

TO: Distribution  
FROM: David M. Jordan  
DATE: March 18, 1974  
SUBJECT: System Maintenance Status, February 9 - March 15

### 1. Significant Events

During this reporting period the System's Maintenance and Assurance Group really lived up to its name as a very large number of changes to the hardcore and online libraries were made while system reliability was kept at an all time high for the G180. In retrospect, it's hard to believe that so many complex and significant changes were made with so little adverse user impact.

Peter Kelley has begun performing hardcore installations. His work on update\_seg has nearly been completed, at least as far as the programming is concerned, so he's been able to spend the past three weeks getting on-the-job training doing hardcore installations.

An offer has been extended to a new person to fill the position left vacant when Ron Rakip left. We expect the new person to begin working with us about April 1, but it will probably be several months before training and Multics experience will allow significant work.

In addition to the large number of software changes there were numerous changes to the hardware. A new 1 million word block of Bulk Store was installed to replace some of the older and less reliable storage. In addition, we are once again being told that the EIS hardware is all working, so we expect to install the EIS PL/1 operators in the online libraries in the near future.

#### A. Online System Installations

During this reporting period there were a total of 440 changes to the online libraries. Included among these changes were the new IO Daemon, a new version of Lisp, the installation of the tools used to generate code for the DataNet 355, Ross Klinger's sample\_refs system, and the new GCOS Daemon. All in all, we've been very busy handling this relatively large number of changes, but it appears that the installation load is not declining.

Sometime near the end of March, Chris Tavares will be observing our installation procedures in an effort to learn

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how to use our tools at sites other than MIT.

## B. Other Installations

During this reporting period hardcore systems MSS 23.2, 23.3, 23.4, 23.4a, 23.5, 23.5a, and 23.5b were installed. Included among the many changes were the installation of the DSU-191 software, the new iox\_ subsystem, major changes to the tty dim, the new Operator console software, and a wide variety of minor changes and fixes. Although a couple of minor problems remain in iox\_ and the Operator console software, all changes went in quite smoothly and we were able to get essentially caught up on submissions.

In addition to the hardcore changes, BOS systems 1.33, 1.34, and 1.35 and Salvager system 2.27 were installed. Included among the changes were several fixes for the DataNet 355, a change to the handling of tape and printer errors in BOS, changes for the DSU-191 disks, software to handle the MDS 2400 remote printer, and a number of fixes for the Salvager.

## C. Crash Analysis

System reliability has been exceptional over the past 5 weeks. Despite the installation of a significant number of hardware and software changes, the system averaged less than 8 crashes/week. Hopefully we are beginning to see the results of having somewhat more standardized hardware and tighter software change procedures. If so, we should be able to maintain this level of reliability and perhaps improve on it.

	Feb 9-15	Feb 16-22	Feb Mar 23-1	Mar 2-8	Mar 9-15	Total
Hardware	6	1	3	4	0	14
Hardware Suspected	1	0	0	1	1	3
Software	1	1	0	2	2	6
Software Suspected	1	1	0	2	0	4
Not Yet Analyzed	0	1	1	1	2	5
Not Available	0	1	0	0	0	1
Other	0	0	3	1	1	5
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Total	9	5	7	11	6	38

## 2. Problem Areas

As usual, our major problem is a lack of man-power. This problem, in conjunction with the large number of installations over the past few weeks has left us all a bit out of breath. Although the situation should be somewhat eased by the addition of another member in the group, the

amount of time required to train the new person may, at least initially, make the problem worse.

The various Honeywell groups outside of CISL are beginning to make our work a bit more difficult as they seem to require a copy of every piece of paper handled by our group. I haven't yet figured out what they do with all this stuff, and I sincerely hope that they decide they don't need it any more.

### 3. Task Status

The new installation tools progressed significantly over the past few weeks with the completion of the final major coding tasks for update\_seg. It is expected that further changes to update\_seg will be primarily limited to minor changes in the various interfaces. In addition, work is progressing on the generation of Multics library descriptors. The reduction compiler has been completed and has been used for Ross Klinger's tape\_in\_out command. Work is now underway on the descriptor compiler and on coding the source for the Multics descriptors.

