U. S. NAVAL AIR ENGINEERING CENTER

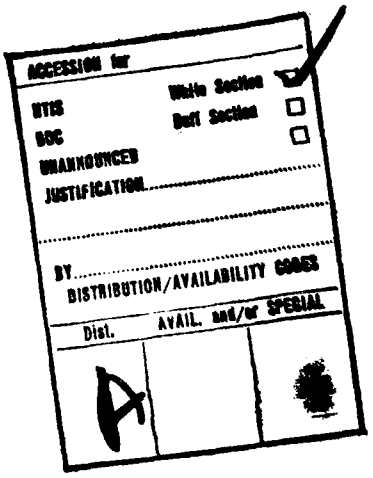
LAKEHURST, NEW JERSEY

GROUND SUPPORT EQUIPMENT DEPARTMENT
NAEC-GSED-91 JUNE 1975
CODE IDENT. NO. 28638

CONTROL OF CORROSION IN GROUND SUPPORT EQUIPMENT

AIRTASK NO. A3400000/051B/5F41461400
WORK UNIT NO. 23

INTERIM REPORT



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INTERIM REPORT

PREPARED BY _____
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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

(14) REPORT NUMBER: NAEC-GSED-91	2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle): CONTROL OF CORROSION IN GROUND SUPPORT EQUIPMENT	5. TYPE OF REPORT & PERIOD COVERED: (9) INTERIM rept.,
6. PERFORMING ORG. REPORT NUMBER	
7. AUTHOR(s): (10) W. H. WOMER	8. CONTRACT OR GRANT NUMBER(s): (12) 51 p.
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Ground Support Equipment Department, Naval Air Engineering Center, Lakehurst, New Jersey 08733	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: AT A3400000/051B/5F41461400 WORK UNIT NO. 23
11. CONTROLLING OFFICE NAME AND ADDRESS: Naval Air Systems Command AIR-340E, Washington, DC 20361	(11) 12. REPORT DATE: Jun 75
	13. NUMBER OF PAGES: 50
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)

APPROVED FOR PUBLIC RELEASE, DISTRIBUTION UNLIMITED

(16) A3400000/051B/5F41461400

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

18. SUPPLEMENTARY NOTES

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

CORROSION
CORROSION SURVEY
CORROSION MAINTENANCE

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

A two year (1972-1974) survey of corrosion in the mechanical elements of ground support equipment was conducted based on the corrosion maintenance manhours reported in the 3M Data Bank. Inventories of all major Navy Commands were reviewed. Data did not pinpoint any severe corroded equipment, areas or corrosion situations. However, the total headings under which all corrosion is reported was determined to be probably too broad for the definitive purposes of this program. A more refined review is necessary to establish any corrosion problem and eventually develop a corrosion control manual for ground support equipment.

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UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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SECTION I

INTRODUCTION

1.1. Corrosion is an inherent part of nature itself, the variables in nature: rain, wind, sun and soil serving either to retard or accelerate the everchanging corrosion rate. In order to maintain and preserve his way of life man strives to slow the rate, ideally to achieve some parity between degradation of function due to wear on the one hand and the overall corroded state on the other.

1.2. Ground support equipment, for the most part fabricated from low carbon steels, is extremely vulnerable in the Navy to the ravages of corrosion, particularly so in carrier service. Here the equipment must stand up to salt spray and mist, ocean sunshine, and carrier and aircraft stack and exhaust gases. Corrosion protection or inhibition in ground support equipment is achieved primarily by paint film acting as a barrier between the corrosive element on one face and the raw structural metal on the other. So long as the barrier remains intact, reasonable protection may be expected, but should a scratch occur, something fall on the film heavy enough to break through it, or should some form of abrasion rub across it heavy enough or often enough to wear through it, corrosion immediately attacks the metal and begins to undermine the protective film. Ideally the continuity of the coating must be restored at once because the corrosion growth rate, if left unchecked, will now progress exponentially to destruction.

1.3. The program initiated by this report will attempt to do the following:

a. Undertake a Research, Development, Test and Evaluation (RDT&E) effort to explore GSE corrosion identification, removal and control.

b. Develop alternatives/requirements to improve the overall GSE corrosion control/maintenance effort within the fleet.

c. Develop GSE specification criteria to inhibit and control corrosion at the design/procurement levels.

d. Develop appropriate corrosion removal equipment, corrosion barrier schemes and barrier maintenance procedures.

e. Promulgate a comprehensive corrosion control manual oriented specifically to GSE.

SECTION II

CONCLUSIONS

2.1. The following conclusions were derived for this first interim report on this program:

a. A minimum of fifteen manhours are expended for corrosion maintenance on Naval aircraft for each hour applied to GSE.

b. The 3M Data Bank, as it currently collects data on GSE corrosion, does not define corrosion anymore other than to say a piece of equipment is corroded or deteriorated and that so many hours were applied to the equipment because it was considered corroded. What specific part(s) was corroded, whether the corrosion was considered as malfunctional or aesthetic, and what was done to correct the situation - none of these are defined. Viewed in this light, the 3M Data Bank corrosion tabulation requires a more definitive basis for the reporting of corrosion faults in order that the optimum remedial action may be determined and standardized.

c. A pictorial survey of the GSE total geographic environment is required to examine the corrosion rates, the severity of tolerated corrosion, how different sites define corrosion, inequalities of corrosion within a piece of equipment, the priorities of corrosion, the personnel relationship to corrosion, corrosion repair facilities, etc. to define a base from which a rational solution of the R&D corrosion situation may be developed. This survey has been scheduled within the next phase of this program.

SECTION III

APPROACH

3.1. To begin, a broad survey of pertinent literature and procedures on corrosion control in the Navy over the past several years was undertaken, supplemented by interviews with knowledgeable personnel, to develop some insight into the general trend of the overall technical conduct of the science. Reference (1) is typical.

3.2. Reference (2) remains the principal document for corrosion control and most new research is aimed primarily at updating its materials callouts. General control procedures, the identification of corrosion fields and margins, a discourse on the mechanics of corrosion, etc., all as described in the manual, are field proven accepted concepts and still have a somewhat timeless quality. Principal orientation of the working portion of the manual, however, is towards aircraft and their non-ferrous components.

3.3. The literature refers at times to spurious recommendations to revise reference (2) to include specific sections for the control of corrosion in ground support equipment, but such action remains in a limbo status. The Air Force provides some measure of control specifically for its ground support equipment in reference (3). But the "control" covered by this manual only goes so far as the specified preparation of the surface to be protected prior to the application of the finish protective coating, the schedule for the application of the finish coat, and the specification call-out of the separate coatings of which it shall consist. Navy ground support equipment design personnel similarly use reference (3) for specification of finish systems and complementary processes required prior to the application of the top coat. Some Navy ground support people use reference (4) as an alternate to reference (3), the principal advantage of the latter, however, being in the convenience it provides in design drawings where a complete corrosion protective scheme may be designated simply by a "Finish Code Number" and a "Color Standard Number".

3.4. Corrosion in ground support equipment, by and large, follows a strange pattern because of which control of the pattern at times almost becomes haphazard.

3.5. For example, reputedly one of the worst situations common to most mobile ground support equipment is the open-skies storage problem which begins in most instances with delivery of the equipment from the manufacturer. Deterioration of this equipment then progresses to a degree where some [illegible] replacement of some parts is necessary before the equipment can be issued. Then, following issue, the use and storage of the equipment becomes a continuation of the open-sky exposure.

3.6. Considering the extremes of weather in the various geographical areas in which GSE is operational, considering the corrosive gases and salt air and

moisture conditions common to the working areas of the equipment, considering the vagaries of priorities for maintenance work on back-up equipment for a priority-one aircraft strike force, the following questions developed relating to the proper conduct of a GSE corrosion prevention program:

a. How extensive is the corrosion problem in GSE?

b. What equipment is particularly troublesome because of corrosion?

c. Are the prescribed finish schedules for GSE adequate? If not, what is the weak link in any schedule?

d. What is the degree of superficiality in typical corrosion maintenance?

e. When is corrosion maintenance considered necessary in the upkeep pattern of the equipment?

f. How closely is the corrosion pattern related to the geographical area?

3.7. For a broad brush look-see at the way GSE corrosion is being handled, a review of the 3M Data Bank was undertaken to determine which equipments are getting corrosion treatment handling, where they are, and how much time was being spent on these treatments.

3.8. Appendix I lists all sites and carriers recording 250 or more maintenance manhours for any category of GSE equipment within the two-year span survey. The objective here was to investigate the possible relationship of corrosion to geographical area.

3.9. The sites and carriers listed in Appendix I include location code numbers. The location and cognizant Command of each such user facility listed in Appendix I is identified in Appendix II.

3.10. Which GSE units are a real corrosion problem? Appendix III attempts to shed some light on this question as a compilation of all those equipments on which 1000 or more maintenance manhours were expended over the two-year survey period.

SECTION IV

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SECTION V

CONTROL OF CORROSION IN GROUND SUPPORT EQUIPMENT

5.1. This interim report summarizes approximately a first year's effort in reviewing the corrosion situation in ground support equipment.

