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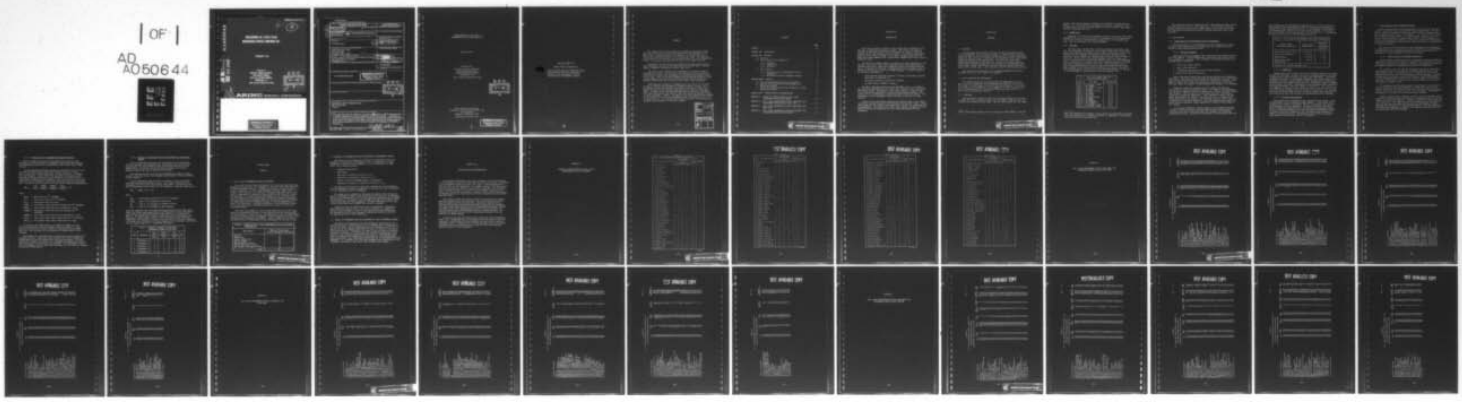

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DEVELOPMENT OF A DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENT LIST

FEBRUARY 1978

Prepared for
DIRECTOR, CRUISER DESTROYER
SHIP LOGISTIC DIVISION
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, D.C.
under Contract N00024-78-C-4062

ARINC RESEARCH CORPORATION

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
(14) 1. REPORT NUMBER 1652-05-9-1710	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
(6) 4. TITLE (and Subtitle) Development of a DDG-2 class maintenance-critical equipment list.		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER 1652-05-9-1710
7. AUTHOR(s) No author given		(15) 8. CONTRACT OR GRANT NUMBER(s) N00024-78-C-4962 new
9. PERFORMING ORGANIZATION NAME AND ADDRESS ARINC Research Corp. 2551 Riva Road Annapolis, Md. 21401		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Director, Cruiser Destroyer Ship Logistic Division (11) Naval Sea Systems Command Washington, D. C.		12. REPORT DATE Feb[redacted]78 13. NUMBER OF PAGES 42 (12) 40p.
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*		15. SECURITY CLASS. *(of this report)* Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Unclassified/unlimited

DISTRIBUTION STATEMENT A
Approved for public release; Distribution Unlimited

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

DDC RECEIVED MAR 2 1978 B

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Maintenance Critical Equipment List
DDG-2 Class Ship
DDEOC

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report presents the results of an analysis performed by ARINC Research Corp. to identify Maintenance-Critical Equipments of the DDG-2 Class. A Maintenance Critical Equipment is one that has been a significant maintenance burden to the ships of the class. The objective of the study was to establish areas of concentration for future engineering efforts in the Destroyer Engineered Operating Cycle (DDEOC) Program.

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Unclassified

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February 1978

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Director, Cruiser Destroyer
Ship Logistic Division
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Washington, D.C.

under Contract N00024-78-C-4062

ARINC Research Corporation
a Subsidiary of Aeronautical Radio, Inc.
2551 Riva Road
Annapolis, Maryland 21401

Publication 1652-05-9-1710

Prepared under Contract N00024-78-C-4062,
which grants to the U.S. Government a
license to use any material in this
publication for Government purposes.

SUMMARY

This report presents the results of an analysis performed by ARINC Research Corporation to identify Maintenance-Critical Equipments of the DDG-2 Class. A Maintenance-Critical Equipment is one that has been a significant maintenance burden to the ships of the class. The objective of the study was to establish areas of concentration for future engineering efforts in the Destroyer Engineered Operating Cycle (DDEOC) Program.

Information for the analysis was obtained from Forces Afloat maintenance experience reported in the Maintenance Data System (MDS), Casualty Reports (CASREPs), and Regular Overhaul (ROH) data.

The study results identified 183 equipments of the DDG-2 Class as maintenance-critical. Of this total, two equipments were highlighted as being the most significant contributors to the overall maintenance burden of the class. They are the Main Propulsion Boiler and the AN/SPG-51 Radar. These equipments were reported as requiring Forces Afloat maintenance, CASREPs, and ROH work far in excess of other DDG-2 Class equipments.

ARINC Research Corporation recommends that the results of the study be used to identify ship systems for in-depth analysis; further, that a preliminary review and analysis be performed to determine whether the AN/SPG-51 radar presents problems that may require long-term development fixes. Analysis of the 1200 PSI Propulsion Boilers should be undertaken only after consultation with PMS-301, which has conducted numerous studies of these equipments. However, the impact of the DDG-2 modernization program on the future status of these equipments should be determined prior to the in-depth analyses. The findings will affect the nature of the engineering analyses to be conducted in the DDEOC Program.

CONTENTS

CHAPTER ONE

INTRODUCTION

This report presents listings of DDG-2 Class ships' equipments that have been a significant maintenance burden. The listings are based on analyses of maintenance data and are intended to be used as a guide for engineering activity conducted for this class in the Destroyer Engineered Operating Cycle (DDEOC) Program. This report has been prepared for the Naval Sea Systems Command DDEOC Program Office (NAVSEA 934X) under Contract N00024-78-C-4062.

The goal of the DDEOC Program is to effect an early improvement in the material condition of ships, at an acceptable cost, while maintaining or increasing the ships' operational capability during an extended operating cycle. In support of this goal, a Maintenance-Critical Equipment List is developed for each ship class in the DDEOC Program. The list is based on the following information:

- Forces Afloat maintenance burdens in terms of maintenance actions, man-hours, and material cost
- Maintenance attention during past overhauls
- Casualty Reports (CASREP) frequency

The DDG-2 Class Maintenance-Critical Equipment List is a listing of the identified equipments for the entire ship, ranked by total experienced maintenance burden. Development of the listing did not include analysis of the reasons why equipments are significant maintenance burdens. The reasons will be investigated in subsequent DDEOC engineering studies. The Maintenance-Critical Equipment listing indicates priorities for these analyses.

Chapter Two of this report documents the approach used in the identification of the Maintenance-Critical Equipments of the DDG-2 Class; Chapter Three summarizes the results; and Chapter Four presents the conclusions and recommendations. The appendixes to this report provide information on the observed maintenance burdens of the DDG-2 Class Maintenance-Critical Equipments.

CHAPTER TWO

APPROACH

2.1 OVERVIEW

The analytical process used to develop the DDG-2 Class Maintenance-Critical Equipments List involved two steps: (1) identification of equipments that were the most significant contributors to the Navy's maintenance burden for that class and (2) ranking of the equipments in the order of the highest maintenance burden experienced. As a basis for these steps, documented maintenance history data were compiled from several sources: Forces Afloat maintenance experience, as reported in the Maintenance Data System (MDS); CASREP information; and data from past regular overhauls (ROH) of DDG-2 Class ships. These data were used in the analytical process.

Data analysis was conducted at the equipment/component level where Allowance Parts List (APL) numbers are assigned.

2.2 DATA COLLECTION AND COMPILATION

The starting point for the analysis was the compilation of a data base to provide information on the maintenance history for ships of the DDG-2 Class. The data base consisted of four key elements: (1) MDS data, (2) CASREP narrative summaries, (3) a summary of the Ship Alteration and Repair Packages (SARPs) of fifteen DDG-2 Class overhauls, and (4) the DDG-2 Class Proposed Repair Profile.*

2.2.1 MDS Data

MDS maintenance transaction data for the period January 1970 through September 1977 were acquired in Generation IV format on computer tape from the Maintenance Support Office (MSO). The data were sorted into APL number

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*DDG-2 Class Proposed Repair Profile, prepared by PERA (CRUDES), July 1977.

sequence after being edited for validity and screened for repair applicability (i.e., only corrective maintenance actions were considered). The resultant data, consisting of approximately 2,225,000 records, represented the DDG-2 Class MDS data file.

2.2.2 CASREP Data

Summaries of all DDG-2 Class CASREPs reported from January 1974 through September 1977 were received from MSO. The summaries for each individual ship in the class were reviewed and integrated into a class CASREP data file. The file contained 6,301 separate CASREPs.

2.2.3 ROH Data

The DDG-2 Class Proposed Report Profile identifies the repair items that are recommended for inclusion in the PERA (CRUDES) DDG-2 Class Routine Repair Ship Alteration and Repair Package (SARP). The Repair Profile was developed by PERA (CRUDES) by analyzing recent SARPs and identifying repetitive repairs planned for accomplishment during overhauls of ships of the class. For the DDG-2 Class Proposed Repair Profile, a repetitive repair is described as a specifically defined repair (such as an equipment Class B overhaul*) that could be identified as having occurred in at least 8 of the 15 overhauls of ships in the class. The information for the DDG-2 Class Proposed Repair Profile was derived from an analysis of the SARPs prepared for the ship overhauls identified in Table 1. The DDG-2 Class Proposed Repair Profile was received from PERA (CRUDES) and was used in the development of the Maintenance-Critical Equipment List.

Table 1. DDG-2 CLASS OVERHAUL SARPS USED TO PREPARE THE REPAIR PROFILE

Hull	Ship Name	Overhaul Year
DDG-2	USS CHARLES F. ADAMS	FY 75
DDG-4	USS LAWRENCE	FY 76
DDG-5	USS CLAUDE V. RICKETTS	FY 74
DDG-6	USS BARNEY	FY 74
DDG-8	USS HENRY B. WILSON	FY 76
DDG-9	USS TOWERS	FY 73
DDG-10	USS SAMPSON	FY 76
DDG-11	USS SELLERS	FY 74
DDG-16	USS JOSEPH STRAUSS	FY 75
DDG-18	USS SEMMES	FY 74
DDG-19	USS TATTWALL	FY 76
DDG-20	USS GOLDSBOROUGH	FY 74
DDG-21	USS COCHRANE	FY 74
DDG-22	USS BENJAMIN STODDERT	FY 76
DDG-23	USS RICHARD E. BYRD	FY 76

*Work that requires such overhaul as will restore the operating and performance characteristics of a system, subsystem, or component to its original design and technical specifications.

