. Edison would pass on to the customer, the cost of ripout and installation, but it may cost less in the long term.

3.0 QUEEN MARY - DEFFERED MAINTENANCE

The items of deferred maintenance are separated into three priority groups:

Priority One: Those items dealing with the immediate safety of the vessel and personnel aboard the vessel.

Priority Two: Those items dealing with the safety of the vessel and personnel, but under limited access, can be accomplished after Priority One items have been completed.

Priority Three: Those items dealing with bringing the vessel up to standard and satisfying the Unified Building Code to the extents possible.

The following pages offer a list of items in each of the three categories listed above. This by no means represents the total work necessary to satisfy either the port or the Unified Building Code, but until those items listed are completed, it is impossible to accomplish an intelligent survey which may uncover additional items requiring additional work.

3.1 PRIORITY ONE

Those items dealing with the safety of the vessel and the personnel aboard the vessel.

3.1.1 Repair/Renew Firemains

a) Sprinklers

Flush and pressure test the system throughout the ship. Many of the sprinkler heads (approximately 20 percent) are damaged to some extent, and must be replaced. Check all valves for leakage and proper operation.

b. Piping

There is approximately 40 feet of firemain which has developed leaks. This is an indication that more problems will develop in this section soon. Recommendations are:

(1) Flush and hydrostatically pressure test the entire firemain system.
(2) Make repairs or replacements as required.
(3) Check all valves for leakage and proper operations.
(4) Remove ACM from specific areas.

The firemain and sprinkling system must be retained in its entirety in order to provide fire protection for the vessel.

Note: Does not include total replacement of firemain.

$ 400,000.00

3.1.2 Remove Loose Asbestos Containing Material (ACM) from Boiler, Engine and Generator Rooms and stern areas.

At present, the loose ACM is flaking and falling to the deck areas and tank tops. to keep the areas clean after sandblasting and painting, that loose ACM must be removed prior to sandblasting and painting.

$ 570,000.00

3.1.3 Sandblast, Clean and Paint bilge and Tank Tops

We believe it imperative that the bilge and tank tops be cleaned to allow audio gauging of the steel on the tank tops and shell and keep from further detoriation.

$ 1,800,000.00

3.1.4 Repair and Replace Watertight Bulkheads

In the 1970's several watertight bulkheads were removed to allow machinery and material to be taken from the vessel and material brought back aboard. These bulkheads and W.T. doors were never replaced. As a result, decks and beams are buckling due to the loss of strength in those areas. These bulkheads would also be required in case any part of the hull gave way, in order to retain its stability.

These bulkheads cannot be replaced until the bilge and tank tops have been cleaned

Three bulkheads are involved:

Bulkhead 21 to "E" Deck

Bulkhead 51 to "E" Deck
Bulkhead 112 to "E" Deck
Bulkhead 168 to "D" Deck
Bulkhead 222 to "D" Deck

$ 635.000.00

3.1.5 Replace Mooring Lines

The mooring lines are rusted beyond repair and should be replaced.

$ 40,000.00

3.1.6 Sandblast and Paint Hulls Exterior Splash Zone

Excessive rust has accumulated in the splash zone and if not checked can cause serious problems. Ballasting of the Queen Mary will be necessary to list the floating structure.

$ 20,000.00

3.1.7 Repair Steel Expansion Joints

The expansion joints have rusted through in some areas and are now leaking water to the next deck. The expansion joints and drain piping should be cleaned and repaired.

$ 75,000.00

3.1.8 Chill Water System.

Replace missing and defective valves, piping and insulation. Provide a spare shore connection umbilical.

$ 35,000.00

3.1.9 Heating, Ventilation and Air Conditioning

Due to the age of the equipment and the limited maintenance schedule, the following conditions on an average are typical for the majority of the 56 HVAC Systems.

1. Air Handlers

a. Excessive corrosion around unit casing and cooling coils (especially units exposed to the weather).
b. Condensate drain pans are corroded and some plugged not allowing drainage.
c. Flexible duct connectors have holes and some cases torn or in a deteriorated condition.
d. Air filters and cooling coil fins are excessively dirty. This greatly reduces air flow.
e. Chilled water piping at many units have missing and/or deteriorated thermal insulation.

$ 45,000.00

2. Fan Coil Units

a. Air filters and cooling coils are excessively dirty. In a few units the air filters are missing.
b. Condensate drain pans are corroding and some are plugged not allowing drainage.
c. Chilled water piping at many units have missing and/or deteriorated thermal insulation.

$ 25,000.00

3. Supply Fans

a. Intake screens are very dirty and in some cases 60% or more clogged with dirt and/or paint which severely restricts air flow.
b. Systems that have heating and/or cooling coils have clogged or missing air filters.
c. Flexible rubberized canvas duct connectors have holes, and in some cases torn or in a deteriorated condition.
d. Noisy bearings and out of balance fan wheels causing excessive vibration.

$ 25,000.00

4. Exhaust Fans

a. Fans installed in weather locations show a lot of corrosion and general clean up maintenance.
b. Flexible rubberized canvas duct connectors have holes, and in some

cases torn or in a deteriorated condition.

c. Noisy bearings and out of balance fan wheels cause excessive vibration.

d. Most of the exhaust fans installed in the weather, discharge straight up vertically with no rain protection. Recommend installing goosenecks in these locations.