A survey of corrosion correspondence traffic was undertaken initially to obtain some insight into the nature and conduct of problems attributed to corrosion in ground support equipment. The survey was then extended to include a bibliography search, a review of recent years Navy-sponsored meetings relating to broad base corrosion, visits to several AIRLANT facilities for first-hand comment on the field attitude towards GSE corrosion, attendance at a Tri-Service conference on the corrosion of Military equipment, and an amassing of trade literature on current equipment, processes, and materials for the inhibition, removal, and control of corrosion.

5.2. Corrosion by its nature can become very abstract and subjective especially when corrosion in equipment, ground support equipment in its support function, is considered in relation to such a high priority item as military aircraft. Corrosion does not ring a bell, light a signal lamp or raise an indicator to alert to its presence. Instead, it's something we become aware of only at random times and, more often than not, only at the sporadic whims of some cognizant individual. Corrosion is something easy to ignore, something easy to put off and put off right up to the time it eventually overwhelms.

Viewed in just such a light, it follows that message traffic concerning GSE corrosion should assume no significant volume. And so it was. No specific equipment was spotlighted for corrosion proneness or functional deficiency due to corrosion. Instead, the subject is treated only in a general sense. Most all letter traffic was oriented to descriptive matter relating to some new piece of mechanical corrosion inhibiting equipment, the letter being used to extol its virtues and recommend its immediate procurement as a panacea for all corrosion woes and worries, present and future. Invariably the singular piece of equipment would have been procured on a consignment or open purchase basis, had been tried and found to be handsomely adequate - at least this is the way it is reported.

5.3. The bibliography search, extending back over the past several years, similarly pointed up the wispy nature of corrosion reporting, the search, having for its objective, reports on malfunctioning of GSE or related gear where the problem could be directly attributed to corrosion or some ramification thereof.

No reports were uncovered relating specifically to GSE per se and corrosion. Not surprisingly, the overwhelming volume of corrosion reports scanned originated at the Kennedy Space Center and dealt with corrosion problems attributable to rocket exhaust gases or malfunction situations stemming from the

environment associated with the handling of rocket propellant materials.

Reference (5) describes a tour of the seven NARF depots (1972) with detailed description and analyses of operations related to the removal of coatings, corrosion removal and application of surface treatments and protective coatings to aircraft components. The report provides an excellent run down of the corrosion handling and treatment facilities at each of the NARF installations. Noteworthy is the lack of standardized corrosion treatment procedures among the NARFS in handling corrosion problems on identical parts of aircraft. Local engineering and local process specifications (LES & LPS's) are used to define the procedures at the local levels. The report makes no mention or reference to the handling of corrosion in ground support equipment.

5.4. Corrosion meetings reviewed for this program that had been sponsored or convened by NAVAIR were found to be almost entirely devoted to problems stemming from aircraft and, primarily, their non-ferrous materials. From such meetings, reference (2) was subsequently issued and revised. Here and there in the minutes of such meetings a reference to ground support equipment will appear in some abstract way such as "considerable corrosion was evident on the ground support equipment at the end of a carrier deployment" or "GSE was corroded in areas used for the carrying of tie-down chains".

5.5. In order to pursue the GSE-on-carrier situation, a visit to the AIRLANT office at Norfolk was made to obtain some comment from field personnel handling GSE removed from carriers at the ends of such deployments. Reference (6) describes this visit. Some of the more pertinent comments coming from the visit and reference (6) are reiterated here:

a. The call-out of applicable MIL specs for the corrosion protection of GSE appears to be lax in drawings and contracts. The protection
s scheme, other than in broad general statements, apparently is left to the established practices of the manufacturer.

   In checking this out, we found that equipment designed at NAEC generally specified reference (3) for the schedule of protective finishes to be provided as the corrosion barrier. Reference (4) also is used, to a lesser extent however. The schedules provide only for the initial protective scheme. Significantly, it should be noted, the Standard was written by USAF.

b. Primer plus a top coat of paint very often defines the protection on surfaces exposed to view. Inaccessible areas may receive only a primer coat at manufacture, and seldom, if ever, any follow-up coating maintenance in the field. As a result, much of the most severe corrosion occurs from the inside out, entire panels frequently requiring replacement because of this unchecked corrosion field.

c. The carrier environment is the most conducive to corrosion.

d. Corrosion-handling facilities, both sea and land-based, for the most part, are not proper or adequate.

e. Deterioration of lox equipment is particularly severe; armament support gear has a similarly fast corrosion rate.

f. The personnel shortage and the accent on aircraft in corrosion training (per NAVAIR 01-1A-509) share much of the responsibility for the quality of GSE corrosion protection.

g. Storage of GSE under open skies is a major factor to the initiation and continuance of the corrosion process.

5.6. A Tri-Service conference on the corrosion of military equipment was held in Dayton, Ohio, 29 thru 31 October 1974. At this meeting the Air Force emphasized a philosophical approach they have developed and implemented towards corrosion of "prevent" rather than "cure". Their corrosion program has been expanded to involve all levels of management. It operates under such basic guidelines as:

a. The establishment of acquisition regulations for new materiel where corrosion has now been made a must consideration.

b. Identification of problems stemming from corrosion that they may be analyzed and handled by a team of corrosion experts.

c. Expansion of corrosion programs to accent the significance of a prevent rather than a cure theme.

d. Advance anticipation and coordination of corrosion items in order to improve and delineate standardized solutions.

e. The establishment of data systems to provide data bank information and versatility for the solution of corrosion problems.

f. A motivation of the industry to a corrosion awareness for the needs of the military and the relation of operational function to corrosion.

g. The recognition and establishment of interface transfers of corrosion cognizance between responsibility groups associated with the various life phases of an article from manufacture to eventual phase out.

5.7. On the basis of literature and reports reviewed and of personal contacts, all relating to corrosion in ground support equipment, a rather subjective picture began to emerge bearing little factual data of the true extent and scope of GSE corrosion. How really severe is the problem allowing that corrosion is inevitable, that its rate only can be slowed, that most GSE is a hard usage item, impact and abrasion wear being recognized as the day-to-day pattern in the use of the equipment? In order to sound the range of corrosion problems being reported for GSE,

to identify, list quantities, and state manhours required to restore corroded areas and correct malfunctions attributed to corrosion, all to put the GSE corrosion situation on some factual basis, a corrosion survey of the 3M GSE Data Bank Inventory was undertaken.

Arbitrarily, a period extending over the immediate past two years was chosen for typical sampling of 3M corrosion data entries. All entries under the following Malfunction Description Codes from reference (7) were examined. These are the only codes listed pertaining to corrosion:

117 Deteriorated
170 Corroded

Similarly, all entries from reference (7) under the following Support Action Code were examined:

040 Corrosion Control

5.8. Over 600 categories of ground support equipment were examined. The same unit of any such equipment fabricated by two different manufacturers, for example, is listed in the Data Bank as two categories. In order to provide some limit to the survey commensurate with the funding allocated to the program, it was decided to list only those activities at all carrier and station sites that had entered at least 250 or more corrosion maintenance manhours under the above specified code numbers for the two-year spread search survey.

5.9. Nine volumes of data, approximately 500 pages per volume, were obtained by the search. The data represented full span organizational, intermediate and depot maintenance reporting. Under the not less than 250 hours limitation, a total of approximately 330,000 maintenance manhours were recorded for the two-year period. This would represent roughly $1,130,000 based on an E-4 pay scale. The cost must be considerably higher than this, however, probably closer to $1.5 million, because of the arbitrary 250 hours limitation and the fact that the somewhat subjective nature of corrosion malfunctioning almost encourages the non-carding (MRC - Maintenance Requirement Card) of a trouble condition.

5.10. Appendix I contains some 98 separate categories of ground support equipment and the corrosion maintenance manhours reported against each of those categories by some 286 station or carrier activities. The inventory of equipment on which the manhours was expended is also reported, as is a resultant average manhours per unit.

5.11. How does corrosion maintenance of GSE rank with other corrosion maintenance activities in the Navy? In FY 73 slightly in excess of 2-1/2 million manhours were applied to corrosion control on aircraft at the organizational level. Based on the current E-4 pay scale, this would represent approximately $8-1/2 million dollars. Related to Navy aircraft, therefore, for each manhour expended

for the corrosion maintenance of GSE, at least 15 hours of similar effort are applied for the maintenance of aircraft (0-level for aircraft).

5.12. The open-skies storage and usage situation was emphasized by many of the knowledgeable people interviewed as probably the principal contributor to the total corrosion condition. In reviewing the manhour quantities listed in Appendix I for many of the GSE units, along with their probable usage pattern, this contention would appear to have some basis in fact. However, a follow-on question develops: How extensive must corrosion be to be considered corrosion? It is apparent from some of the manhours logged for the same type of equipment by some of the different sites that very different interpretations to this question may prevail.