The work sheets used to prepare the DDG-2 Class Proposed Repair Profile were also a part of the DDG-2 Class data base. The work sheets itemized, by Ship's Work Breakdown Structure (SWBS) number, each repair action item and highlighted the repetitious repairs performed during the DDG-2 Class overhauls.

2.3 DATA ANALYSIS

2.3.1 Identification of Maintenance-Critical Equipments

The identification of the Maintenance-Critical Equipments was accomplished by using Maintenance Data System (MDS) data, CASREP data, and the DDG-2 Class Proposed Repair Profile.

2.3.1.1 MDS Data Analysis

Maintenance-Critical Equipments were identified from the MDS data base using APL numbers. The APL numbers were used because they readily relate to an equipment or component. Four indicators of maintenance burden were analyzed from the MDS data:

1. Ship's Force parts dollars
2. Ship's Force man-hours
3. Intermediate Maintenance Activity (IMA) man-hours
4. Ship's Force labor transactions

Ship's Force parts dollars were used for an indication of maintenance parts costs. The Ship's Force man-hours and IMA man-hours were used because they show the Forces Afloat effort required to maintain an equipment. The number of Ship's Force labor transactions was used because it indicates the total number of instances in which manpower was expended on an equipment.

These four categories represent the full range of maintenance that different types of equipments require. For example, some equipments are modular in composition and their maintenance requires wholesale replacement of parts. The net result is a high parts cost and, conceivably, a relatively low manpower expenditure. Other equipments require high manpower expenditures, but little or no parts cost (e.g., a leaking valve bonnet that needs to be lapped). Some equipments can be repaired only at an IMA facility and other equipments, while not requiring large amounts of parts dollars or manpower, require maintenance attention often enough to be a burden.

In the total maintenance reported against an APL-numbered equipment, if any of the four indicators of maintenance burden was significant in relation to the entire class data base, the equipment was designated Maintenance-Critical. One-tenth of one percent of the data base total for

the indicator was the significance threshold (e.g., $77,070,000 spent for repair parts by the class during the data period makes the significance threshold for parts expenditure $77,070). If an equipment (represented by an APL number) had $77,070 in parts cost reported against it, the equipment was included in the Maintenance-Critical Equipment List. Significance thresholds for the DDG-2 Class are shown in Table 2.

Table 2. DDG-2 CLASS MDS MAINTENANCE INDICATOR SIGNIFICANCE

Forces Afloat Maintenance Indicator	DDG-2 Class Expenditure*	Maintenance-Critical Significance Threshold
Ship's Force Parts Dollars	$77,069,817	$77,070
Ship's Force Man-Hours	3,712,409	3,712
IMA Man-Hours	1,777,888	1,778
Ship's Force Labor Transactions	491,795	492

*January 1970 through September 1977.

2.3.1.2 CASREP Data

CASREPs were used as a data source for identifying maintenance burdens because the maintenance necessary to correct a CASREP represents that which is required by a ship to fulfill its operational commitments. Information regarding the effect of a maintenance requirement on a ship mission is not contained in the MDS. The maintenance burden equipments were identified by determining the equipments that have had a significant number of CASREPs reported across the class. Maintenance-Critical Equipments were identified from reported CASREPs, using APL numbers as identifiers. The reporting of one CASREP by at least four ships within the class in the data period (January 1974 through December 1977) was considered significant. Any equipment identified by an APL number having at least one CASREP reported against it by at least four ships was selected as a Maintenance-Critical Equipment.

2.3.1.3 Overhaul Data Analysis

Maintenance-Critical Equipments were identified from the DDG-2 Class Proposed Repair Profile prepared by PERA (CRUDES). If the repair of an equipment was included in the Repair Profile, the equipment was selected as a Maintenance-Critical Equipment. Repeated industrial maintenance during overhaul was considered to be an indicator of maintenance burden since it indicated equipments that required repair/refurbishment because of material condition or because it was "insurance" work necessary to support the operating period. Maintenance during ROH was used because some equipments are repaired only in the shipyard.

2.3.2 Maintenance-Critical Equipment Ranking

After the Maintenance-Critical Equipments were identified, they were ranked in accordance with the maintenance burden experienced. This was done to compare the relative maintenance burdens between equipments that may be maintained differently. For example, it is of interest to know how the maintenance burden imposed by a main feed pump compares to that of a Gun Fire Control System or a Surface Search Radar. This information is useful in allocating and scheduling resources to analyze the effectiveness of existing maintenance practices and in identifying areas of concentration for Baseline Overhaul.

The ranking of the Maintenance-Critical Equipments was accomplished by identifying the class population of each Maintenance-Critical Equipment, identifying the total equipment maintenance burdens, and ranking the Maintenance-Critical Equipments by maintenance burden.

2.3.2.1 Identification of Equipment Population

Identification of Maintenance-Critical Equipments through the MDS and CASREP was accomplished by determining equipment APL numbers against which significant maintenance was reported. However, identification of only the APL numbers presents two problems associated with configurations.

One problem is that the same APL designator may not be universally used across the entire class because of different manufacturers of the same equipment type. To account for this, a complete set of lead APL numbers was identified for each Maintenance-Critical Equipment. This was accomplished by preparing a configuration matrix, for each Maintenance-Critical Equipment, that identified the lead APL numbers utilized within the class. For example, there are three lead APL numbers for the main feed pumps of the DDG-2 Class.

To determine the APL numbers necessary to prepare the configuration matrix, the Surface Ship Type Commander's (TYCOM) COSAL for both the Atlantic and Pacific Fleets was researched to identify similar equipments used to fulfill the same function (e.g., main feed pump). TYCOM COSAL information, as of June 1977, was used for this research.

Another problem to be considered was that for each equipment represented by a lead APL number, there may be a subcomponent with its own APL numbers (ancillary APL numbers). Therefore, the ancillary APL numbers had to be identified. This identification was accomplished by reviewing the list for each lead APL number that represented a Maintenance-Critical Equipment and extracting the ancillary APL numbers. When this identification effort was completed, a complete class population was available for each Maintenance-Critical Equipment.

2.3.2.2 Identification of Equipment Maintenance Burdens

When the complete listing of lead and ancillary APLs for each Maintenance-Critical Equipment was prepared, total maintenance burdens were determined from each of the maintenance data sources (MDS, CASREP, and ROH).

A total equipment maintenance burden was calculated for each of the four MDS indicators (Ship's Force parts dollars, Ship's Force man-hours, Ship's Force labor transactions, and IMA man-hours). To obtain for each equipment a single factor that provides an indication of the magnitude of the MDS maintenance burden imposed on the Forces Afloat, a term called the MDS Factor was computed. Ratios for each of the four MDS indicators to the indicator's class total were calculated for each equipment. The sum of the four ratios is the MDS factor. Expressed symbolically,

$$(MDS)_i = \frac{(PC)_i}{(PC)_T} + \frac{(SFMH)_i}{(SFMH)_T} + \frac{(IMAMH)_i}{(IMAMH)_T} + \frac{(SFLT)_i}{(SFLT)_T} \times 100$$

where

$(MDS)_i$ = MDS Factor for i^{th} equipment

$(PC)_i$ = Total parts costs for i^{th} equipment

$(PC)_T$ = Total parts costs for class

$(SFMH)_i$ = Total Ship's Force man-hours expended for i^{th} equipment

$(SFMH)_T$ = Total Ship's Force man-hours expended for class

$(IMAMH)_i$ = Total Ship's IMA Force man-hours expended for i^{th} equipment

$(IMAMH)_T$ = Total Ship's IMA Force man-hours expended for class

$(SFLT)_i$ = Total Ship's Force labor transactions for i^{th} equipment

$(SFLT)_T$ = Total Ship's Force labor transactions for class

To calculate the CASREP burden, the number of CASREPs for each identified Maintenance-Critical Equipment (reported against all lead and ancillary APLs for the DDG-2 Class) was extracted from the CASREP data file. The resultant total represented the CASREP burden for the equipment.

ROH burdens were calculated from the work sheets used to prepare the ROH Repair Profile. These work sheets itemized all the work planned for accomplishment during the fifteen DDG-2 Class ship overhauls. The work sheets were reviewed to determine if an equipment was subjected to maintenance during each of the fifteen ship overhauls. The percentage of times that the equipment received significant maintenance in the fifteen overhauls represented the ROH burden.

2.3.2.3 Ranking of Maintenance-Critical Equipments by Maintenance Burden

After the maintenance burdens were calculated for each Maintenance-Critical Equipment, the equipments were ranked within each of the three data sources. The MDS ranking was made by descending MDS factors; the CASREP ranking was made by descending CASREP frequency; and the ROH frequency ranking was made by descending percentage.

The rankings were done to order the equipments by highest to lowest burden in each data source. Each equipment was assigned a relative standing in each category.

A final ranking was made by using the ranking in each of the three individual reported maintenance sources. The relative standings of the equipments from each of the three sources were summed. The resultant sum was the Maintenance Burden Factor for the equipment. Expressed symbolically,

$$MBF_i = RMDS_i + RC_i + RO_i$$

where

MBF_i = Maintenance Burden Factor for i^{th} equipment
$RMDS_i$ = Rank of i^{th} equipment by MDS Factor
RC_i = Rank of i^{th} equipment by CASREP frequency
RO_i = Rank of i^{th} equipment by ROH frequency

Since the equipment with the lowest Maintenance Burden Factor (MBF) represented the highest maintenance burden, the Maintenance-Critical Equipments were ranked by ascending Maintenance Burden Factors, as illustrated in Table 3. The method used to rank the Maintenance-Critical Equipments was developed to permit equal weighting of the three data sources (MDS data, CASREP data, and ROH data). However, the contribution of overhaul frequency to the MBF can be influenced by a small sample size of overhauls, particularly for the highest-ranked (i.e., lowest-MBF) equipments.

