

# UNIVAC DIVISION

## INTERCOMMUNICATION

TO: V. R. Vitols

FROM (NAME) &amp; EXT: V. L. Sandusky

LOCATION &amp; DATE: VAFB 12 Sept 1972

DEPARTMENT &amp; M.S.: CSD-DSFE

SUBJECT: Damage Assessment on  
Johnston Atoll

CARBONS:

PLACE VISITED AND DATE:

Johnston Atoll  
August 31 thru September 7, 1972

PERSONS CONTACTED:

COL Arnold - CMDR 10th ADS  
CAPT Hugh Baker - CMDR DET. 1 10th ADS  
CMSGT Guest - NCOIC  
SSGT Darrell Beach - Computer Technican  
MSGT Dale Wyscarver - Radar Technican  
Tom Goodman - SMAMA

ACCOUNTS:

6CX912 labor  
6CX929 travel

PURPOSE OF VISIT:

Assess damage to UNIVAC furnished equipment  
due to hurricane Celeste.

STATEMENT OF WORK:

### I. BACKGROUND

Hurricane Celeste struck Johnston Atoll on Friday, August 19. A request for a damage assessment team from Univac was made by the Commander of the 10th ADS on August 27, after the 10th had made a preliminary survey. The preliminary reports that reached Vandenberg indicated that the damage was very severe.

The damage assessment team from Univac consisted of myself and Paul Castrodale from Reliability Testing. The initial purpose was to assess the damage that had occurred and to determine the best means for cleaning corrosion from the equipment which had received water damage. After arrival it was also evident that the 10th needed help in cleaning and repairing the equipment. This help was provided but in such a way as to incur minimum cost to the customer since that was not the prime purpose of our visit.

### II. DAMAGE ASSESSMENT

The damage assessment was begun Friday, September 1. The attached preliminary damage assessment report was submitted to CAPT Baker on Saturday morning. The following list indicates the status of the equipment as Univac left it.

GGS-1

642B  
S/N 16

There was some damage to unpainted aluminum surfaces but only in a cosmetic sense. Transformer, T1, inside the maintenance console showed some surface corrosion. The only serious damage was some salt water corrosion to the indicator modules on the exterior of the maintenance console, however all seemed to work. No attempt was made to clean these since this may result in pushing the corrosion back into the interior of the module. Only time will tell the extent of this damage. In general the 642B sustained no serious damage.

1240 MTU  
S/N 97

The "porkchops" show some pitting on each transport but this may have been there before the storm. The gasketing around each transport door needs to be replaced since coral dust contamination is a serious problem on the island. The indicators received slightly less damage than the 642B.

1232 I/O CONSOLE  
S/N 84

This unit received heavy damage to the keyboard. Each arm on the keyboard was rusted and there was some corrosion in the electronics P.C. Board. The keys were removed and the keyboard was dipped halfway into phosphoric acid (PH of 1) and scrubbed. This cleaned it up well and after flushing it with water and replacing one C-switch it worked fine. The top cover showed some rust as well as the keyboard cover. These should be removed and repainted. The fan filter screens should be replaced as they were heavily corroded. The Teletype received water damage also, however by the time we arrived it had already been cleaned. It worked fine on the ICE test.

After the cleaning operation was complete the 1232 worked well enough to complete the ICE test except for the punch which had intermittent errors.

CCP  
S/N 2

This unit showed moderate damage to painted surfaces and also to aluminum anodized surfaces. There was no damage to the switches on to the power supply.

RTD/DIU  
S/N 2

This showed extensive pitting to the decorative aluminum trim surface surrounding the front door. There was no damage to the rest of the unit.

MILGO PLOTTER  
S/N 6

The left and right structural members which support the plotting surfaces showed corrosion and fungus growth. These were cleaned using Freon and 3M "horsehair" pads and then spot painted with Chromate. The general condition was good.

1004 CARD PROCESSOR  
S/N 3100

The general exterior appearance was poor. All painted surfaces which had scratches were showing moderate rust. The card reader assembly showed extensive moderate rust. All shafts and surfaces were beginning to show pitting. The entire assembly was sprayed with WD-40 and left until time permitted its cleaning. This unit will require complete disassembly to clean it.

The print hammer assembly had moderate rust however by removing this and scrubbing it with Freon it was cleaned up. We ran a 1004 print test and after replacing 2 fuses it worked OK.

The carriage in/out assembly had rust on the surface it normally slides on. This was cleaned with emory paper and Freon.

The electronics assembly came through with no damage.