5.13. Objectively the tabulated data listed in Appendix I is somewhat sketchy in the sense that it only represents a count of so-called corrosion situations. What was corroded; why was it considered as being corroded; whether the corrosion actually degraded the performance of the equipment or whether it was considered corroded simply because "-- it didn't look good"; - none of these are established. When does something cross over the line from a non-corroded state to a corroded state? Undoubtedly the "line" as a line cannot exist because it cannot be drawn any finer than an area. Decision making as regards corrosion remains very much in the category of personal judgement and of little basis in fact. Considering that the data entered in Appendix I as average manhours expended on each unit of equipment to correct the reported corrosion condition is for the two-year search period, most of the data appears insignificant. The data doesn't support the fact that GSE on carriers generally requires extensive corrosion maintenance. The data on the NC-2A (FSN 871-9292) mobile electric power plant, for example, for seven carriers reporting, records an average of less than one hour per week for corrosion maintenance for the two-year check period.

5.14. The relatively small quantity of corrosion manhours expended on GSE, from the 3M data, compared to the corrosion time spent on aircraft raises the conjecture that the current corrosion control pattern for GSE may be adequate and reasonable. If this possibly be so, the vagueness of the reporting in the 3M data still remains, however, as does the challenge to determine how the corrosion maintenance pattern may be improved and made more effective for the broad range of GSE from the design stage through and including the operational unit in the field. A part of this program must include a better way of reporting the corrosion picture for GSE in the 3M Data Bank.

5.15. Because weather is so closely related to the rate of corrosion, it must be a consideration in any corrosion control program, particularly so because, like aircraft, open-skies storage of GSE is an accepted and common practice. Appendix II locates geographically the sites and carriers listed in Appendix I. It was intended to compare for correlation the temperature, humidity and precipitation environment of the various sites with the maintenance manhours reported for the various GSE equipments listed in Appendix I. Weather data returns at the time of this report were insufficient to establish any such correlation. Further, any weather influence is difficult to discern in the Appendix I information as now pre-

sented even assuming that sites in and near the Tropic Zone should be reporting more corrosion maintenance manhours than sites in the Temperate Zones. Tests have proven that the corrosion rates of structural steel, a common material used for the fabrication of GSE, in tropical atmospheres (e.g., Panama) are about two or more times higher than in temperate atmospheres (e.g., Kure Beach, N.C.) mainly because of the higher relative humidity and higher average temperature (reference (8). Further investigation of the geographic influence on GSE corrosion will be deferred to a later time when more data is available.

5.16. Which are the so-called "heavies" in the GSE corrosion picture? Appendix III lists those equipments for which 1000 or more manhours have been reported. The total hours reported for each equipment are an accumulative total from these eleven Navy Commands: LANT NAVY, PACT NAVY, NASC, NATRA, NAVAIRRESFOR, NART NAVY, ALL NAVY, LANT MARINE, PAC MARINE, MARINE NON-FLEET and NART MARINE. The five highest totals listed in Appendix III are:

17,023 hours: TA-75 Tow Tractor (Northwestern)
16,188 hours: A/C jacks
12,964 Hours: TA-75 Tow Tractor (United)
10,452 hours: MD-3A Hough/Airesearch Gas Turbine Auxiliary Set
10,007 hours: NC-8A Mobile Electric Power Plant

5.17. Typically the manhours reported for the two TA-75 tow tractors (Northwestern and United manufacture) would seem impressive until it is realized that there were approximately 735 Northwestern units in service during the two-year study time and about 630 United units. Assuming the same corrosive rate applicable to all units, this sifts down to about 12 corrosion maintenance manhours per year per Northwestern tractor and about 10 hours for the United unit, both insignificant quantities yet reflecting actual data reporting.

5.18. The jet engine test stands/facilities, starting with Category GGBE and following, appear to exhibit a logical credence in their corrosion manhours reported. These units would be particularly susceptible to the combination of salt air/moisture, jet engine exhaust gases and carrier stack gases. Based on the stands reported, approximately 50 minutes each day was expended in corrosion control over the two-year survey period, a time period adjudged to be reasonable. Very little other data seems to be as reasonable.

SECTION VI

REFERENCES

1. COMNAVAIRSYSCOM ltr AIR-4117B/49: RSN of 8 Jun 1971 (NOTAL)

2. NAVAIR 01-1A-509 Technical Manual Aircraft Weapons Systems Cleaning and Corrosion Control, Organizational and Intermediate, 15 March 1972

3. MIL-STD-808 (USAF) Finishes, Protective, and Codes, for Finishing Schemes for Ground and Ground Support Equipment, October 1960

4. MIL-T-704 Treatment and Painting of Materiel, October 1972

5. "Analysis and Critique of Depot Level Maintenance Procedures for the Application of Protective Coatings to Naval Aircraft," Final Report, Phase I Contract N62269-71-C-0308 by W. D. Benzinger & A. H. Fainberg, to Analytical Rework/Service Life Programs Office, Naval Air Development Center, December 1972

6. Trip Report to COMNAVAIRLANT office 18 July 1974, Subject: Corrosion of GSE (NOTAL)

7. NAVAIR 17-1-107 Technical Manual Aircraft Maintenance Aerospace Ground Support Equipment Work Unit Code Manual, 1 November 1972

8. Uhlig, Herbert H., "Corrosion and Corrosion Control," 2nd Edition, John Wiley & Sons, Inc., New York, 1971

APPENDIX I

GSE CORROSION CONTROL PROGRAM

SITES WITH 250 OR MORE CORROSION MAINTENANCE MANHOURS CHARGED PER CATEGORY FOR MONTHS 7207 - 7409

SITES WITH 250 OR MORE CORROSION MAINTENANCE MANHOURS CHARGED PER CATEGORY FOR MONTHS 7207 - 7409

I.1. This appendix lists, by category, sites with two hundred fifty or more corrosion maintenance man hours. The listings enable consideration of those sites with high unit corrosion maintenance time for field determination of type, extent and possible cause of the corrosion problems.

I.2. Sites charging 250 or more maintenance manhours for a category are listed under the equipment code designation for that category. Code designations are in alpha numerical sequence and in conjunction with each code, the Navy Type is indicated in parentheses followed by the last seven digits of the Federal Stock Number. The line below gives the equipment title. Beneath each code heading are listed the sites charging maintenance time within the above time frame. For each site, the unit identification code is indicated.

I.3. Beside each site, in the next column to the right, are listed the total corrosion maintenance manhours charged by the site for the particular equipment during the time duration searched. An inventory column follows which indicates the quantity of the item of equipment on hand at the various sites reported. During the period of months covered in the corrosion data search, some sites were deactivated, inventory reporting for PAC sites was from a 3M computer run during the final month of the data search, and inventory reporting for LANT sites came from a computer run as of March 1975. For these reasons, exact inventory reporting for the search period was not available. Another column indicates the average corrosion hours charged per unit for given sites; however, because of the disparity of inventory reporting, some percentage of error must be considered for these unit averages.

I.4. In reviewing Appendix I, recall that a two year plus time span applies to each data entry.

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GABC (NC-5A) 344-0100 Mobile Elec Power Plant			
AIMD PENNSACOLA 00204 FLORIDA	367.0	13	31
MCAS EL TORO 60050 SANTA ANA, CALIF.	347.0	5	69
GABD (NC-5B) 623-7823 Mobile Elec Power Plant			
AIMD GLYNCO 60103 BRUNSWICK, GEORGIA	663.0	11	60
NART GLENVIEW 00275 ILLINOIS	324.0	2	162
GABH (E-APU) 511-2210 Mobile Elec Power Plant			
AIMD WHITING FIELD 60508 MILTON, FLORIDA	1585.8	24	66
AIMD CORPUS CHRISTI 0404A TEXAS	454.5	54	8
GACB (NC-10) 858-4488 Mbl Elec Pwr Plt Diesel Eng Driv			
VXE-6 DET CHRISTCH NEW ZEALAND	281.0	deactivated Oct 74	
AIMD MIRAMAR 60259 SAN DIEGO, CALIF.	342.0	36	9.5
GACC (NC-12A) 992-6890 Mobile Elec Power Plant			
AIMD NAHA 62254 OKINAWA, JAPAN	274.0	4	68.5
GACD (NC-10A) 056-0909 Mobile Elec Power Plant Diesel			
H/MS-32 09385 BEAUFORT, S.C.	450.7	16	28
H/MS-31 09384 BEAUFORT, S.C.	261.8	16	16

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSI HRS. CHARGED/UNI
GACG (NC-2A) 871-9292 Mobile Elec Power Plant			
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	883.7	34	26
AIMD AMERICA 03366 LANT	739.0	5	148
AIMD ORISKANY 03334 PAC	657.4	5	131
AIMD CVA MIDWAY 03341 PAC	652.2	6	109
AIMD KITTY HAWK 03363 PAC	437.5	5	87.5
AIMD HANCOCK 03321 PAC	319.0	5	64
AIMD ENTERPRISE 03365 PAC	282.5	5	56.5
AIMD INDEPENDENCE 03362 LANT	254.0	6	42
GAC4 (NC-10B) 933-5397 Mobile Elec Power Plant Diesel			
VMCJ-2 09896 CHERRY POINT, N.C.	2268.0	(not reported in source)	
H/MS-12 09377 IWAKUNI, JAPAN	1347.5	21	64
H/MS-14 09378 CHERRY POINT, N.C.	1070.5	22	49
GAC6 (NC-8A) 782-6740 Mobile Elec Power Plant Diesel			
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	862.0	36	24
AIMD PENSACOLA 00204 FLORIDA	795.7	29	27
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	827.5	23	36
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	762.5	43	18
AIMD LEMOORE 63042 CALIF.	734.2	46	16
AIMD WHITING FIELD 60508 MILTON, FLORIDA	584.5	6	97
VC-3 09176 N.ISLAND, SAN DIEGO, CALIF.	497.0	1	497
AIMD KINGSVILLE 60241 TEXAS	402.5	19	21