Table 3. EXAMPLE OF RANKING BY ASCENDING MAINTENANCE BURDEN FACTOR (MBF)

Rank	Equipment	MDS Factor Rank	CASREP Frequency Rank	ROH Frequency Rank	MBF
1	Equipment 1	1	4	2	7
2	Equipment 2	9	2	1	12
3	Equipment 3	16	1	5	22
4	Equipment 4	4	9	10	23
5	Equipment 5	15	6	12	33

CHAPTER THREE

RESULTS

3.1 DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENTS

As a result of the review and analysis of the various maintenance and maintenance-related data, 183 equipments in the DDG-2 Class were identified as being maintenance-critical. Appendix A lists each of the identified critical equipments, in Ship's Work Breakdown Structure (SWBS) order. Included in this listing is a notation of the significant data source indicator or combination of indicators (MDS, CASREP, or ROH data) that caused the equipment to be identified as maintenance-critical. Further review of this listing can provide guidance for subsequent engineering analyses. [The Line Shaft Bearing Assembly (SWBS 241) was identified by the MDS data as a Maintenance-Critical Equipment because of the high expenditure of Ship's Force man-hours. Any detailed analysis of the maintenance history of the Line Shaft Bearing Assembly should first examine the causes for such expenditures].

There were 46 equipments in the listing identified by all three data sources as maintenance-critical; 50 were identified by two sources and 87 were identified by a single source. The MDS was the source for identifying the most Maintenance-Critical Equipments, although nearly two-thirds of the equipments were identified from CASREPs. Table 4 summarizes the sources of identification of Maintenance-Critical Equipments for the DDG-2 Class.

Table 4. SOURCES OF DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENT CONFIGURATION

Data Source	Number of Maintenance-Critical Equipments Identified
MDS Only	37
CASREP Only	29
Repair Profile Only	21
MDS and CASREP	34
MDS and Repair Profile	10
CASREP and Repair Profile	6
MDS, CASREP, and Repair Profile	46
Total	183

3.2 RANKING OF MAINTENANCE-CRITICAL EQUIPMENTS BY MAINTENANCE BURDEN

The results of the ranking of the DDG-2 Class Maintenance-Critical Equipments are presented in Appendixes B and C. Appendix B lists the equipments in MBF rank order; Appendix C lists the equipments in SWBS order. Each listing includes:

- Equipment nomenclature
- SWBS number
- MBF rank, as defined in Section 2.3.2.3
- MDS Factor, as defined in Section 2.3.2.2
- Number of reported CASREPs against the equipment
- Frequency of overhaul, as defined in Section 2.3.2.2

The data for the last three items were computed for each Maintenance-Critical Equipment identified, regardless of the source(s) that established it as a Maintenance-Critical Equipment.

The number one and number two MBF-ranked equipments (Main Propulsion Boilers and AN/SPG-51 Radar) stand out among all the others in the analysis. Each of these equipments met all the MDS indicator thresholds and the CASREP and ROH criteria. In addition, each equipment had MDS burdens nearly three times greater than any other equipment. The Main Propulsion Boilers experienced significantly more CASREPs than any other equipment.

Appendix D lists the Maintenance-Critical Equipments in Maintenance Data System (MDS) factor order. The listing indicates the comparative burden of each equipment in terms of reported Forces Afloat maintenance. The appendix also lists each equipment's CASREP and overhaul burden and its rank within each of these categories.

3.3 IMPACT OF MAINTENANCE-CRITICAL EQUIPMENTS ON CLASS MAINTENANCE BURDEN

The DDG-2 Class Maintenance-Critical Equipments identified by this analysis represent a sizable portion of the reported total maintenance burden of this class. The 183 Maintenance-Critical Equipments account for 71 percent of all the CASREPs reported by the class, 79 percent of the Ship's Force parts dollars, 72 percent of the Ship's Force corrective maintenance man-hours, 64 percent of the IMA corrective maintenance man-hours, and 62 percent of the corrective maintenance labor actions. Although depot data were not available for determining the percentage of total overhaul man-hours and material costs experienced historically by the Maintenance-Critical Equipments, it is apparent the identified equipments are collectively a considerable contributor to past DDG-2 Class overhaul work packages.

CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

The analysis presented in this report resulted in the identification of 183 equipments of the DDG-2 Class that have been significant contributors to the maintenance burden of ships of the class. These equipments have been the cause for the expenditure of a sizable portion of the Ship's Force corrective maintenance resources, as reported in the MDS. The equipments have also been the source of 71 percent of the CASREPs reported by the class. The significant contributors, insofar as Forces Afloat maintenance and CASREP activity are concerned, are the Main Propulsion Boilers and the AN/SPG-51 Radar.

This study provides the initial guidance for beginning the in-depth analysis required in the DDEOC Program. Use of the study results will direct analytical efforts to areas where significant advances can be realized in developing engineering maintenance strategies for equipments that historically have been the sources of maintenance problems. However, the impact of the DDG-2 modernization program on the future status of these equipments should be determined prior to in-depth analyses. The findings will affect the nature of the engineering analyses to be conducted in the DDEOC Program.

Because of the high maintenance burden associated with the AN/SPG-51 Radar, it is recommended that a preliminary review and analysis should be conducted for identifying potential problems that may require long-term development fixes. Analysis of the 1200 PSI Propulsion Boilers should be undertaken only after consultation with PMS-301, which has conducted numerous studies of these equipments.

APPENDIX A

SOURCE OF IDENTIFICATION OF DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENTS

	SOURCE OF IDENTIFICATION DDG-2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST						
SWBS	Equipment/Component Nomenclature	Met or Exceeded MDS Indicator Thresholds				Four or More CASREPs	ROH Repair Profile Items
		Indicator					
		Part $	SF Mhrs	IMA Mhrs	Labor Txns		
221	Main Boilers	X	X	X	X	X	X
221	Burners and Registers	X					X
221	Soot Blowers						X
221	ACC/FWC System						X
221	Boiler Safety Valve						X
231	HP/LP Turbine		X	X	X	X	
241	Line Shaft Bearing Assy.		X				
245	Propeller Assy.	X				X	
251	Forced Draft Blower	X	X	X	X	X	X
253	Boiler Main Steam Stop Valve					X	
253	Main Engine Guarding Valve			X			
253	Main Steam 5" (1200 psi) Gate Valve		X	X	X	X	
253	Main Steam 2.5" (1200 psi) Gate Valve			X			
254	Main Condenser		X	X	X		X
254	Auxiliary Condenser			X			
254	Propulsion Gland Exhauster					X	
254	Auxiliary Gland Exhauster			X		X	X
255	Main Feed Pump	X	X	X	X	X	X
255	Main Condensate Pump	X	X	X	X	X	X
255	Main Feed Booster Pump	X	X	X	X	X	X
255	Auxiliary Condensate Pump	X					X
255	Deaerating Feed Tank		X	X	X	X	
256	Main Circulating Pump		X		X	X	X
256	Auxiliary Circulating Pump		X	X	X		X
261	Fuel Oil Service Pump	X	X	X	X	X	X
261	Fuel Oil Duplex Strainer		X			X	X
261	Port Fuel Oil Service Pump					X	
262	Main Lube Oil Standby Pump	X	X	X	X	X	X
262	Lube Oil Purifier	X	X		X	X	X
262	Lube Oil Duplex Strainer			X			
311	Ship Service Turbine Generator	X	X	X	X	X	
312	Emergency Diesel Generator		X	X	X	X	
314	60 kW 400 Hz MG Set			X		X	X
314	30 kW 400 Hz MG Set		X			X	
324	IC Switchboard				X		
324	Ship Service Switchboard				X		
342	Emergency Diesel SW Booster Pump			X			
415	AN/USC-30( ) Data Comm. System					X	
421	Navigation Chronometer			X	X		
421	Binoculars			X	X		
423	AN/SRN-6( ) TACAN	X			X	X	X
423	AN/URN-20( ) TACAN	X	X			X	
423	AN/URD-4( ) Radio Direction Finder	X	X			X	X
424	AN/UQN-1( ) Fathometer					X	X
426	Mk 19 Gyro Compass	X	X	X	X	X	X
426	Underwater Log	X		X		X	X

(continued)

APPENDIX A (continued)

SWBS	Equipment/Component Nomenclature	Met or Exceeded MDS Indicator Thresholds				Four or More CASREPs	ROH Repair Profile Items
		Indicator					
		Part $	SF Mhrs	IMA Mhrs	Labor Txns		
426	NC-2 Plotter	X				X	X
426	DRT						X
426	DRAI					X	
432	Dial Telephone Switchboard	X	X	X	X	X	X
432	Telephone Set (Type F)				X		
434	16 mm Sound Movie Projector			X	X		
437	*Salinity Indicating Ckt.*	X					X
437	Wind Speed and Direction Transmitter					X	X
439	AN/UNQ-7( ) Recorder Reproducer					X	
441	AM-3007( )/URT RF Amplifier					X	
441	AM-3924( )/URT RF Amplifier					X	
441	AN/PRC-41( ) Transceiver	X					
441	AN/SRA-17( ) Antenna Group						X
441	AN/SRA-22( ) Antenna Coupler	X					
441	AN/SRA-33( ) Antenna Coupler					X	X
441	AN/SRC-20( ) Transceiver	X	X		X	X	X
441	AN/SRC-21( ) Transceiver	X	X		X	X	X
441	AN/SRR-19( ) Radio Receiver						X
441	AN/URA-38( ) Antenna Coupler Group					X	
441	AN/URC-9( ) Transceiver	X	X		X	X	X
441	AN/URC-32( ) Transceiver	X			X	X	
441	AN/URC-80(V) Transceiver					X	
441	AN/URQ-10( ) Frequency Standard					X	
441	AN/URR-27( ) Receiver						X
441	AN/URT-7( ) Transmitter					X	X
441	AN/URT-23(V) Transmitter	X				X	
441	AN/WRR-3( ) Receiver						X
441	AN/WRT-2( ) Transmitter	X	X	X	X	X	
441	CU-937/UR Tuner					X	
441	*R-390( )/URR Receiver*			X	X		X
441	R-1051( )/URR Receiver	X			X	X	X
445	AN/UGC-25( ) TTY			X	X		
445	AN/URA-17( ) Converter-Comparator		X				
446	KWR-37/TSEC					X	
446	TSEC/KY-8					X	
450	AN/SPA-4( ) Indicator	X	X	X	X		
450	AN/SPA-25( ) Indicator Group	X		X		X	X
450	AN/SPA-33( ) Indicator	X	X		X		
450	AN/SPA-34( ) Indicator Group	X	X		X		
450	AN/SPA-41( ) Indicator Group	X				X	
450	AN/SPA-66( ) Radar Indicator					X	
450	AN/SPA-74( ) Indicator Group	X				X	
451	AN/SPS-10( ) Surface Search Radar	X	X		X	X	X
451	AS-936( )/SPS-10( ) Antenna						X
452	AN/SPS-29( ) 2D Air Search Radar	X	X		X	X	
452	AN/SPS-37( ) 2D Air Search Radar	X	X		X	X	

(continued)

APPENDIX A - (continued)