2009 CARD PUNCH  
S/N 2043

The punch block assembly showed moderate rust as did the stacker assembly. This was cleaned up by the Air Force using WD-40 and Freon.

The power supply showed some corrosion around the capacitor assembly. The main electronics assembly came through without damage.

MG SETS

These recieved some standing water but I do not believe it reached the field coils. The units ran without any problems.

GGs-2

642B  
S/N 12

No Damage.

1240  
S/N 40

No Damage.

RTD/RIO  
S/N 1

No Damage.

DTU  
S/N A6

No Damage.

1232 I/O CONSOLE  
S/N 50

The keyboard showed the same rusting as found at GGS-1. It was cleaned in the same manner and after replacing 2 C-switches worked fine.

MILGO PLOTTER  
S/N 2

This showed rust around the lower left arm drive shaft bearing. This was saturated with WD-40 and left until time permitted disassembly. Exterior rust spots were cleaned up and spot painted with chromate.

1004 CARD PROCESSOR  
S/N 2863

The external appearance of this unit was poor. Most panels show rust where there is a scratch through the paint.

The print hammer assembly was rusted to about the same degree as GGS-1. This was removed and cleaned by Univac after which it worked fine.

The card reader showed extensive rusting. This was sprayed with WD-40 until time permitted work to begin on this unit. It must be completely disassembled and the parts dipped in phosphoric acid.

The capacitor bank received some water damage and must be disassembled and cleaned. The PC card assemblies received no damage.

2009 CARD PUNCH  
S/N 1637

The punch block showed spotty rust as did the output hopper. This was sprayed with WD-40 to hold the rust.

IMS and DC AREAS

These received no damage.

### III. WORK PERFORMED

After the preliminary damage report was made we began trying various cleaning agents on the corroded assemblies. It was found that phosphoric acid could be used to clean steel and aluminum parts which could be dipped and scrubbed. On small parts vinegar was used since phosphoric acid is very hazardous to personnel. These parts were passivated with water and then flushed with Freon. The 1232 keyboards were cleaned up in this manner.

One day was spent in adjusting the light switches on the 1004 printer carriage. After these were adjusted correctly, relay K6 began intermittent operation. The trouble was traced to this relay or to the wiring leading to it. This failure

may have been precipitated by corrosion causing the printer carriage to bind. It was not repaired since it could be operated manually and other problems were more urgent. The parallax adjustments were performed on the plotters in the D. C. and on the plotter in GGS-1. The origin adjustment was also made on one plotter in the D. C.

On Thursday an effort was made to perform a GUID-EX run. This was not successful due to operator error but did show that the system would work.

#### IV. EQUIPMENT STATUS (Univac information only)

The storm did no damage that cannot be repaired. The 10th ADS has two problems however; not enough people to clean up the equipment, and lack of mechanical spare parts to replace units corroded beyond repair.

Further the general state of equipment on the island leaves much to be desired. Some of the obvious examples are as follows. The RTD/RIU at GGS-1 has a warm up problem such that it will not keep correct time without a three to four hour warmup period after which it still gets intermittent errors. Tape transport 4 at GGS-1 has a bad adjustment on the upper tape tension arm. A manual read/write cannot be done from the maintenance console. The 1240 cannot read or write consistently without errors. The paper tape punch cannot run ICE without errors. The 2009 punch has a bent roller. The On Line/Off Line switch on the CCP is intermittent. The 1218 in the IMS area has an intermittent "Fault" problem. The UNIVAC buffer in the MILGO in GGS-1 had an intermittent problem such that data for the right arm got loaded into the left arm. (This was swapped out with one of the buffers from the DC plotboards). This list could go on and on since the more carefully one looks the more problems one can see.

In my opinion no programming effort should be made on Johnston Atoll without a thorough investigation by Univac Field Engineering. I would estimate that it would take one man a week just to list all the obvious problems and to identify parts that need replacement. Once this effort was completed and parts were on hand I believe it would take 3 men two weeks to bring the equipment to a good operating level and another man for two weeks to get the intermittants out of the system.

The final engineering report should not be submitted until Paul Castrodale's report can be incorporated. Also it should be noted that the 10th ADS DET 1 on the Island did not receive the engineering report made last year on the DTU problem until a few weeks ago. Some effort should be made to straighten this red tape out.

*V. L. Sandusky*

V. L. SANDUSKY

## Attachments

1. Preliminary Damage Assessment Report
2. Summary Damage Report
3. 10th ADS Damage Report

## Distribution

N. L. Alrick  
P. A. Castrodale  
W. R. Crosson  
R. R. Kistler  
R. A. Malmen  
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