A major revision to the online cross reference driving exec\_coms was made so that they now generate a cross reference of the entire online libraries rather than one library at a time.

Our preparations for the new Network library continue, but have been held up some by the large number of installations that were processed during this reporting period.

### 4. Work Planned for the Coming Month

We hope to get Pete Kelley started on crash analysis in the near future. This should allow a little easing on everybody else's work load.

We expect to complete the various changes required for the Network library and to begin installing things in it within the next four to five weeks.

With the general feeling that the FIS hardware is now working, we expect to begin installation of the operators and compiler in the near future.













PROJECT Library Maintenance Tools Project AREA Installation tool enhancements

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-W	CHANGES-SIAIUS
update_seg: SPS command documentation	Kelley		12/21/73		* done
update_seg: enhance automatic documentation (MCR 189)	Kelley	01/02/74	01/25/74		Submitted; production testing in progress.
update_seg: remove "a" access mode references from MIS (MCR 224)	Kelley	12/26/73	12/28/73		incorporated into documentation enhancement change
update_seg: have installation tools set the "safety-switch" on newly created segments.	Kelley				preparing appropriate MCR
MTB describing documentation format for MIS	Kelley				deferred
update_seg: Increase size of online installations (MCR 188)	Kelley				not started

TASK DESCRIPTION PERSONNEL START FINISH M-W CHANGES-SIAIUS

lex_string: code a lexical analyzer to parse a character string into tokens which are processed by the compilers below	Dixon	12/15/73	01/10/74	.5	Done
reduction_compiler (rdc): code the reduction compiler (used to code the library_descriptor_compiler)	Dixon	01/01/74	01/08/74	.5	Done
library_descriptor_compiler (ldc): code the library descriptor data base compiler	Dixon	12/15/73	01/10/74	2.0	bnf for descriptor language done;
multics_libraries_.ld: code the library descriptor for Multics	Dixon	02/28/74	03/01/74	.2	reductions being coded
System Libraries		03/05/74	03/18/74		Done
library_search_: recode to use multics_libraries_.ld generated by library_descriptor_compiler	Dixon	01/10/74	01/15/74	.5	
library_info (li): code, document command which replaces msl_info (HIGH)	Dixon	10/05/73	10/30/73	1.5	Add options to command
library_map (lm): code, document command which replaces msl_global_format (HIGH)	Dixon	05/25/73	06/25/73	3	Add options to command
library_print (lpr): code, document command which prints groups of library segments (HIGH)	Dixon	04/10/73	04/01/73	1	prints segments now; make it print archive components, pt segs, chase links, print MSFs, etc
library_brief_map (lbm): code, document replacement for Poach's segment list (MEDIUM)	Dixon	12/07/73	12/30/73	.5	
li/lm: get and output ACLs, Initial ACLs, extra status (MEDIUM)	Dixon	12/15/73	12/30/73	1.5	
li/lm/lpr: add sorting options to commands (LOW)	Dixon	01/01/74	01/15/74	.5	

PROJECT Library Maintenance Tools Project AREA library descriptor tools

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-W	CHANGES-SIATUS
document the above procedures and subroutines	Dixon	03/01/74	05/30/74	3	library_map, library_print, reduction_compiler documentation underway
lm/lpr: gather and output statistics on library segments (LOW)	Dixon			1.5	
library_search_rules (lscr): code, document command which lists directories searched by ll/lm/lpr for a given library (LOW)	Dixon			1.5	
library_get (lgt): rewrite gls to use library descriptor				2	
library_cleanup (lcln): clean up the code; use library descriptor				1.5	
library_object_cref (loc): rewrite cross_reference to use library descriptor				2.5	
library_include_cref (lilc): rewrite icref to use library descriptor & source maps in standard obl segs				2	