SWBS	Equipment/Component Nomenclature	Met or Exceeded MDS Indicator Thresholds				Four or More CASREPs	ROH Repair Profile Items
		Indicator					
		Part $	SF Mhrs	IMA Mhrs	Labor Txns		
452	AN/SPS-40( ) 2D Air Search Radar	X				X	
453	AN/SPS-39( ) 3D Air Search Radar	X	X		X	X	X
453	AN/SPA-72( ) Antenna Group	X	X			X	
455	AN/UPA-24( ) Decoder		X				
455	AN/UPX-1( ) Radar Recognition Set					X	
455	AN/UPX-11( ) Interrogator Set		X				
455	AN/UPX-23( ) Interrogator Set					X	
455	RT-859( )/APX-72 Transceiver					X	
463	AN/SQS-23( ) Sonar Set	X	X	X	X	X	
463	AN/SQQ-23( ) Sonar Set	X				X	
463	PU-485( )/SQ MG Set	X					
471	AN/SLD-1( ) Direction Finder Set					X	
471	AN/SLA-12( ) Antenna Group					X	
471	AN/ULQ-6( ) Countermeasures Set	X	X		X	X	X
472	AN/SLA-10( ) Video Blanker						X
472	AN/WLA-3( ) Amplifier Group	X				X	X
472	AN/WLR-1( ) ECM Receiving Set	X				X	X
472	AS-571( )/SLR DF Antenna						X
472	AS-616( )/SLR DF Antenna						X
472	AS-899( )/SLR DF Antenna					X	X
473	T-Mk 6 Fanfare Winch	X					
475	Degaussing Power Supply					X	
475	Degaussing Coil MG Set					X	
475	Degaussing Switchboard					X	
481	AN/SPG-53( ) Radar Set	X	X		X	X	X
481	Mk 68 Gun Director	X	X	X	X	X	X
481	Mk 75 Rangefinder					X	
481	Mk 16 Stable Element	X	X		X	X	X
481	Mk 2 Mod 3 Director Drive	X	X		X	X	
481	Mk 47 Computer	X	X		X	X	X
482	AN/SPG-51( ) Radar Set	X	X	X	X	X	X
482	Mk 73 Tartar Missile Director	X	X		X	X	X
482	Mk 152 Digital Computer	X	X		X	X	
482	Mk 72 Signal Data Converter	X	X		X	X	
482	Weapons Direction Equipment	X	X		X	X	X
482	Mk 24 Target Designation Transmitter	X	X	X	X		
482	AN/SPM-15( ) Test Set	X					
482	Mk 5 Low Light Level TV	X				X	
482	Mk 474 Test Set	X				X	X
483	Mk 38 Attack Console	X	X		X	X	
483	Mk 53 Attack Console	X	X		X	X	
483	Mk 78 Position Indicator					X	
483	Mk 43 FCS Relay Transmitter	X				X	
489	Mk 14 FC Switchboard						X
491	AN/PSM-4( ) Multimeter				X		
491	AN/USM-115( ) Range Calibration Set				X		

(continued)

SWBS	Equipment/Component Nomenclature	Met or Exceeded MDS Indicator Threshold				Four or More CASREPs	ROH Repair Profile Items
		Indicator					
		Part $	SF Mhrs	IMA Mhrs	Labor Txns		
491	AN/USM-117( ) Oscilloscope			X	X		
491	AN/USM-207( ) Digital Counter				X		
491	AN/USM-281( ) Oscilloscope			X	X		
491	CCUH-803-B( ) Voltmeter				X		
512	2-Speed Ventilation Fan			X		X	
514	A/C Plant		X	X	X	X	X
514	A/C Chilled Water Pump						X
514	A/C SW Circ. Pump		X	X			X
516	Refrigeration Plant		X	X	X		X
521	Fire Pump	X	X	X	X	X	X
524	Auxiliary Machinery Cooling Pump		X	X	X	X	X
529	F.O. and Bilge Stripping Pump		X	X		X	X
531	Distilling Plant		X	X	X		X
531	Distiller Feed Pump		X	X	X		X
531	Distillate Pump						X
531	Salt Water Heater Drain Pump						X
531	Overboard Brine Pump						X
533	Fresh Water Priming Pump						X
533	Fresh Water Pump						X
534	Fresh Water Drain Pump		X	X	X		
534	1500-600 psi Steam Reducing Valve		X	X	X	X	
534	600-150 psi Steam Reducing Valve			X	X		
534	1200-12 psi Augmenting Steam Valve		X				
534	Aux. Steam 3" (1200 psi) Gate Valve			X		X	
534	Aux. Steam 2" (1200 psi) Gate Valve			X			
534	Aux. Steam 1.5" (1200 psi) Gate Valve			X			
536	Radar/Sonar Cooling Water Pump			X			
551	HP Air Compressor	X	X	X	X	X	X
551	HP Air Flasks						X
551	LP Air Compressor	X	X	X	X	X	
551	LP Air Dehydrator					X	
561	Steering Gear		X	X	X	X	
581	Anchor Windlass						X
583	Boat Davit					X	
583	Personnel Boat		X	X		X	X
583	Motor Whaleboat					X	
655	Laundry Dryer					X	
711	Mk 42 5"/54 Cal Gun Mount	X	X	X	X	X	
721	Mk 11 GM Launcher	X	X	X	X	X	
721	Mk 13 GM Launcher	X	X	X	X	X	
721	Mk 3 Signal Comparator	X				X	X
721	Mk 7 Carriage (ASROC)		X		X	X	X
721	Mk 7 Guide (ASROC)	X	X	X	X	X	X
722	ASROC Loader Crane					X	X
751	Mk 32 Torpedo Tube	X	X	X	X	X	X

APPENDIX B

DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENT LIST
MAINTENANCE BURDEN FACTOR (MBF) ORDER

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN FACTOR ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
MAIN BOILERS	221	1	18.398	416	100.00
AN/SPG-51( ) RADAR SET	482	2	22.084	250	93.33
MAIN FEED PUMP	255	3	5.393	168	93.33
FORCED DRAFT BLOWER	251	4	3.586	117	100.00
MAIN FEED BOOSTER PUMP	255	5	3.019	66	100.00
MK 19 GYRO COMPASS	426	5	2.955	100	93.33
FIRE PUMP	521	7	4.263	133	86.67
MK 73 TARTAR MISSILE DIRECTOR	482	8	3.000	58	93.33
AN/SPG-53( ) RADAR SET	481	9	3.666	77	80.00
AN/SPS-39( ) 3D AIR SEARCH RADAR	453	10	6.145	117	73.33
MK 42 5 /54 CAL GUN MOUNT	711	11	7.139	116	66.67
MAIN CONDENSATE PUMP	255	12	1.683	38	93.33
MK 47 COMPUTER	481	12	1.965	37	93.33
AN/URD-4( ) RADIO DIRECTION FINDER	423	14	.936	57	86.67
AN/SRC-20( ) TRANSCEIVER	441	15	1.934	36	80.00
FUEL OIL SERVICE PUMP	261	16	2.149	65	66.67
HP AIR COMPRESSOR	551	17	1.053	38	80.00
AN/SPS-10( ) SURFACE SEARCH RADAR	451	18	1.009	38	80.00
A/C PLANT	514	19	2.688	32	73.33
R-1051( )/URR RECEIVER	441	20	2.172	32	73.33
AN/SQS-23( ) SONAR SET	463	21	3.106	39	60.00
AN/SLQ-6( ) COUNTERMEASURES SET	471	22	1.622	74	60.00
HP/LP TURBINE	231	23	2.293	46	60.00
MK 11 GM LAUNCHER	721	24	4.392	99	46.67
MAIN STEAM 5"(1200 PSI) GATE VALVE	253	25	.704	38	80.00
DISTILLING PLANT	531	26	1.784	11	93.33
MK 152 DIGITAL COMPUTER	482	27	1.355	47	60.00
WEAPONS DIRECTION EQUIPMENT	482	28	3.007	47	53.33
SHIP SERVICE TURBINE GENERATOR	311	29	2.732	109	46.67
MK 16 STABLE ELEMENT	481	30	.512	32	93.33
PERSONNEL BOAT	583	31	1.577	20	66.67
MAIN LUBE OIL STANDBY PUMP	262	32	1.224	27	66.67
MK 13 GM LAUNCHER	721	33	2.787	48	46.67
MK 32 TORPEDO TUBE	751	34	1.922	11	80.00
UNDERWATER LOG	426	35	.455	35	93.33
AN/SPA-25( ) INDICATOR GROUP	450	36	.841	20	73.33
LP AIR COMPRESSOR	551	36	2.135	76	40.00
DIAL TELEPHONE SWITCHBOARD	432	38	1.305	6	93.33
ACC/FAC SYSTEM	221	39	1.273	29	60.00
AN/SRN-6( ) TACAN	423	40	.703	48	60.00

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN FACTOR ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
MK 68 GUN DIRECTOR	481	40	1.134	11	80.00
MK 7 GUIDE (ASROC)	721	40	.887	18	73.33
BOILER SAFETY VALVE	221	43	.720	16	80.00
AN/SRC-21( ) TRANSCEIVER	441	44	.647	19	80.00
STEERING GEAR	561	45	.816	10	86.67
AN/SPS-40( ) 2D AIR SEARCH RADAR	452	46	2.629	79	20.00
EMERGENCY DIESEL GENERATOR	312	47	1.240	36	46.67
MK 38 ATTACK CONSOLE	483	48	1.492	37	40.00
AN/URC-9( ) TRANSCEIVER	441	49	1.236	28	53.33
LUBE OIL PURIFIER	262	50	.480	35	66.67
MAIN CIRCULATING PUMP	256	51	.726	14	66.67
AN/SPS-29( ) 2D AIR SEARCH RADAR	452	52	.975	39	33.33
MK 72 SIGNAL DATA CONVERTER	482	52	3.680	69	.00
AUXILIARY MACHINERY COOLING PUMP	524	52	.970	25	53.33
MOTOR WHALEBOAT	583	52	.509	19	73.33
MK 7 CARRIAGE (ASROC)	721	52	.657	14	73.33
REFRIGERATION PLANT	516	57	.740	6	80.00
LP AIR DEHYDRATOR	551	58	.228	20	100.00
BOAT DAVIT	583	59	.711	29	53.33
30KW 400HZ MG SET	314	60	.523	47	46.67
60KW 400HZ MG SET	314	61	.477	27	60.00
NC-2 PLOTTER	426	61	.685	26	53.33
AN/ALR-1( ) ECM RECEIVING SET	472	63	.292	47	60.00
AUXILIARY GLAND EXHAUSTER	254	64	.519	31	53.33
AN/URT-23(V) TRANSMITTER	441	65	.832	46	13.33
SALINITY INDICATING CKT	437	66	.929	4	66.67
WIND SPEED AND DIRECTION TRANSMITTER	437	67	.375	15	66.67
AUXILIARY CIRCULATING PUMP	256	68	.814	6	60.00
AN/UQN-1( ) FATHOMETER	424	69	.338	15	66.67
2-SPEED VENTILATION FAN	512	70	.813	21	26.67
MK 3 SIGNAL COMPARATOR	721	71	.400	16	60.00
SOOT BLOWERS	221	72	.456	2	93.33
FRESH WATER DRAIN PUMP	534	72	.637	8	60.00
MK 24 TARGET DESIGNATION TRANSMITTER	482	74	1.286	2	60.00
MK 53 ATTACK CONSOLE	483	75	.629	13	53.33
BOILER MAIN STEAM STOP VALVE	253	76	.185	10	93.33
AN/SLA-12( ) ANTENNA GROUP	471	77	.312	35	53.33
MK 474 TEST SET	482	77	.224	19	66.67
IC SWITCHBOARD	324	79	.459	3	86.67
ASROC LOADER CRANE	722	79	.265	9	80.00