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GAC6 (NC-8A) 782-6740 Mobile Elec Power Plant Diesel			
AIMD QUONSET POINT 00127 RHODE ISLAND	376.1	-	
AIMD ALAMEDA 00236 CALIF.	316.6	37	9
AIMD GLYNCO 60103 BRUNSWICK, GEORGIA	291.0	-	
AIMD KEY WEST 00200 FLORIDA	290.3	-	
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	275.0	34	8
GBBC (GTC-85/POD) 777-4035 Gas Turbine Compressor			
AIMD MIRAMAR 60259 SAN DIEGO, CALIF.	352.5	38	9
H/MS-32 09385 BEAUFORT, S.C.	474.1	16	30
AIMD MOFFETT 00296 SAN JOSE, CALIF.	319.0	15	21
H/MS-12 09377 IWAKUNI, JAPAN	277.6	24	12
GBCC (GTC-85/TRLR) 523-0225 Gas Turbine Compressor			
AIMD ROTA 62832 SPAIN	567.9	-	
AIMD KINGSVILLE 60241 TEXAS	510.2	21	24
NAF WARMINSTER AIM 62269 PENNSYLVANIA	404.5	2	202
AIMD ALAMEDA 00236 CALIFORNIA	350.7	34	10
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	346.0	21	16
AIMD PENSACOLA 00204 FLORIDA	304.0	23	13
AIMD PATUXENT 0428A &00421 MARYLAND	266.0	26	10
H/MS-14 09378 CHERRY POINT, N.C.	266.0	25	11
GBCG (NCPP-105) 923-5380 Gas Turbine Aux Trailer			
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	258.0	19	14

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GBCH (56A79-G1) 923-5380 Gas Turbine Aux Trailer			
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	279.0	19	15
GBDB & GBDC (MD-3) 715-2783, 169-0131 Gas Turbine Aux Set & 968-8222			
AIMD FORRESTAL 03359 LANT	2268.0	12	189
AIMD KITTY HAWK 03363 PAC	3113.5	17	183
AIMD CVA MIDWAY 03341 PAC	2681.6	14	192
AIMD INDEPENDENCE 03362 LANT	1131.5	12	94
AIMD AMERICA 03366 LANT	1663.5	16	104
AIMD ENTERPRISE 03365 PAC	1084.4	16	68
AIMD CORAL SEA 09860 PAC	1019.5	9	113
AIMD SARATOGA 03360 LANT	836.8	16	52
AIMD CONSTELLATION 03364 PAC	717.0	10	72
AIMD ORISKANY 03334 PAC	1034.5	16	65
AIMD HANCOCK 03321 PAC	669.8	7	96
GBDJ (TA-75/GTC-85) 169-0131, 523-0225 Gas Turbine Aux Set & 623-0104			
(see GPCY)			
GBDK (322/AS-100) 960-1076 Gas Turbine Aux Set			
(see GPC1)			
GBFB (CC100-1) Turbine Compressor			
AIMD J.F.KENNEDY 03367 LANT	644.0	-	
AIMD AMERICA 03366 LANT	433.3	-	

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GCBB (62A106) 986-0809 High Pressure A/C Cleaning Mach			
HMM-162 09492 JACKSONVILLE, N.C.	1375.0	-	
GCBK (65A102-J1) 930-1801 Jet Eng Corrosion Control Cart			
HMT-204 52842 JACKSONVILLE, N.C.	385.0	-	
AIMD FORRESTAL 03359 LANT	340.0	4	85
GDGE (PMU-216) 482-3972 Vacuum Pump Rotary Pwr Driven			
H/MS-31 09385 BEAUFORT, S.C.	317.0	2	158.5
GEBF (H-1) 589-8451 Portable Grd Heater Gas Burn.			
NAF WARMINSTER AIM 62269 PENNSYLVANIA	409.7	5	82
GECE (NR-3A) 061-7844 &063-9574 Air Conditioner			
AIMD NAHA 62254 OKINAWA, JAPAN	1081.9	2	541
GECU (NR-2B) 884-8241 Air Conditioner			
AIMD FORRESTAL 03359 LANT	603.1	6	100.5
AIMD AMERICA 03366 LANT	540.0	6	90
AIMD KITTY HAWK 03363 PAC	411.0	7	59
GECZ (NR-5C) 134-4357 Air Conditioner			
AIMD KITTY HAWK 03363 PAC	517.5	3	172.5
AIMD FORRESTAL 03359 LANT	418.5	3	139.5
AIMD AMERICA 03366 LANT	356.0	-	

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GFBA 441-0537 Air Compressor			
H/MS-36 09260 FUTEMA, OKINAWA	320.0	4	80
GFBD (USN-10C) 390-9543 Portable Gas Eng Dr Air Comp			
H/MS-26 09506 &09035 JACKSONVILLE, N.C.	761.5	-	
GFBQ (NHPC-4) 606-1673 Port Gas Dr Recip A/C Air Compress			
AIMD F.D. ROOSEVELT 03342 LANT	262.5	-	
GFCA Air Start Systems			
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	253.0	-	
GGBB (NER-2) 659-2588 Port Univ Eng Run Up/Test Stand			
AIMD KINGSVILLE 60241 TEXAS	387.5	2	194
GGBE (ID126-1/6823-1) 960-4432 CVA Turbo-Jet Eng Test Facility			
AIMD FORRESTAL 03359 LANT	1697.5	1	1697.5
AIMD AMERICA 03366 LANT	909.5	1	909.5
AIMD J.F. KENNEDY 03367 LANT	742.0	1	742
AIMD CVA MIDWAY 03341 PAC	702.0	1	702
AIMD INDEPENDENCE 03362 LANT	422.3	1	422
AIMD KITTY HAWK 03363 PAC	264.0	1	264
GGBF (Class C) 31682 Jet Engine Test Facility			
AIMD F.D. ROOSEVELT 03342 LANT	1162.0	1	1162

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GGBG (NER-3) 717-6963 Port Eng Run Up/Test System			
AIMD AGANA 61577 GUAM, MARIANA ISLAND	579.0	1	579
GGBQ (A/M 37 T-13) 169-0232 Jet Eng Test Stand (Universal)			
AIMD KINGSVILLE 60241 TEXAS	409.9	-	
GGCC (T-58) 986-7646, 675-6296 & 833-8447 Portable Run Up/Test System			
UNKNOWN C9G ORG 03313 LANT INTREPID	1080.5	-	
GGCD (T-56) 736-8837 (088-3824) Mobile Engine Test Stand			
AIMD AGANA 61577 GUAM, MARIANA ISLAND	803.0	1	803
AIMD SIGONELLA 62995 CATANIA, SICILY	324.0	1	324
GGCE (T-58) 675-6296 (833-8447 & 986-7646) Mobile Engine Test Stand			
H/MS-26 09506 & 09035 JACKSONVILLE, N.C.	452.0	1	452
GGCF (T-58/T-64) 833-8447 Turbo Shaft Eng Test System			
H/MS-36 09260 FUTEMA, OKINAWA	885.0	1	885
H/MS-26 09506 & 09035 JACKSONVILLE, N.C.	479.0	1	479
GGCG (T-53) 869-9406 Engine Mobile Test Stand			
H/MS-16 SUB 1 09243 SANTA ANA, CALIF.	260.0	-	
GGCH (T-76) 997-1958 Trlr Mounted Eng Test Stand			
H/MS-29 52844 JACKSONVILLE, N.C.	1093.0	2	546.5
H/MS-16 SUB 1 09243 SANTA ANA, CALIF.	595.0	-	

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GGCL (T-400) 402-2531 (339-2957& 370-9881) Turbo Shaft Eng Run -Up Stand			
H/MS-29 52844 JACKSONVILLE, N.C.	1165.5	-	
GGCU (A/F32 T-5) 128-4979 Turbo Fan Jet Eng Test System			
AIMD WHIDBEY ISLAND 00620 OAK HARBOR, WASHINGTON	377.4	-	
GGE3 (AHT-64) 933-2824 Port Hyd Test Stand Diesel Driv			
AIMD HANCOCK 03321 PAC	273.0	3	91
GGJD (NH-8 AHT-64) 089-0521 Hydraulic Test Stand			
AIMD KITTY HAWK 03363 PAC	702.7	6	117
AIMD FORRESTAL 03359 LANT	523.2	6	89
H/MS-31 09384 BEAUFORT, S.C.	401.0	12	33
AIMD SARATOGA 03360 LANT	359.5	5	72
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	296.0	7	42
GGJR (AHT-64) 159-9028 Hydraulic Test Stand			
AIMD FORRESTAL 03359 LANT	494.0	-	
GGLD (HCT-10) 933-6310 Hydraulic Component Test Stand			
AIMD FORRESTAL 03359 LANT	255.5	1	255.5