$ 35,000.00

3.1.10 Sewage System

1. Pumps

Pumps appear to be in good condition, and this is borne out by maintenance personnel. Due to the length of time in use, pumps should be overhauled completely to avoid future problems.

$ 7,000.00

2. Valves

Some sewage system valves show signs of past leaks, others were leaking at the time of inspection, although not seriously. All valves in this system should be refurbished with new gaskets, seats, etc.

$ 65,000.00

3. Piping

Piping seems to be generally in good condition with a few leaks noted. Some PVC pipe has been replaced with copper pipe. Piping is not adequately supported in some areas, particularly in sewage tank room. Piping areas contain ACM.

$ 50,000.00

3.1.11 Steam System

1. Valves

Valves throughout the steam system have either leaks through the bonnet, rusted lines or deteriorating or missing insulation. Some valves are "frozen". Balancing valves are generally in poor shape and should be either repaired and balanced or replaced and balanced.

$ 15,000.00

2. Piping

Steam lines not exposed cannot be assessed for wear without removing insulation, but many sections have insulation missing, exposing leaks and extremely corroded conditions. These areas occur throughout the ship and in various sizes.

$ 25,000.00

3.1.12 Gas Line

The natural gas line serving the Q.M. at present seems to be generally in good condition, but there are some portions on the tower which should be checked by the Gas Company which services the facility.

$ 5.000.00

3.1.13 Water (Hot/Cold) System

Piping is in fair to good condition. Requires a pressure test to locate leaks and defective piping. Control valve not operating properly should be overhauled or replaced. Insulation is missing on some hot water piping. Piping areas contain ACM.

$ 65,000.00

3.1.14 Bilge System

1. Pumps

Connect the fwd diesel pump and run exhaust line overboard.

$ 6,000.00

2. Piping

Piping installed during conversion is PVC mixed with steel, and in fair to good condition. All bilge wells are clean and have water to cover the suction strainer. Bilge piping forward of frame 260 is badly corroded, with some sections completely rusted out, making the system inoperative. Some piping has been replaced at some of the bilge wells. Watertight bulkheads which could ordinarily isolate various areas of the

bilges are nonexistent, subjecting the ship to total flooding in case of a catastrophic disaster.

$ 125,000.00

3. Valves

Bilge suction valves in some areas are "frozen" making them inoperable. All valves must be overhauled to assure they are in proper working order.

$ 20,000.00

3.1.15 Ballast System

The ballast system presently installed on the ship is connected to the bilge main for transferring water to and from 12 individual valved wing tanks, 6 starboard and 6 port. However, this system is not being used. Ballasting is accomplished by using a hosed fill line from the ship's F.M. into the tanks on "D" deck, and drained by gravity to the sea.

The ballast system as it is now connected lacks the flexibility to make it a viable system. This problem can be corrected by adding 7 valves and two short lengths of pipe, which would allow transfer to and from any two tanks.

$ 92,000.00

3.1.16 Deck Drains

Clean drain pipes to insure free flow from origin to terminal. Provide and install strainer plates at scupper intakes to keep out foreign material.

Replace drain pipes in areas where pipe has rusted through.

$ 80,000.00

3.1.17 Fire Detection System

The Fire Detection System is outdated and parts are no longer available. The system was last tested in 1990 with few problems reported. However, with limited access and reduced maintenance crews, the possibility exists for a fire to go undetected until it can become a threat to the vessel and the lives of tourist or crew.

It is our recommendation that the Fire Detection System be replaced at this time.

Detailed studies would have to be conducted, but calculating on a square foot area, the cost would be approximately.

$300,000.

3.1.18 Public Address System

The P.A. System is outdated as the Fire Detection System, and is not in total working order. This system would be necessary to guide people from the vessel in case of an emergency.

It is our recommendation that this system be replaced at this time.

Detailed studies would have to be conducted, but calculating on a square foot area, the cost would be approximately

$150,000.

3.1.19 Notes

Replace lavs in Capstan Club men's rest room.

Spare hoses for ship to shore umbilicals in case of rupture of a hose, a spare can be put in place without having to wait for one to be made.

An inventory of valves, fittings, pipe, belts, motors, filters, etc., which are more likely to be required — input from maintenance people can establish the correct inventory.

3.2 PRIORITY TWO

Those items dealing with the safety of the vessel and personnel, but under limited access, can be accomplished after Priority One items have been completed.

3.2 1 Repair and Replace Watertight Bulkheads

These are additional bulkheads that were never replaced. As a result, decks and beams are buckling due to the loss of strength in those areas.

These bulkheads would also be required in case any part of the hull gave way, in order to retain its stability.

These bulkheads cannot be replaced until the bilge and tank tops have been cleaned

Two bulkheads are involved:
Bulkhead 71 to "F" Deck
Bulkhead 190 to "D" Deck

$ 110,000.00

3.3 PRIORITY THREE

Those items dealing with bringing the vessel up to standard and satisfying the Unified Building Code to the extents possible.

3.3 1 Repair and Replace Watertight Bulkheads

These are additional bulkheads that were never replaced. As a result, decks and beams are buckling due to the loss of strength in those areas. These bulkheads would also be required in case any part of the hull gave way, in order to retain its stability.

These bulkheads cannot be replaced until the bilge and tank tops have been cleaned

One bulkhead is involved:
Bulkhead 245 to "D" Deck

$ 45,000.00