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN FACTOR ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
MAIN CONDENSER	254	81	.688	2	66.67
AN/SPA-41( ) INDICATOR GROUP	450	81	.558	14	46.67
DISTILLER FEED PUMP	531	83	.552	2	73.33
AN/URT-2( ) TRANSMITTER	441	84	1.338	13	13.33
FUEL OIL AND BILGE STRIPPING PUMP	529	85	.349	8	66.67
AN/SPS-37( ) 2D AIR SEARCH RADAR	452	86	.710	25	13.33
MAIN STEAM 2.5"(1200PSI) GATE VALVE	253	87	.351	4	80.00
AN/URC-32( ) TRANSCEIVER	441	87	.878	12	26.67
MK 2 MOD 3 DIRECTOR DRIVE	481	89	.491	19	33.33
AN/SLA-10( ) VIDEO BLANKER	472	90	.108	8	93.33
AS-899( )/SLR DF ANTENNA	472	91	.199	7	86.67
FRESH WATER PRIMING PUMP	533	91	.476	4	66.67
AN/URN-20( ) TACAN	423	93	.648	15	26.67
AUXILIARY CONDENSATE PUMP	255	94	.627	6	53.33
BURNERS AND REGISTERS	221	95	.611	1	66.67
AN/UGC-25( ) TTY	445	95	.750	1	60.00
PORT FUEL OIL SERVICE PUMP	261	97	.362	20	33.33
AN/SPA-72( ) ANTENNA GROUP	453	98	.762	9	26.67
FUEL OIL DUPLEX STRAINER	261	99	.383	11	53.33
DEGAUSSING SWITCHBOARD	475	100	.350	19	33.33
AN/SRA-33( ) ANTENNA COUPLER	441	101	.130	18	60.00
AUX STEAM 3"(1200PSI) GATE VALVE	534	102	.499	14	26.67
AN/UNQ-7( ) RECORDER REPRODUCER	439	103	.229	10	60.00
OVERBOARD BRINE PUMP	531	103	.227	3	80.00
DEAERATING FEED TANK	255	105	.800	8	13.33
DRAI	426	105	.213	11	60.00
AN/UPX-23( ) INTERROGATOR SET	455	107	.179	30	40.00
AN/SQQ-23( ) SONAR SET	463	107	.343	44	.00
AN/WLA-3( ) AMPLIFIER GROUP	472	107	.161	13	60.00
R-390( )/URR RECEIVER	441	110	.372	1	66.67
AN/SPA-74( ) RADAR INDICATOR	450	111	.401	14	26.67
DRT	426	112	.134	4	80.00
A/C CHILLED WATER PUMP	514	113	.427	5	53.33
1200-600 PSI STEAM REDUCING VALVE	534	114	.443	9	33.33
PROPELLOR ASSY	245	115	.474	12	20.00
AN/SRR-19( ) RADIO RECEIVER	441	116	.212	4	66.67
AS-571( )/SLR DF ANTENNA	472	117	.090	3	86.67
AS-616( )/SLR DF ANTENNA	472	118	.097	1	93.33
600-150 PSI STEAM REDUCING VALVE	534	119	.700	2	33.33
AN/URT-7( ) TRANSMITTER	441	120	.142	5	66.67

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN FACTOR ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MBS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
AN/SPA-4( ) INDICATOR	450	121	.675	2	33.33
FRESH WATER PUMP	533	122	.260	1	66.67
SHIP SERVICE SWITCHBOARD	324	123	.618	6	13.33
AN/SPA-34( ) INDICATOR GROUP	450	124	.694	5	13.33
A/C Sw CIRC PUMP	514	125	.268	2	60.00
DEGAUSSING POWER SUPPLY	475	126	.150	15	40.00
EMERGENCY DIESEL Sw BOOSTER PUMP	342	127	.362	5	40.00
AN/SPA-33( ) INDICATOR	450	128	.728	2	20.00
AN/WRR-3( ) RECEIVER	441	129	.172	1	73.33
KWR-37/TSEC	446	130	.230	13	26.67
ANCHOR WINDLASS	581	130	.229	2	60.00
TELEPHONE SET (TYPE F)	432	132	.466	1	46.67
DISTILLATE PUMP	531	133	.181	1	66.67
AUX STEAM 2"(1200PSI) GATE VALVE	534	134	.420	5	26.67
TSEC/KY-8	446	135	.280	6	33.33
PROPULSION GLAND EXHAUSTER	254	136	.222	8	33.33
MK 5 LOW LIGHT LEVEL TV	482	137	.222	15	13.33
LINE SHAFT BEARING ASSY	241	138	.465	6	6.67
16MM SOUND MOVIE PROJECTOR	434	139	.951	0	6.67
AN/URR-27( ) RECEIVER	441	140	.119	3	60.00
AN/SPA-66( ) RADAR INDICATOR	450	140	.129	19	13.33
MK 78 POSITION INDICATOR	483	142	.058	9	40.00
T-MK 6 FAIRLEAD WINCH	473	143	.338	3	20.67
DEGAUSSING COIL MG SET	475	143	.103	7	40.00
MK 43 FCS RELAY TRANSMITTER	483	143	.199	7	26.67
HP AIR FLASKS	551	146	.000	0	73.33
AN/USH-117( ) OSCILLOSCOPE	491	147	.790	0	.00
AM-3924( )/URT RF AMPLIFIER	441	148	.088	26	.00
AM-3007( )/URT RF AMPLIFIER	441	149	.106	20	.00
AN/URA-38( ) ANTENNA COUPLER GROUP	441	149	.085	17	13.33
1200-12 PSI AUGMENTING STEAM VALVE	534	151	.221	4	33.33
MK 14 FC SWITCHBOARD	489	152	.015	0	66.67
AS-930( )/SPS-10( ) ANTENNA	451	153	.000	0	66.67
LUBE OIL DUPLEX STRAINER	262	154	.277	0	46.67
AN/USC-30( ) DATA COMM SYSTEM	415	154	.012	26	.00
MAIN ENGINE GUARDING VALVE	253	156	.243	5	20.00
AUXILIARY CONDENSER	254	156	.319	3	20.00
AN/UPX-1( ) RADAR RECOGNITION SET	455	158	.192	12	.00
SALT WATER HEATER DRAIN PUMP	531	159	.092	0	60.00
AM/UPA-17( ) CONVERTER-COMPARATOR	445	160	.316	0	33.33

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN FACTOR ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
NAVIGATION CHRONOMETER	421	161	.550	0	6.67
LAUNDRY DRYER	655	161	.036	6	33.33
AN/SPM-15( ) TEST SET	482	163	.301	0	33.33
AN/USM-207( ) DIGITAL COUNTER	491	164	.500	1	.00
AN/PSM-4( ) MULTIMETER	491	165	.531	0	.00
AN/USM-281( ) OSCILLOSCOPE	491	166	.517	0	.00
AN/PRC-41( ) TRANSCEIVER	441	167	.258	1	26.67
AN/SRA-17( ) ANTENNA GROUP	441	167	.121	0	53.33
MK 75 RANGEFINDER	481	169	.123	6	13.33
AUX STEAM 1.5"(1200PSI) GATE VALVE	534	170	.174	4	20.00
PU-465( )/SQ MG SET	463	171	.328	2	.00
AN/UPX-11( ) INTERROGATOR SET	455	172	.327	2	.00
RADAR/SONAR COOLING WATER PUMP	536	173	.298	1	6.67
CU-937/UP TUNER	441	174	.077	7	6.67
CCUM-803-B( ) VOLTMETER	491	175	.369	0	.00
AN/URQ-10( ) FREQUENCY STANDARD	441	176	.049	5	13.33
AN/SLQ-1( ) DIRECTION FINDER SET	471	177	.033	6	6.67
AN/USM-115( ) RANGE CALIBRATION SET	491	177	.342	0	.00
AN/URC-80(V) TRANSCEIVER	441	179	.006	6	6.67
RT-859( )/APX-72 TRANSCEIVER	455	179	.022	7	.00
AN/SRA-22( ) ANTENNA COUPLER	441	181	.260	0	6.67
BINOCULARS	421	182	.284	0	.00
AN/UPA-24( ) DECODER	455	183	.186	0	.00