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSIO HRS. CHARGED/UNI
GJBB (GB-1A) Oxygen/Nitrogen Gen Plant			
H/MS-37 09906 SANTA ANA, CALIF.	865.8		
H/MS-31 09384 BEAUFORT, S.C.	724.3		
H/MS-14 09378 CHERRY POINT, N.C.	495.0		
H/MS-32 09385 BEAUFORT, S.C.	378.0		
GJCA 111-6074, 541-4117& 224-9142 Air, Oxygen, Lox & Nitro Service Eq			
AIMD AMERICA 03366 LANT	355.5	-	
GJCD 541-4117 Air/Nitrogen Servicing Trailer			
H/MS-31 09384 BEAUFORT, S.C.	254.8	4	64
GJCE (NO-4) 294-9976 Lox Servicing Trailer			
H/MS-31 09384 BEAUFORT, S.C.	1185.6	13	91
GJCF (NO-4) 605-4126 Lox Trailer			
H/MS-31 09384 BEAUFORT, S.C.	603.9	-	
GJCJ (NO-2) 212-8877 & 606-7501 Oxygen Servicing Trailer			
H/MS-31 09384 BEAUFORT, S.C.	321.3	8	40
AIMD ROOSEVELT ROA 00389 LANT	289.3	5	58
AIMD WHITING FIELD 60508 MILTON, FLORIDA	271.5	6	45
GJCM (NO-7) 675-5250 Lox Trailer 50 gal Capacity			
AIMD HANCOCK 03321 PAC	344.0	4	86

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GJCV (NAN-2) 908-7451 Nitrogen Servicing Unit			
AIMD MERIDIAN 63043 MISSISSIPPI	723.0	5	145
AIMD WHITING FIELD 60508 MILTON, FLORIDA	468.0	7	67
H/MS-12 09377 IWAKUNI, JAPAN	305.2	9	34
NART DALLAS 00215 TEXAS	268.0	5	54
GJCW 421-4344 500 Gal Capacity Lox Storage Tank			
H/MS-14 09378 CHERRY POINT, N.C.	2562.5	10	256
H/MS-24 09382 OAHU, HAWAII	908.0	5	182
H/MS-32 09385 BEAUFORT, S.C.	813.0	5	163
H/MS-15 09379 IWAKUNI, JAPAN	351.7	8	44
H/MS-12 09377 IWAKUNI, JAPAN	336.7	5	67
GJC2 (NAN-3) 224-9142 Nitrogen Servicing Unit			
AIMD ORISKANY 03334 PAC	339.0	4	85
GJEF(15 BRO(WUC) 294-9976 Skid Mtd 500 Gal Lox Tank			
H/MS-15 09379 IWAKUNI, JAPAN	276.0	-	
GJEM (Part #6083) Lox and Liquid Nitrogen Tank			
H/MS-14 09378 CHERRY POINT, N.C.	300.3	-	

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSIO HRS. CHARGED/UNI
GLBA 830-2757, 834-2935, 244-8884, 244-8883 & 654-1585 Aircraft Maintenance Platforms			
AIMD AMERICA 03366 LANT	1161.0	7	166
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	379.0	3	126
AIMD AGANA 61577 GUAM, MARIANA ISLAND	292.0	11	27
AIMD CORPUS CHRISTI 0404A TEXAS	268.5	25	11
GLBB (B-4A) 654-1585 Adj. A/C Maintenance Platform			
H/MS-36 09260 FUTEMA, OKINAWA	1193.5	8	149
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	646.8	-	
AIMD BARBERS POINT 00334 HAWAII	539.4	-	
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	527.2	-	
AIMD SARATOGA 03360 LANT	519.8	7	74
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	484.5	42	12
NART WILLOW GROVE 00158 PENNSYLVANIA	457.0	20	23
H/MS-26 09506, 09035 JACKSONVILLE, N.C.	450.0	26	17
AIMD ENTERPRISE 03365 PAC	299.5	8	37
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	261.4	-	
GLBF (B-5) 390-5619 Maintenance Stand			
H/MS-16 09243 SANTA ANA, CALIF.	287.8	15	19
AIMD NASU IWAKUNI 66035 JAPAN	283.0	6	47
GLBP (B-4A) 294-8883 Adj. A/C Maintenance Platform			
AIMD WHITING FIELD 60508 MILTON, FLORIDA	552.5	13	42.5
AIMD IWO JIMA 09878	266.0	-	

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GLCA 926-4038, 516-2018 & 516-2019 Aircraft Maintenance Jacks			
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	1108.4	32	35
AIMD AMERICA 03366 LANT	999.5	5	200
AIMD SARATOGA 03360 LANT	955.3	2	478
H/MS-36 09260 FUTEMA, OKINAWA	909.0	5	182
AIMD HANCOCK 03321 PAC	869.2	11	79
AIMD INDEPENDENCE 03362 LANT	783.8	2	392
AIMD FORRESTAL 03359 LANT	729.1	3	243
AIMD KITTY HAWK 03363 PAC	618.6	6	103
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	570.1	60	10
AIMD PENSACOLA 00204 FLORIDA	534.4	29	18
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	432.0	1	432
MCAS YUMA 62974 ARIZONA	404.5	28	14
AIMD WHITING FIELD 60508 MILTON, FLORIDA	391.0	30	13
AIMD F.D. ROOSEVELT 03342 LANT	312.0	6	52
AIMD CVA MIDWAY 03341 PAC	259.0	12	22
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	250.6	7	36
GLDA General Maintenance Equipment			
H/MS-31 09384 BEAUFORT, S.C.	3490.9		
AIMD FORRESTAL 03359 LANT	418.0		
GLDF 872-1712 Portable Honing Machine			
AIMD SARATOGA 03360 LANT	358.8	9	40

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GMBA 602-6884, 625-4268 & 624-4274 Tow Bars 727-3803 Eng/Airframe Inst & Removal Stands			
H/MS-36 09260 FUTEMA, OKINAWA	970.0	4	242.5
H/MS-15 09379 IWAKUNI, JAPAN	909.5	10	91
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	696.5	-	
AIMD PENSACOLA 00204 FLORIDA	658.0	10 22(tow)	21
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	566.5	56 60(tow)	5
AIMD LEMOORE 63042 CALIF.	328.3	72	5
AIMD WHIDBEY ISLAND 00620 OAK HARBOR, WASH.	319.0	29	11
GMBB (4000A) 565-3887 Eng Removal & Positioning Trlr			
AIMD SARATOGA 03360 LANT	857.0	7	122
AIMD KITTY HAWK 03363 PAC	518.5	7	74
H/MS-12 09377 IWAKUNI, JAPAN	257.0	28	9
GMBC (NT-4) 954-8751 & 839-5623 Aircraft Universal Tow Bar			
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	523.5	-	
AIMD SARATOGA 03360 LANT	427.0	79	5
AIMD NORFOLK 63102 VIRGINIA	367.1	-	
AIMD KITTY HAWK 03363 PAC	1149.5	67	17
AIMD HANCOCK 03321 PAC	833.1	88	9
AIMD LEMOORE 63042 CALIF.	594.8	72	8
AIMD MIRAMAR 60259 SAN DIEGO, CALIF.	277.5	91	3

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GMBJ 565-3887 &494-7149 Engine Trailer			
AIMD INDEPENDENCE 03362 LANT	350.0	-	
GMBL (3000-B) 589-7082 Engine Transport Trailer			
AIMD INDEPENDENCE 03362 LANT	1038.5	-	
TRARON 25 0404A BEEVILLE, TEXAS	721.1	-	
VMA-211 09412 SANTA ANA, CALIF.	635.0		
AIMD SARATOGA 03360 LANT	415.7	1	416
GMBM Eng Removal/Position Trlr			
AIMD AMERICA 03366 LANT	941.0		
GMCA 721-5376 Eng Airframe Inst & Rem Hoists/Slings			
AIMD CORPUS CHRISTI 0404A TEXAS	304.0		
GMDA Armament Transportation Equip			
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	414.6		
GMEJ Van Maint Air Trans			
H/MS-16 SUB 1 09243 SANTA ANA, CALIF.	528.0		
H/MS-31 09384 BEAUFORT, S.C.	282.5		
GMFC (Aero 47-A) 852-0186 Self Propelled A/C Weapons Loader			
AIMD MOFFETT 00296 SAN JOSE, CALIF.	267.5	20	13

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GMFD (A/S 32K-1) 256-6552 Air Launch Weapon Loader Swing Boom			
H/MS-14 09378 CHERRY POINT, N.C.	961.8	19	51
H/MS-31 09384 BEAUFORT, S.C.	377.0	17	22
H/MS-32 09385 BEAUFORT, S.C.	612.2	8	77
MCAS YUMA 62974 ARIZONA	232.8	13	18
GMGA (33D Trk) 673-5619 &921-5510 Weapons Handling & Trnspt Equip			
AIMD KITTY HAWK 03363 PAC	603.5	18	34
GMGD (Aero 21A) 887-0125 Weapon Skid			
AIMD KITTY HAWK 03363 PAC	734.5	177	4
GMGF (Aero 12C) 872-9361 Aero Bomb Skid			
AIMD KITTY HAWK 03363 PAC	1162.0	247	5
GMGM (Aero 51B) 133-7153 Weapon Trailer			
AIMD AGANA 61577 GUAM, MARIANA ISLAND	623.4	12	52
GMGP (A/M 32K-4/-4A SATS) Bomb Trailer			
H/MS-14 09378 CHERRY POINT, N.C.	1414.0		
GMJA Air Transportable Maint Vans			
NART GLENVIEW 00275 ILLINOIS	264.0		

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GMJB (2111)			
Air Transportable Maint Van			
H/MS-36 09260 FUTEMA, OKINAWA	4488.0		
GPCA			
Aircraft Towing Tractor			
VC-3 09176 (composite sqdn) SAN DIEGO, CALIF.	349.4		
GPCF (SMA-75)			
Aircraft Towing Tractor			
AIMD GLYNCO 60103 BRUNSWICK, GEORGIA	324.0		
GPCK (TA-18) 925-8212, 231-8576 &414-7154			
Aircraft Tow Tractor Gas			
AIMD WHIDBEY ISLAND 00620 OAK HARBOR, WASH.	440.0		
AIMD ROTA 62832 SPAIN	406.3		
AIMD ADAK 57099 ALASKA	309.0		
AIMD BRUNSWICK 60087 MAINE	280.3	12	23
VC-3 09176 SAN DIEGO, CALIF.	267.5		
AIMD JACKSONVILLE 00207 FLORIDA	265.0	16	17
AIMD AGANA 61577 GUAM, MARIANA ISLAND	250.7	7	36
GPCL (MD-3) 414-7155			
Aircraft Tow Tractor Diesel			
AIMD AMERICA 03366 LANT	2640.0	19	139
AIMD KITTY HAWK 03363 PAC	520.6	21	25
AIMD HANCOCK 03321 PAC	413.5	11	38
AIMD ORISKANY 03334 PAC	330.0	11	30
AIMD CVA MIDWAY 03341 PAC	310.0	18	17
AIMD FORRESTAL 03359 LANT	282.0	17	16

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSIO.. HRS. CHARGED/UNIT
GPCL (MD-3) 414-7155 Aircraft Tow Tractor Diesel			
AIMD LPH-12 INCHON 09078 LANT	254.5	-	
AIMD J.F. KENNEDY 03367 LANT	251.9	16	16
GPCM (MD-1) Aircraft Towing Tractor			
AIMD GLYNCO 60103 BRUNSWICK, GEORGIA	2574.0		
GPCU (W-30) 938-2726 Utility Tractor			
H/MS-36 09260 FUTEMA, OKINAWA	580.7	22	26
H/MS-12 09377 IWAKUNI, JAPAN	440.8	21	21
GPCV (TA-18) 231-8576 A/C Tow Tractor Gas Eng Dr			
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	266.0	7	38
GPCY & GBDJ 414-7149, 414-7151 &414-7152 A/C Tow Tractor Gas & Gas Turb Aux			
AIMD WHITING FIELD 60508 MILTON, FLORIDA	3729.8	19	196
MCAS YUMA 62974 ARIZONA	961.1	22	44
AIMD ROTA 62832 SPAIN	946.0	9	105
AIMD LEMOORE 63042 CALIF.	1166.7	106	11
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	751.2	19	40
AIMD KINGSVILLE 60241 TEXAS	700.2	18	39
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	676.1	8	85
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	604.5	32	19
AIMD WASH D.C. 00166 ANDREWS AFB, WASH., D.C.	533.6	13	41
AIMD KEY WEST 00200 FLORIDA	491.5	20	25

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GPCY & GBDJ 414-7149, 414-7151 & 414-7152 A/C Tow Tractor Gas & Gas Turb Aux			
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	453.5	16	28
AIMD CECIL FIELD 60200 JACKSONVILLE, FLORIDA	414.4	39	11
AIMD MIRAMAR 60259 SAN DIEGO, CALIF.	764.0	89	9
AIMD CHASE FIELD 60376 BEEVILLE, TEXAS	364.0	19	19
AIMD NAHA 62254 OKINAWA, JAPAN	362.5	11	33
AIMD ALAMEDA 00236 CALIFORNIA	305.8	21	15
AIMD PENSACOLA 00204 FLORIDA	270.5	10	27
AIMD QUONSET POINT 00127 RHODE ISLAND	263.0	-	
AIMD ROOSEVELT ROA 00389 LANT	254.3	8	32
AIMD ALBANY GA 65371 GEORGIA	254.0	-	
GPC1 & GBDK 414-7156 & 414-7150 A/C Tow Tractor Gas & Gas Turb Aux			
AIMD NORTH ISLAND 00246 SAN DIEGO, CALIF.	1432.0	40	36
AIMD MIRAMAR 60259 SAN DIEGO, CALIF.	934.0	42	22
AIMD PENSACOLA 00204 FLORIDA	919.0	27	34
AIMD KINGSVILLE 60241 TEXAS	1183.5	24	49
AIMD CUBI POINT 62876 LUZON, PHILIPPINES	843.0	20	42
AIMD IMPERIAL BEACH 60205 SAN DIEGO, CALIF.	834.5	11	76
AIMD FALLON 60495 NEVADA	727.1	-	
AIMD SAUFLEY FIELD 60234 PENSACOLA, FLORIDA	633.0	7	90
AIMD LEMOORE 63042 CALIFORNIA	394.5	-	
AIMD OCEANA 60191 VIRGINIA BEACH, VA.	459.0	37	12
AIMD QUONSET POINT 00127 RHODE ISLAND	379.8	(station disestablished)	
H/MS-31 09384 BEAUFORT, S.C.	359.4	13	28

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSIC HRS. CHARGED/UNI
GPC1 & GBDK 414-7156 &414-7150 A/C Tow Tractor Gas & Gas Turb Aux			
AIMD WASH D.C. 00166 ANDREWS AFB, WASH., D.C.	339.0	8	42
MCAS YUMA 62974 ARIZONA	326.0	8	41
AIMD ROOSEVELT ROA 00389 LANT	286.1	15	19
GPC2 (SD-1D) 159-0759 Aircraft Spotting Dolly			
AIMD AMERICA 03366 LANT	1257.1	5	251
AIMD KITTY HAWK 03363 PAC	896.1	6	149
AIMD HANCOCK 03321 PAC	664.0	5	133
AIMD CVA MIDWAY 03341 PAC	598.5	6	100
AIMD FORRESTAL 03359 LANT	448.0	5	90
AIMD ORISKANY 03334 PAC	414.0	5	83
AIMD ENTERPRISE 03365 PAC	348.0	6	58
AIMD CONSTELLATION 03364 PAC	299.0	6	50
AIMD INDEPENDENCE 03362 LANT	276.5	5	55
GPDA 727-1153, 999-2836& 885-6476 Trlrs, Gas-Fuel-Oil-Water-A			
VC-6 32019 NORFOLK, VIRGINIA	700.7		
TRARON 1 0392A PENSACOLA, FLORIDA	360.0		
GPEA 134-5203, 224-4640 &165-4293 Lifts Trucks and Cranes			
AIMD KITTY HAWK 03363 PAC	2242.4	10	224
AIMD HANCOCK 03321 PAC	808.5	10	81
AIMD CONSTELLATION 03364 PAC	702.5	10	70

CATEGORY AND SITE	TOTAL HRS. CHARGED	INV.	AVERAGE CORROSION HRS. CHARGED/UNIT
GPEA 134-5203, 224-4640 & 165-4293 Lifts Trucks and Cranes			
AIMD ENTERPRISE 03365 PAC	603.0	10	60
AIMD FORRESTAL 03359 LANT	526.6	10	53
AIMD J.F. KENNEDY 03367 LANT	454.2	10	45
AIMD ORISKANY 03334 PAC	376.0	10	38
AIMD TRIPOLI LPH-10 09396 PAC	336.5	10	34
AIMD CORAL SEA 09860 PAC	331.5	10	33
AIMD AMERICA 03366 LANT	322.8	10	32
GPEN (NS-60) Crane Mobile A/C Crash			
AIMD CVA MIDWAY 03341 PAC	259.0		
GPKD (SATS) M-21 Arresting Gear A/C Recovery Sys Expeditionary			
H/MS-36 09260 FUTEMA, OKINAWA	954.0	1	954

APPENDIX II

GSE CORROSION CONTROL PROGRAM

SITE GEOGRAPHICAL LOCATION BY LATITUDE AND COMMAND LISTED BY UNIT IDENTIFICATION CODE

SITE GEOGRAPHICAL LOCATION BY LATITUDE AND COMMAND

II. 1. This appendix provides geographical location information on sites reported in Appendix I. Individual sites are listed in ascending numerical order according to unit identification code number followed by unit title and address. In columns beside each unit or site are listed Latitude and Command to aid in determination of local environmental conditions affecting corrosion. "L" is used to designate AIRLANT sites, "P" is used for AIRPAC sites. Geographically, the Tropic Zone extends 23-1/2 latitude degrees each side of the equator. The temperate zones, Cancer and Capricorn, extend from the Tropic Zone on out to a latitude of 66°33' each side of the equator.