APPENDIX C

DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENT LIST
SWBS ORDER

APPENDIX C

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

SHIPS WORK BREAKDOWN STRUCTURE ORDER

EQUIPMENT NOMENCLATURE	SWBS	MEF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
MAIN BOILERS	221	1	18.398	416	100.00
BURNERS AND REGISTERS	221	95	.611	1	66.67
SOOT BLOWERS	221	72	.456	2	93.33
ACC/FWC SYSTEM	221	39	1.273	29	60.00
BOILER SAFETY VALVE	221	43	.720	16	80.00
HP/LP TURBINE	231	23	2.293	46	60.00
LINE SHAFT BEARING ASSY	241	138	.465	6	6.67
PROPELLOR ASSY	245	115	.474	12	20.00
FORCED DRAFT BLOWER	251	4	3.586	117	100.00
BOILER MAIN STEAM STOP VALVE	253	76	.185	10	93.33
MAIN ENGINE GUARDING VALVE	253	156	.243	5	20.00
MAIN STEAM 5"(1200 PSI) GATE VALVE	253	25	.704	38	80.00
MAIN STEAM 2.5"(1200PSI) GATE VALVE	253	87	.351	4	80.00
MAIN CONDENSER	254	81	.688	2	66.67
AUXILIARY CONDENSER	254	156	.319	3	20.00
PROPULSION GLAND EXHAUSTER	254	136	.222	8	33.33
AUXILIARY GLAND EXHAUSTER	254	64	.519	31	53.33
MAIN FEED PUMP	255	3	5.393	168	93.33
MAIN CONDENSATE PUMP	255	12	1.683	38	93.33
MAIN FEED BOOSTER PUMP	255	5	3.019	66	100.00
AUXILIARY CONDENSATE PUMP	255	94	.627	6	53.33
DEAERATING FEED TANK	255	105	.800	8	13.33
MAIN CIRCULATING PUMP	256	51	.726	14	66.67
AUXILIARY CIRCULATING PUMP	256	68	.814	6	60.00
FUEL OIL SERVICE PUMP	261	16	2.149	65	66.67
FUEL OIL DUPLEX STRAINER	261	99	.383	11	53.33
PORT FUEL OIL SERVICE PUMP	261	97	.362	20	33.33
MAIN LUBE OIL STANDBY PUMP	262	32	1.224	27	66.67
LUBE OIL PURIFIER	262	50	.480	35	66.67
LUBE OIL DUPLEX STRAINER	262	154	.277	0	46.67
SHIP SERVICE TURBINE GENERATOR	311	29	2.732	109	46.67
EMERGENCY DIESEL GENERATOR	312	47	1.240	36	46.67
60KW 400HZ MG SET	314	61	.477	27	60.00
30KW 400HZ MG SET	314	60	.523	47	46.67
IC SWITCHBOARD	324	79	.459	3	86.67
SHIP SERVICE SWITCHBOARD	324	123	.618	6	13.33
EMERGENCY DIESEL SW BOOSTER PUMP	342	127	.362	5	40.00
AN/USC-38( ) DATA COMM SYSTEM	415	154	.012	26	.00
NAVIGATION CHRONOMETER	421	161	.550	0	6.67
BINOCULARS	421	182	.284	0	.00

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

SHIPS WORK BREAKDOWN STRUCTURE ORDER

EQUIPMENT NOMENCLATURE	SWBS	MEF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
AN/SRN-6( ) TACAN	423	40	.703	48	60.00
AN/URN-20( ) TACAN	423	93	.648	15	26.67
AN/URD-4( ) RADIO DIRECTION FINDER	423	14	.936	57	86.67
AN/UQN-1( ) FATHOMETER	424	69	.338	15	66.67
MK 19 GYRO COMPASS	426	5	2.955	100	93.33
UNDERWATER LOG	426	35	.455	35	93.33
VC-2 PLOTTER	426	61	.685	26	53.33
ORT	426	112	.134	4	80.00
ORAI	426	105	.213	11	60.00
DIAL TELEPHONE SWITCHBOARD	432	38	1.305	6	93.33
TELEPHONE SET (TYPE F)	432	132	.466	1	46.67
16MM SOUND MOVIE PROJECTOR	434	139	.951	0	6.67
SALINITY INDICATING CRT	437	66	.929	4	66.67
WIND SPEED AND DIRECTION TRANSMITTER	437	67	.375	15	66.67
AN/UNQ-7( ) RECORDER REPRODUCER	439	103	.229	10	60.00
AM-3007( )/URT RF AMPLIFIER	441	149	.106	20	.00
AM-3924( )/URT RF AMPLIFIER	441	148	.088	26	.00
AN/PRC-41( ) TRANSCEIVER	441	167	.258	1	26.67
AN/SRA-17( ) ANTENNA GROUP	441	167	.121	0	53.33
AN/SRA-22( ) ANTENNA COUPLER	441	181	.260	0	6.67
AN/SRA-33( ) ANTENNA COUPLER	441	101	.130	18	60.00
AN/SRC-20( ) TRANSCEIVER	441	15	1.934	36	80.00
AN/SRC-21( ) TRANSCEIVER	441	44	.647	19	80.00
AN/SRR-19( ) RADIO RECEIVER	441	116	.212	4	66.67
AN/URA-38( ) ANTENNA COUPLER GROUP	441	149	.085	17	13.33
AN/URC-9( ) TRANSCEIVER	441	49	1.236	28	53.33
AN/URC-32( ) TRANSCEIVER	441	87	.878	12	26.67
AN/URC-80(V) TRANSCEIVER	441	179	.006	6	6.67
AN/URQ-10( ) FREQUENCY STANDARD	441	176	.049	5	13.33
AN/URR-27( ) RECEIVER	441	140	.119	3	60.00
AN/URT-7( ) TRANSMITTER	441	120	.142	5	66.67
AN/URT-23(V) TRANSMITTER	441	65	.832	46	13.33
AN/WRR-3( ) RECEIVER	441	129	.172	1	73.33
AN/WRT-2( ) TRANSMITTER	441	84	1.338	13	13.33
CU-937/UR TUNER	441	174	.077	7	6.67
R-390( )/URR RECEIVER	441	110	.372	1	66.67
R-1051( )/URR RECEIVER	441	20	2.172	32	73.33
AN/UGC-25( ) TTY	445	95	.750	1	60.00
AN/URA-17( ) CONVERTER-COMPARATOR	445	160	.316	0	33.33
CAM-37/TSEC	446	130	.230	13	26.67

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

SHIPS WORK BREAKDOWN STRUCTURE ORDER

EQUIPMENT NOMENCLATURE	SWBS	16F RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
TSEC/KY-8	446	135	.280	6	33.33
AN/SPA-4( ) INDICATOR	450	121	.675	2	33.33
AN/SPA-25( ) INDICATOR GROUP	450	36	.841	20	73.33
AN/SPA-33( ) INDICATOR	450	128	.728	2	20.00
AN/SPA-34( ) INDICATOR GROUP	450	124	.694	5	13.33
AN/SPA-41( ) INDICATOR GROUP	450	81	.558	14	46.67
AN/SPA-66( ) RADAR INDICATOR	450	140	.129	19	13.33
AN/SPA-74( ) RADAR INDICATOR	450	111	.401	14	26.67
AN/SPS-10( ) SURFACE SEARCH RADAR	451	18	1.009	38	80.00
AS-936( )/SPS-10( ) ANTENNA	451	153	.000	0	66.67
AN/SPS-29( ) 2D AIR SEARCH RADAR	452	52	.975	39	33.33
AN/SPS-37( ) 2D AIR SEARCH RADAR	452	86	.710	25	13.33
AN/SPS-40( ) 2D AIR SEARCH RADAR	452	46	2.629	79	20.00
AN/SPS-39( ) 3D AIR SEARCH RADAR	453	10	6.145	117	73.33
AN/SPA-72( ) ANTENNA GROUP	453	98	.762	9	26.67
AN/UPA-24( ) DECODER	455	183	.186	0	.00
AN/UPX-1( ) RADAR RECOGNITION SET	455	158	.192	12	.00
AN/UPX-11( ) INTERROGATOR SET	455	172	.327	2	.00
AN/UPX-23( ) INTERROGATOR SET	455	107	.179	30	40.00
RT-859( )/APX-72 TRANSCEIVER	455	179	.022	7	.00
AN/SQS-23( ) SONAR SET	463	21	3.106	39	60.00
AN/SQQ-23( ) SONAR SET	463	107	.343	44	.00
PU-485( )/SQ MG SET	463	171	.328	2	.00
AN/SLQ-1( ) DIRECTION FINDER SET	471	177	.033	6	6.67
AN/SLA-12( ) ANTENNA GROUP	471	77	.312	35	53.33
AN/ULQ-6( ) COUNTERMEASURES SET	471	22	1.622	74	60.00
AN/SLA-10( ) VIDEO BLANKER	472	90	.108	8	93.33
AN/WLA-3( ) AMPLIFIER GROUP	472	107	.161	13	60.00
AN/WLR-1( ) ECM RECEIVING SET	472	63	.292	47	60.00
AS-571( )/SLR DF ANTENNA	472	117	.090	3	86.67
AS-616( )/SLR DF ANTENNA	472	118	.097	1	93.33
AS-899( )/SLR DF ANTENNA	472	91	.199	7	86.67
T-MK 6 FANFARE 8INCH	473	143	.338	3	26.67
DEGAUSSING POWER SUPPLY	475	126	.150	15	40.00
DEGAUSSING COIL MG SET	475	143	.103	7	40.00
DEGAUSSING SWITCHBOARD	475	100	.350	19	33.33
AN/SPG-53( ) RADAR SET	481	9	3.666	77	80.00
MK 68 GUN DIRECTOR	481	40	1.134	11	80.00
MK 75 RANGEFINDER	481	169	.123	6	13.33
MK 16 STABLE ELEMENT	481	30	.512	32	93.33

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

SHIPS WORK BREAKDOWN STRUCTURE ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
MK 2 MOD 3 DIRECTOR DRIVE	481	89	.491	19	33.33
MK 47 COMPUTER	481	12	1.965	37	93.33
AN/SPG-51( ) RADAR SET	482	2	22.084	250	93.33
MK 73 TARTAR MISSILE DIRECTOR	482	8	3.000	58	93.33
MK 152 DIGITAL COMPUTER	482	27	1.355	47	60.00
MK 72 SIGNAL DATA CONVERTER	482	52	3.680	69	.00
WEAPONS DIRECTION EQUIPMENT	482	28	3.007	47	53.33
MK 24 TARGET DESIGNATION TRANSMITTER	482	74	1.286	2	60.00
AN/SPM-15( ) TEST SET	482	163	.301	0	33.33
MK 5 LOW LIGHT LEVEL TV	482	137	.222	15	13.33
MK 474 TEST SET	482	77	.224	19	66.67
MK 38 ATTACK CONSOLE	483	48	1.492	37	40.00
MK 53 ATTACK CONSOLE	483	75	.629	13	53.33
MK 78 POSITION INDICATOR	483	142	.058	9	40.00
MK 43 FCS RELAY TRANSMITTER	483	143	.199	7	26.67
MK 14 FC SWITCHBOARD	489	152	.015	0	66.67
AN/PSM-4( ) MULTIMETER	491	165	.531	0	.00
AN/USM-115( ) RANGE CALIBRATION SET	491	177	.342	0	.00
AN/USM-117( ) OSCILLOSCOPE	491	147	.790	0	.00
AN/USM-207( ) DIGITAL COUNTER	491	164	.500	1	.00
AN/USM-281( ) OSCILLOSCOPE	491	166	.517	0	.00
CCUM-803-8( ) VOLTMETER	491	175	.369	0	.00
2-SPEED VENTILATION FAN	512	70	.813	21	26.67
A/C PLANT	514	19	2.688	32	73.33
A/C CHILLED WATER PUMP	514	113	.427	5	53.33
A/C SW CIRC PUMP	514	125	.288	2	60.00
REFRIGERATION PLANT	516	57	.740	6	80.00
FIRE PUMP	521	7	4.263	133	86.67
AUXILIARY MACHINERY COOLING PUMP	524	52	.970	25	53.33
FUEL OIL AND BILGE STRIPPING PUMP	529	85	.349	8	66.67
DISTILLING PLANT	531	26	1.784	11	93.33
DISTILLER FEED PUMP	531	83	.552	2	73.33
DISTILLATE PUMP	531	133	.181	1	66.67
SALT WATER HEATER DRAIN PUMP	531	159	.092	0	60.00
OVERBOARD BRINE PUMP	531	103	.227	3	80.00
FRESH WATER PRIMING PUMP	533	91	.476	4	66.67
FRESH WATER PUMP	533	122	.260	1	66.67
FRESH WATER DRAIN PUMP	534	72	.637	8	60.00
1200-600 PSI STEAM REDUCING VALVE	534	114	.443	9	33.33
600-150 PSI STEAM REDUCING VALVE	534	119	.700	2	33.33

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

SHIPS WORK BREAKDOWN STRUCTURE ORDER

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	NO. OF CASREPTS	OVERHAUL FREQUENCY (%)
1200-12 PSI AUGMENTING STEAM VALVE	534	151	.221	4	33.33
AUX STEAM 3"(1200PSI) GATE VALVE	534	102	.499	14	26.67
AUX STEAM 2"(1200PSI) GATE VALVE	534	134	.420	5	26.67
AUX STEAM 1.5"(1200PSI) GATE VALVE	534	170	.174	4	20.00
RADAR/SONAR COOLING WATER PUMP	536	173	.298	1	6.67
HP AIR COMPRESSOR	551	17	1.053	38	80.00
HP AIR FLASKS	551	146	.000	0	73.33
LP AIR COMPRESSOR	551	36	2.135	76	40.00
LP AIR DEHYDRATOR	551	58	.228	20	100.00
STEERING GEAR	561	45	.816	10	86.67
ANCHOR WINDLASS	581	130	.229	2	60.00
BOAT DAVIT	583	59	.711	29	53.33
PERSONNEL BOAT	583	31	1.577	20	66.67
MOTOR WHALEBOAT	583	52	.509	19	73.33
LAUNDRY DRYER	655	161	.036	6	33.33
MK 42 5"/54 CAL GUN MOUNT	711	11	7.139	116	66.67
MK 11 GM LAUNCHER	721	24	4.392	99	46.67
MK 13 GM LAUNCHER	721	23	2.787	48	46.67
MK 3 SIGNAL COMPARATOR	721	71	.400	16	60.00
MK 7 CARRIAGE (ASROC)	721	52	.657	14	73.33
MK 7 GUIDE (ASROC)	721	40	.887	18	73.33
ASROC LOADER CRANE	722	79	.265	9	80.00
MK 32 TORPEDO TUBE	751	34	1.922	11	80.00

APPENDIX D

DDG-2 CLASS MAINTENANCE-CRITICAL EQUIPMENT LIST
MAINTENANCE BURDEN SOURCE RANKING

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN SOURCE RANKING

(MAINTENANCE DATA SYSTEM BURDEN ORDER)

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MCS FACTOR	MDS RANK	NO. OF CASREPTS	CASREPT RANK	OVERHAUL FREQ (%)	OVHL RANK
AN/SPG-51( ) RADAR SET	482	2	22.084	1	250	2	93.33	5
MAIN BOILERS	221	1	18.398	2	416	1	100.00	1
MK 42 5"/54 CAL GUN MOUNT	711	11	7.139	3	116	7	66.67	49
AN/SPS-39( ) 3D AIR SEARCH RADAR	453	10	6.145	4	117	5	73.33	39
MAIN FEED PUMP	255	3	5.393	5	168	3	93.33	5
MK 11 GM LAUNCHER	721	24	4.392	6	99	10	46.67	103
FIRE PUMP	521	7	4.263	7	133	4	86.67	19
MK 72 SIGNAL DATA CONVERTER	482	52	3.680	8	69	15	.00	167
AN/SPG-53( ) RADAR SET	481	9	3.666	9	77	12	80.00	25
FORCED DRAFT BLOWER	251	4	3.586	10	117	5	100.00	1
AN/SQS-23( ) SONAR SET	463	21	3.106	11	39	29	60.00	70
MAIN FEED BOOSTER PUMP	255	5	3.019	12	66	16	100.00	1
WEAPONS DIRECTION EQUIPMENT	482	28	3.007	13	47	22	53.33	91
MK 73 TARTAR MISSILE DIRECTOR	482	8	3.000	14	58	18	93.33	5
MK 19 GYRO COMPASS	426	5	2.955	15	100	9	93.33	5
MK 13 GM LAUNCHER	721	33	2.787	16	48	20	46.67	103
SHIP SERVICE TURBINE GENERATOR	311	29	2.732	17	109	8	46.67	103
A/C PLANT	514	19	2.688	18	32	42	73.33	39
AN/SPS-40( ) 2D AIR SEARCH RADAR	452	46	2.629	19	79	11	20.00	142
HP/LP TURBINE	231	23	2.293	20	46	26	60.00	70
R-1051( )/URR RECEIVER	441	20	2.172	21	32	42	73.33	39
FUEL OIL SERVICE PUMP	261	16	2.149	22	65	17	66.67	49
LP AIR COMPRESSOR	551	36	2.135	23	76	13	40.00	111
MK 47 COMPUTER	481	12	1.965	24	37	35	93.33	5
AN/SRC-20( ) TRANSCEIVER	441	15	1.934	25	36	35	80.00	25
MK 32 TORPEDO TUBE	751	34	1.922	26	11	91	80.00	25
DISTILLING PLANT	531	26	1.784	27	11	91	93.33	5
MAIN CONDENSATE PUMP	255	12	1.683	28	38	31	93.33	5
AN/ULQ-6( ) COUNTERMEASURES SET	471	22	1.622	29	74	14	60.00	70
PERSONNEL BOAT	583	31	1.577	30	20	58	66.67	49
MK 38 ATTACK CONSOLE	433	48	1.492	31	37	35	40.00	111
MK 152 DIGITAL COMPUTER	482	27	1.355	32	47	22	60.00	70
AN/WRT-2( ) TRANSMITTER	441	84	1.338	33	13	84	13.33	148
DIAL TELEPHONE SWITCHBOARD	432	38	1.305	34	6	113	93.33	5
MK 24 TARGET DESIGNATION TRANSMITTER	482	74	1.286	35	2	144	60.00	70
SCS/FWC SYSTEM	221	39	1.273	36	29	47	60.00	70
EMERGENCY DIESEL GENERATOR	312	47	1.240	37	36	35	46.67	103
AN/UYC-9( ) TRANSCEIVER	441	49	1.236	38	28	45	53.33	91
MAIN LUBE OIL STANDBY PUMP	262	32	1.224	39	27	50	66.67	49
MK 84 GUN DIRECTOR	481	40	1.134	40	11	91	80.00	25

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN SOURCE RANKING

(MAINTENANCE DATA SYSTEM BURDEN ORDER)

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MCS FACTOR	MDS RANK	NO. OF CASREPTS	CASREPT RANK	OVERHAUL FREQ (%)	OVHL RANK
HP AIR COMPRESSOR	551	17	1.053	41	38	31	80.00	25
AN/SPS-10( ) SURFACE SEARCH RADAR	451	18	1.009	42	38	31	80.00	25
AN/SPS-29( ) 2D AIR SEARCH RADAR	452	52	.975	43	39	29	33.33	118
AUXILIARY MACHINERY COOLING PUMP	524	52	.970	44	25	55	53.33	91
16MM SOUND MOVIE PROJECTOR	434	139	.951	45	0	166	6.67	159
AN/URD-4( ) RADIO DIRECTION FINDER	423	14	.936	46	57	19	86.67	19
SALINITY INDICATING CAT	437	66	.929	47	4	131	66.67	49
MK 7 GUIDE (ASROC)	721	40	.887	48	18	69	73.33	39
AN/URC-32( ) TRANSCEIVER	441	87	.878	49	12	88	26.67	131
AN/SPA-2?( ) INDICATOR GROUP	450	36	.841	50	20	58	73.33	39
AN/URT-23(V) TRANSMITTER	441	65	.832	51	46	26	13.33	148
STEERING GEAR	561	45	.816	52	10	96	86.67	19
AUXILIARY CIRCULATING PUMP	256	68	.814	53	6	113	60.00	70
2-SPEED VENTILATION FAN	512	70	.813	54	21	57	26.67	131
DEAERATING FEED TANK	255	105	.800	55	8	103	13.33	148
AN/USM-117( ) OSCILLOSCOPE	491	147	.790	56	0	166	.00	167
AN/SPA-72( ) ANTENNA GROUP	453	98	.762	57	9	95	26.67	131
AN/UGC-25( ) TTY	445	95	.750	58	1	155	60.00	70
REFRIGERATION PLANT	516	57	.740	59	6	113	80.00	25
AN/SPA-33( ) INDICATOR	450	128	.728	60	2	144	20.00	142
MAIN CIRCULATING PUMP	256	51	.726	61	14	79	66.67	49
BOILER SAFETY VALVE	221	43	.720	62	16	72	80.00	25
BOAT DAVIT	583	59	.711	63	29	47	53.33	91
AN/SPS-37( ) 2D AIR SEARCH RADAR	452	86	.710	64	25	55	13.33	148
MAIN STEAM 5"(1200 PSI) GATE VALVE	253	25	.704	65	38	31	80.00	25
AN/SRN-6( ) TACAN	423	40	.703	66	48	20	60.00	70
600-150 PSI STEAM REDUCING VALVE	534	119	.700	67	2	144	33.33	118
AN/SPA-34( ) INDICATOR GROUP	450	124	.694	68	5	124	13.33	148
MAIN CONDENSER	254	81	.688	69	2	114	66.67	49
MC-2 PLOTTER	426	61	.685	70	26	52	53.33	91
AN/SPA-4( ) INDICATOR	450	121	.675	71	2	144	33.33	118
MK 7 CARRIAGE (ASROC)	721	52	.657	72	14	79	73.33	39
AN/URN-20( ) TACAN	423	93	.648	73	15	74	26.67	131
AN/SRC-21( ) TRANSCEIVER	441	44	.647	74	19	63	80.00	25
FRESH WATER MAIN PUMP	534	72	.637	75	8	103	60.00	70
MK 53 ATTACK CONSOLE	483	75	.629	76	13	84	53.33	91
AUXILIARY CONDENSATE PUMP	255	94	.627	77	6	113	53.33	91
SHIP SERVICE SWITCHBOARD	324	123	.618	78	6	113	13.33	148
BURNERS AND REGISTERS	221	95	.611	79	1	155	66.67	49
AN/SPA-41( ) INDICATOR GROUP	450	81	.558	80	14	79	66.67	103