II. 2. It was intended to determine whether there was any discernible correlation between geographical location and the corrosion manhours reported for a site which might be attributed to the precipitation, temperature and humidity conditions peculiar to that site. The approach may well warrant consideration because of the wide range of environmental conditions to which GSE is subject, particularly under the open-skies storage policy. This portion of the investigation could not be completed within the time allotted because of incomplete weather data. The weather influence will be deferred to a later part of the study.

UNIT IDENT. CODE	UNIT	NORTH LATITUDE	COMMA
00127	NAS, Quonset Point, R.I. 02819	42°	L
00158	NAS, Willow Grove, PA 19090	40°	L
00166	NAF, Andrews AFB, Wash., D.C.	38°	L
00188	NAS, Norfolk, VA 23511	35°	L
00200	Naval Station, Key West, FL 33040	25°	L
00204	NAS, Pensacola, FL 32508	30°	L
00207	NAS, Jacksonville, FL 32212	30°	L
00215	NAS, Dallas, Texas 75211	33°	L
00216	USNAS, Pensacola, FL 32508	30°	L
00236	NAS, Supply Dept., Alameda, CA 94501	38°	P
00246	NAS, North Island, San Diego, CA 92135	33°	P
00275	NAS, Glenview, Illinois 60026	38°	L
00296	USNAS, Moffett Fld, San Jose, CA 94035	37°	P
00334	NAS, Barbers Point Hawaii	21°	P
00389	US Naval Station, FPO, NY 09551	31°-45°	L
	Roosevelt RDS PR	18°	L
00421	NATC, Supply Dept., Patuxent River, MD 20670	38°	L
00620	USNAS, Whidbey Island, Oak Harbor, Wash. 98277	48°	P
03313	USS Intrepid CVS 11, FPO NY 09501	31°-45°	L
03321	USS Hancock CVA19, FPO San Francisco, CA 96601	8°-22°	P
03334	USS Oriskany CVA34, FPO San Francisco, CA 96601	8°-22°	P
03341	USS Midway CVA41, FPO San Francisco, CA 96601	8°-22°	P

UNIT IDENT. CODE	UNIT	NORTH LATITUDE	COMMAND
03342	USS F.D. Roosevelt CVA42, FPO NY 09501	31°-45°	L
03343	USS Coral Sea CVA43, FPO San Fran. 96601	8°-22°	P
03359	USS Forrestal CVA59, FPO NY 09501	31°-45°	L
03360	USS Saratoga CV60, FPO NY 09501	31°-45°	L
03362	USS Independence CV62, FPO NY 09501	31°-45°	L
03363	USS Kitty Hawk CV63, FPO San Fran. 96601	8°-22°	P
03364	USS Constellation CVA64, FPO San Fran. 96601	8°-22°	P
03365	USS Enterprise CVAN65, FPO San Fran. 96601	8°-22°	P
03366	USS America CVA66, FPO NY 09501	31°-45°	L
03367	USS J.F. Kennedy CVA67, FPO NY 09501	31°-45°	L
0392A	NAS Saufley Fld, Pensacola, FL 32508	30°	L
0404A	NAS Corpus Christi, Texas 78419 NAS Chase Fld, Beeville, Texas 78102	30°	L
0428A	NAS Patuxent River, MD 20670	38°	L
09035	MARCORPS Air Sta. Heli, New River, Jacksonville, NC 28540	30°	L
09041	MCAS Santa Ana, CA 92709	34°	P
09078	SHips VT A/C USS Inchon LPH12, FPO NY 09501	31°-45°	L
09176	NAS North Island, San Diego, CA 92135	33°	P
09243	MCAS Heli., Santa Ana, CA 92710	34°	P
09260	Marine A/C Group 36, FPO San Fran. 96602 Futema, Okinawa	8°-22° 37°	P P
09377	MARCORPS Air Sta., FPO Seattle 98764 Iwakuni, Japan	8°-22° 34°	P P
09378	MCAS Cherry Point, NC 28533	35°	L
09379	Marine Air Group 15, FPO San Fran. 96602 Iwakuni, Japan	8°-22° 34°	P P
09382	MARCORPS Air Sta, Kaneohe Bay, Oahu, Hawaii	21°	P

UNIT IDENT. CODE	UNIT	NORTH LATITUDE	COMMAND
09384	MCAS, Beaufort, SC 29902	32°	L
09385	MCAS Beaufort, SC 29902	32°	L
09396	Ships VT A/C USS Tripoli LPH10, FPO San Fran. 96601	8°-22°	P
09412	MCAS, Santa Ana, CA 92709	34°	P
09492	MCAS, New River, Jacksonville, NC 28540	35°	L
09506	MCAS, New River, Jacksonville, NC 28540	35°	L
09860	Ships VT A/C, USS Coral Sea CVA43, FPO San Fran. 96601	8°-22°	P
09878	Ships VT A/C, Iwo Jima	25°	L
09896	MCAS Cherry Point, NC 28533	35°	L
09906	MCAS El Toro, Santa Ana, CA 92709	34°	P
32019	Det. Sea Duty, NAS, Norfolk, VA 23511	37°	L
52842	MCAS, New River, Jacksonville, NC 28540	35°	L
52844	MCAS, New River, Jacksonville, NC 28540	35°	L
57099	US Naval Fac., Box 71, FPO Seattle 98791	8°-22°	P
	Adak, Alaska	52°	P
60050	MCAS El Toro, Santa Ana, CA 92709	34°	P
60087	USNAS, Brunswick, Maine 04011	44°	L
60103	NAS Glynco, NMSD, Brunswick, GA 31520	31°	L
60191	USNAS Oceana, Virginia Beach, VA 23460	37°	L
60200	USNAS Cecil Fld, Jacksonville, FL 32215	30°	L
60205	NAS Imperial Beach, San Diego, CA 92032	32°	P
60234	NAS Saufley Fld, Pensacola, FL 32510	30°	L
60241	NAS Kingsville, Texas 78363	28°	L

UNIT IDENT. CODE	UNIT	NORTH LATITUDE	COMMAND
60259	NAS, Miramar, San Diego, CA 92145	33°	P
60376	NAS, Chase Fld, Beeville, Texas 78102(Sup) NAS, Corpus Christi, Texas 78419 (Acctg.)	30°	L
60495	NAS, Fallon, Nevada 89406	40°	P
60508	NAS, Whiting Fld, Milton, FL 32570	31°	L
61577	USNAS, FPO San Francisco, CA 96637 Agana, Guam, Mariana Island	8°-22° 13°-25'	P P
62254	Cmdr Fleet Act. Okinawa, FPO Seattle 98770 Okinawa NAHA, Japan	8°-22° 26°-30'	P P
62269	NADC, Warminster, PA 18974	40°	L
62613	MCAS, FPO Seattle 98764 Supply Dept., Iwakuni, Japan	8°-22° 34°	P P
62832	USN Act., Spain, FPO NY 09540 JUSMG, USN Act., Rota, Spain	31°-45° 37°	L L
62876	USNAS Cubi Pt, Subic Bay, Luzon, Philippines	15°	P
62974	MCAS, Yuma, Arizona 85364	33°	P
62995	USNAF, Sigonella, Catania, Sicily	38°	L
63042	USNAS, Lemoore, CA 93245	36°	P
63043	USNAS, Meridian, Miss. 39301	32°	L
63102	USNARTU, USNAS, Norfolk, VA 23511	35°	L
65371	NAS, Albany, Georgia 31703	32°	L
66035	Naval Air Support Unit, Iwakuni, Japan	34°	P

APPENDIX III

GSE CORROSION CONTROL PROGRAM

CATEGORIES WITH 1000 OR MORE CORROSION MAINTENANCE MANHOURS CHARGED FOR MONTHS 7207 - 7409

CATEGORIES WITH 1000 OR MORE CORROSION MAINTENANCE MANHOURS CHARGED FOR MONTHS 7207 - 7409

III. 1. This appendix presents those categories of ground support equipment which, during the search period covered, had maintenance manhours of 1000 hours or more. The purpose of this listing is to set forth those categories of ground support equipment with high corrosion maintenance time for investigation of causes and high incidence of corrosion problems.

III. 2. Categories with 1000 or more maintenance manhours are listed by code in alpha numerical sequence. The code column is followed by these headings: Equipment, Part Number, Manufacturer, Model Number, Navy Type and Tota' Hours.