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN SOURCE RANKING

(MAINTENANCE DATA SYSTEM BURDEN ORDER)

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	MDS RANK	NO. OF CASREPTS	CASREPT RANK	OVERHAUL FREQ (%)	OVHL RANK
DISTILLER FEED PUMP	531	83	.552	81	2	144	73.33	39
NAVIGATION CHRONOMETER	421	161	.550	82	0	166	6.67	159
AN/PSM-4( ) MULTIMETER	491	165	.531	83	0	166	.00	167
30KW 400HZ MG SET	314	60	.523	84	47	22	46.67	103
AUXILIARY GLAND EXHAUSTER	254	64	.519	85	31	45	53.33	91
AN/USM-281( ) OSCILLOSCOPE	491	166	.517	86	0	166	.00	167
MK 16 STABLE ELEMENT	481	30	.512	87	32	42	93.33	5
MOTOR WHALEBOAT	583	52	.509	88	19	63	73.33	39
AN/USM-207( ) DIGITAL COUNTER	491	164	.500	89	1	155	.00	167
AUX STEAM 3"(1200PSI) GATE VALVE	534	102	.499	90	14	79	26.67	131
MK 2 MOD 3 DIRECTOR DRIVE	481	89	.491	91	19	63	33.33	118
LUBE OIL PURIFIER	262	50	.480	92	35	39	66.67	49
60KW 400HZ MG SET	314	61	.477	93	27	50	60.00	70
FRESH WATER PRIMING PUMP	533	91	.476	94	4	131	66.67	49
PROPELLOR ASSY	245	115	.474	95	12	88	20.00	142
TELEPHONE SET (TYPE F)	432	132	.466	96	1	155	46.67	103
LINE SHAFT BEARING ASSY	241	138	.465	97	6	113	6.67	159
IC SWITCHBOARD	324	79	.459	98	3	138	86.67	19
SOOT BLOWERS	221	72	.456	99	2	144	93.33	5
UNDERWATER LOG	426	35	.455	100	35	39	93.33	5
1200-600 PSI STEAM REDUCING VALVE	534	114	.443	101	9	99	33.33	118
A/C CHILLED WATER PUMP	514	113	.427	102	5	124	53.33	91
AUX STEAM 2"(1200PSI) GATE VALVE	534	134	.420	103	5	124	26.67	131
AN/SPA-74( ) RADAR INDICATOR	450	111	.401	104	14	79	26.67	131
MK 3 SIGNAL COMPARATOR	721	71	.400	105	16	72	60.00	70
FUEL OIL DUPLEX STRAINER	261	99	.383	106	11	91	53.33	91
WIND SPEED AND DIRECTION TRANSMITTER	437	67	.375	107	15	74	66.67	49
R-390( )/URR RECEIVER	441	110	.372	108	1	155	66.67	49
OCUM-803-6( ) VOLTMETER	491	175	.369	109	0	166	.00	167
DIRT FUEL OIL SERVICE PUMP	261	97	.362	110	20	58	33.33	118
EMERGENCY DIESEL SW BOOSTER PUMP	342	127	.362	110	5	124	40.00	111
MAIN STEAM 2.5"(1200PSI) GATE VALVE	253	87	.351	112	4	131	80.00	25
DEGAUSSING SWITCHBOARD	475	100	.350	113	19	63	33.33	118
FUEL OIL AND BILGE STRIPPING PUMP	529	85	.349	114	8	103	66.67	49
AN/SQQ-23( ) SONAR SET	463	107	.343	115	44	28	.00	167
AN/USM-115( ) RANGE CALIBRATION SET	491	177	.342	116	0	166	.00	167
AN/UQN-1( ) FATHOMETER	424	69	.338	117	15	74	66.67	49
PU-495( )/SK MG SET	463	171	.328	117	2	144	.00	167
T-MK 5 FANFARE WINCH	473	143	.338	117	3	138	26.67	131
AN/UPX-11( ) INTERROGATOR SET	455	172	.327	120	2	144	.00	167

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN SOURCE RANKING

(MAINTENANCE DATA SYSTEM BURDEN ORDER)

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	MDS RANK	NO. OF CASREPTS	CASREPT RANK	OVERHAUL FREQ (%)	OVHL RANK
AUXILIARY CONDENSER	254	156	.319	121	3	138	20.00	142
AN/UPA-17( ) CONVERTER-COMPARATOR	445	160	.316	122	0	166	33.33	118
AN/SLA-12( ) ANTENNA GROUP	471	77	.312	123	35	39	53.33	91
AN/SPM-15( ) TEST SET	482	163	.301	124	0	166	33.33	118
RADAR/SONAR COOLING WATER PUMP	536	173	.298	125	1	155	6.67	159
AN/WLR-1( ) ECM RECEIVING SET	472	63	.292	126	47	22	60.00	70
A/C SW CIRC PUMP	514	125	.288	127	2	144	60.00	70
BINOCULARS	421	182	.284	128	0	166	.00	167
TSEC/KY-8	446	135	.280	129	6	113	33.33	118
LUBE OIL DUPLEX STRAINER	262	154	.277	130	0	166	46.67	103
ASROC LOADER CRANE	722	79	.265	131	9	95	80.00	25
AN/SRA-22( ) ANTENNA COUPLER	441	181	.260	132	0	166	6.67	159
FRESH WATER PUMP	533	122	.260	132	1	155	66.67	49
AN/PRC-41( ) TRANSCEIVER	441	167	.258	134	1	155	26.67	131
MAIN ENGINE GUARDING VALVE	253	156	.243	135	5	124	20.00	142
KWR-37/TSEC	446	130	.230	136	13	84	26.67	131
AN/UNQ-7( ) RECORDER REPRODUCER	439	103	.229	137	10	98	60.00	70
ANCHOR WINDLASS	581	130	.229	137	2	144	60.00	70
LP AIR DEHYDRATOR	551	58	.228	139	20	58	100.00	1
OVERBOARD BRINE PUMP	531	103	.227	140	3	138	80.00	25
MK 474 TEST SET	482	77	.224	141	19	63	66.67	49
PROPULSION GLAND EXHAUSTER	254	136	.222	142	8	103	33.33	118
MK 5 LOW LIGHT LEVEL TV	482	137	.222	142	15	74	13.33	148
1200-12 PSI AUGMENTING STEAM VALVE	534	151	.221	144	4	131	33.33	116
DRAI	426	105	.213	145	11	91	60.00	70
AN/SRR-19( ) RADIO RECEIVER	441	116	.212	146	4	131	66.67	49
AS-899( )/SLR DF ANTENNA	472	91	.199	147	7	108	86.67	19
MK 43 FCS RELAY TRANSMITTER	483	143	.199	147	7	108	26.67	131
AN/UPX-1( ) RADAR RECOGNITION SET	455	158	.192	149	12	88	.00	167
AN/UPA-24( ) DECODER	455	183	.186	150	0	166	.00	167
BOILER MAIN STEAM STOP VALVE	253	76	.185	151	10	98	93.33	5
DISTILLATE PUMP	531	133	.181	152	1	155	66.67	49
AN/UPX-23( ) INTERROGATOR SET	455	107	.179	153	30	46	40.00	111
AUX STEAM 1.5"(1200PSI) GATE VALVE	534	170	.174	154	4	131	20.00	142
AN/WRR-3( ) RECEIVER	441	129	.172	155	1	155	73.33	39
AN/WLA-3( ) AMPLIFIER GROUP	472	107	.161	156	13	84	60.00	70
DEGAUSSING POWER SUPPLY	475	126	.150	157	15	74	40.00	111
AN/URT-7( ) TRANSMITTER	441	120	.142	158	5	124	66.67	49
DFT	426	112	.134	159	4	131	80.00	25
AN/SRA-33( ) ANTENNA COUPLER	441	101	.130	160	18	69	60.00	70

DDG 2 CLASS MAINTENANCE CRITICAL EQUIPMENT LIST

MAINTENANCE BURDEN SOURCE RANKING

(MAINTENANCE DATA SYSTEM BURDEN ORDER)

EQUIPMENT NOMENCLATURE	SWBS	MBF RANK	MDS FACTOR	MDS RANK	NO. OF CASREPTS	CASREPT RANK	OVERHAUL FREQ (%)	OVHL RANK
AN/SPA-66( ) RADAR INDICATOR	450	140	.129	161	19	63	13.33	148
MK 75 RANGEFINDER	481	169	.123	162	6	113	13.33	148
AN/SPA-17( ) ANTENNA GROUP	441	167	.121	163	0	166	53.33	91
AN/URR-27( ) RECEIVER	441	140	.119	164	3	138	60.00	70
AN/SLA-1D( ) VIDEO BLANKER	472	90	.108	165	8	103	93.33	5
AM-3007( )/URT RF AMPLIFIER	441	149	.106	166	20	58	.00	167
DEGAUSSING COIL MG SET	475	143	.103	167	7	108	40.00	111
AS-616( )/SLR DF ANTENNA	472	118	.097	168	1	155	93.33	5
SALT WATER HEATER DRAIN PUMP	531	159	.092	169	0	166	60.00	70
AS-571( )/SLR DF ANTENNA	472	117	.090	170	3	138	86.67	19
AM-3924( )/URT RF AMPLIFIER	441	148	.088	171	26	52	.00	167
AN/URA-38( ) ANTENNA COUPLER GROUP	441	149	.085	172	17	71	13.33	148
CU-937/UR TUNER	441	174	.077	173	7	108	6.67	159
MK 76 POSITION INDICATOR	483	142	.058	174	9	95	40.00	111
AN/URQ-1D( ) FREQUENCY STANDARD	441	176	.049	175	5	124	13.33	148
LAUNDRY DRYER	655	161	.036	176	6	113	33.33	118
AN/SLQ-1( ) DIRECTION FINDER SET	471	177	.033	177	6	113	6.67	159
RT-859( )/APX-72 TRANSCEIVER	455	179	.022	178	7	108	.00	167
MK 14 FC SWITCHBOARD	489	152	.015	179	0	166	66.67	49
AN/USC-3D( ) DATA COMM SYSTEM	415	154	.012	180	26	52	.00	167
AN/URC-80(V) TRANSCEIVER	441	179	.006	181	6	113	6.67	159
AS-936( )/SPS-10( ) ANTENNA	451	153	.000	182	0	166	66.67	49
HP AIR FLASKS	551	146	.000	182	0	166	73.33	39