III. 3. The Equipment column includes the title by which the unit of common ground support equipment is identified in 3M Aviation Type Equipment Code List, MSO 4790. A2210-01, produced by Navy Fleet Material Support Office, Mechanicsburg, Pa., 17055. The Total Hours column lists the total corrosion maintenance manhours charged per category listed during the period of months 7207 thru 7409 for the eleven following Navy major commands: LANT NAVY, PAC NAVY, NASC, NATRA, NAVAIRRESFOR, NART NAVY, ALL NAVY, LANT MARINE, PAC MARINE, MARINE NON-FLEET and NART MARINE.

CODE	EQUIPMENT	PART NUMBER	MANUFACTURER	MODEL NO.	NAVY TYPE	TOTAL HOURS
GABB	Mobile Elec Pwr Plt		Consolidated Diesel	1700	NC-5	1975.0
GABC	Mobile Elec Pwr Plt		Consolidated Diesel	2022	NC-5A	1028.7
GABD	Mobile Elec Pwr Plt		Consolidated Diesel	2035	NC-5B	2432.2
GABH	Mobile Elec Pwr Plt	E-APU	Waukesha Motors	E-APU		3225.0
GACB	Mobile Elec Pwr Plt Diesel Eng Driv	61A102-E1	Sun Electric	MGS-516	NC-10	1113.0
GACD	Mobile Elec Pwr Plt Diesel	62A102-E500	Sun Electric	MGS-7/9	NC-10A	1398.4
GACG	Mobile Elec Pwr Plt	62A100-F8000	Consolidated Diesel	2177A	NC-2A	5802.5
GAC4	Mobile Elec Pwr Plt Diesel	66A97-E1	Sun Electric	MGS-7A	NC-10B	5665.2
GAC6	Mobile Elec Pwr Plt Diesel	65A81-J1	Consolidated Diesel	NC-8A	NC-8A	10006.9
GAED	Mobile Mtr Generator	46-307:62A85-J1	Inet-Sprague		MMG-2	1145.3
GAEN	Mobile Mtr Generator	62A85-J1	Irving Ind.		MMG-2	1074.8
GBBC	Gas Turbine Compress	GTC-85/POD	Airesearch			3304.1
GBCC	Gas Turbine Compress	GTC-85/Trlr	Airesearch			4898.2
GBCG	Gas Turbine Aux Trlr	NCPP-105	Airesearch			1504.1
GBDB	Gas Turbine Aux Set	MD-3A GTCP 100	Hough/Airesearch			10452.6
GBDC	Gas Turbine Aux Set	MD-3B/GTC 85	Hough/Airesearch			7110.7
GBDJ	Gas Turbine Aux Set	TA-75/GTG-85	NWestern Airesearch			1271.9

CODE	EQUIPMENT	PART NUMBER	MANUFACTURER	MODEL NO.	NAVY TYPE	TOTAL HOURS
GBDK	Gas Turbine Aux Set	322/AS-100	United Airesearch			2093.2
GBFB	Turbine Compressor	CC100-1	Airesearch			1077.3
GCBB	High Pressure A/C Cleaning Machine	62A106	Stewart Warner	328500		1520.5
GCBK	Jet Engine Corrosion Control Cart	65A102-J1	Liquidonics			2205.1
GECE	Air Conditioner	A44560	Keco Industries		NR-3A	1094.1
GECU	Air Conditioner	67A81D-2	Acme		NR-2B	2304.1
GECZ	Air Conditioner	HE-036-B	Westinghouse			1632.5
GFBA	Air Compressors					1259.3
GFBD	Portable Gas Eng Dr Air Compressor		Champion	USN-10C	USN-10C	1292.4
GFBQ	Port Gas Dr Recip A/C Air Compress	P5R15GB	Ingersoll Rand	NHPC-4		1324.2
GGBE	CVA Turbo-Jet Eng Test Facility	1D126-1:1D6823-1	Fischbaugh-Moore			4767.3
GGBF	Jet Eng Test Facility		Janke	Class C	Class C	1899.0
GGCC	T-58 Portable Run Up Test System	21C2222G Series	General Electric	Class D	T-58	1403.3
GGCD	Mobile Eng Test Stand	6799207	Allison		T-56	1994.0
GGCF	Turbo Shaft Eng Test System	21C1250G004	General Electric	T-58/T-64	T-58/T-64	1438.5

CODE	EQUIPMENT	PART NUMBER	MANUFACTURER	MODEL NO.	NAVY TYPE	TOTAL HOURS
GGCH	Trlr Mtd Eng Test Stnd	285270-1-1	Airesearch	T-76	T-76	1689.5
GGCL	Turbo Shaft Eng Run-up Stand	CPWA0600-10000-041	United Aircraft of Canada	T-400		1216.0
GGJD	Hyd Test Stand	1435-100:68AJ1:-1	Liquidonics	AHT-64	NH-8	5181.1
GJBB	Oxy/Nitro Gen Plt	3200300-1	Cosmodyne	GB-1A	GB-1A	2771.6
GJCA	Air, Oxygen, Lox & Nitro Serv Eq					1573.2
GJCE	Lox Servicing Trlr	LOX50-3:LOX50-7	Ronan & Kunzl	NO-4	NO-4	3718.8
GJCF	Lox Servicing Trlr	900753-1	H Spen and Co	NO-4	NO-4	1683.8
GJCJ	Oxy Servicing Trlr	58000 & 114194A	H Spen and Co		NO-2	3275.0
GJCM	Lox Trlr 50 Gal Cap	1890-0C51: 189000C52	Linde	NO-7	NO-7	2247.2
GJCV	Nitrogen Serv Unit	64A100-H110	Stewart Avonics		NAN-2	4386.9
GJCW	400 Gal Cap Lox Storage Tank	5803	Ryan	5803		5292.6
GJC2	Nitrogen Service Unit	322AS100	Stewart Avonics		NAN-3	1060.8
GLBA	A/C Maint Pltfms					5472.9
GLBB	Adj A/C Maint Pltfm	54J6345	Regent		B-4A	9419.1
GLBC	Adj A/C Maint Pltfm	54J6279	Regent		B-5A	1109.1
GLBF	Maintenance Stand		United Steel & Wire		B-5	1189.5
GLBP	Adj A/C Maint Pltfm	54J6345	Carco Now Deval		B-4A	2237.9

CODE	EQUIPMENT	PART NUMBER	MANUFACTURER	MODEL NO.	NAVY TYPE	TOTAL HOURS
GLBQ	Adj A/C Maint Pltfm	54J6345	United Steel & Wire		B-4A	1604.1
GLCA	A/C Maint Jacks					16188.1
GLDA	Gen Maint Equipment					4536.7
GLDF	Portable Honing Mach	41303	Vacu-Blast Co			1000.5
GMBA	Eng Airframe Install & Removal Stands					7297.2
GMBB	Eng Removal & Position Trlr	100628A & 4938001	Air Logistics		4000A	2983.4
GMBC	A/C Universal Tow Bar	62A122J1-1	H Spen-and Co	NT-4		6514.9
GMBL	Eng Transport Trlr	104904	Air Logistics	3000B		4440.6
GMBM	Eng Rem/Position Trlr	NW19-25E-14	Air Logistics			1665.0
GMEA	Main Jeeps Trks etc.					3013.6
GMFD	Air Launch Weapon Loader Swing Boom	3Q106E1:E2	Standard Mfg Co		A/S 532K-1	2989.8
GMGD	Weapon Skid	64A114H1-1	Deval Corp		Aero 21A	1290.0
GMGF	Aero Bomb Skid	62A81D1	Drexal Dynamics		Aero 12C	1446.5
GMGP	Bomb Trailer	2517488	Bond Lumber Co	M32K-4/-4A		2028.0
GMGB	Air Trnspt Maint Van	2111	Consolidated Diesel	2111		4525.5
GPBF	Portbl Floodlight	59A61	Stewart Avonics	NF-2		1587.6
GPCA	A/C Towing Tractors					1637.2

CODE	EQUIPMENT	PART NUMBER	MANUFACTURER	MODEL NO.	NAVY TYPE	TOTAL HOURS
GPCK	A/C Tow Tractor Gas		Hough	T-180F	TA-18	4397.8
GPCL	A/C Tow Tractor Diesel	156171	Hough	TD-80	MD-3	6494.3
GPCM	A/C Towing Tractor		Northwestern	J231T	MD-1	2645.9
GPCU	Utility Tractor	New Super Dextra 300	Ford Motor Co	3000	W-30	2326.8
GPCV	A/C Tow Tractor Gas Eng Drive		Ward Lafrance	WLF-18	TA-18	1283.2
GPCY	A/C Tow Tractor Gas	JG-75:-1:-3	Northwestern	J6-75:-1:3	TA-75	17022.6
GPC1	A/C Tow Tractor Gas		United	TA-75A:B	TA-75	12963.6
GPC2	A/C Spotting Dolly	02245-0001	Consolidated Diesel	SD-1D		5782.5
GPDA	Trlrs, Gas-Fuel-Oil-Water-A					1129.3
GPEA	Lifts Trucks & Cranes					7604.5
GPKD	A/C Recvry Sys Exped.	M-21	All American Engr	M-21	M-21	1007.0

NAVAIRENGCEN, Lakehurst, N.J.
NAEC-GSED-91

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2. Corrosion Survey
3. Corrosion Maintenance

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