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Authority
By LS NAVA, Date 11-18

HARVEST CONTROL PROGRAM

Job Request Analyzer

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The Job Request Analyzer is the HCP system program which makes the initial analysis of the Job Requests which make up a Job Request File. It accepts requests in external or original Job Request Language, then categorizes and condenses the Job Request information into a series of tables and file entries for more efficient and effective use by the other HCP system components.

I. External Format for Job Requests

When a Job Request is prepared for introduction to the HCP system, it is punched on cards, then loaded, along with other cards, on 729 tape. The format for the ten types of cards which can appear is as follows:

	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
	1	5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0
1	MPRO JOB NUMBER	# OF SECS	J	I	D	I	JOB IDENT										
2	MPRO JOB NUMBER	J	L	U	L	PGM NAME						OPTION: ASSEMBLE, REVISE, ADD, DELETE, etc.					
3	MPRO JOB NUMBER	J	I	L	L	FILE NAME						OPTION: BIN COPY, CONVERT, UNLOAD, DUMP, etc.					
4	MPRO JOB NUMBER	J	F	M	F	FILE NAME OF RESULT FILE						OPTION: ADD, CONSOLIDATE, ADD TO, DELETE, etc.					
5	MPRO JOB NUMBER	J	F	M	C	FILE NAME OF INPUT FILE											
6	MPRO JOB NUMBER	J	F	M	P	FILE MAINTENANCE PARAMETERS											
7	MPRO JOB NUMBER	J	P	P	R	PGM NAME (# WORK FILES)						OPTION: EXECUTE, DEBUG					
8	MPRO JOB NUMBER	J	P	P	R	PGM SYMBOL = FILE IDENT (DISP, BUFFER SIZE, F/V)											
9	MPRO JOB NUMBER	J	P	P	B	PARAMETER IDENT = PARAMETER											
10	MPRO JOB NUMBER	CARD # BY TYPE	L	LOAD PARAMETERS													

- 1: Job Header, 2: Library Update, 3: Unload, 4: File Maintenance,
- 5: File Maintenance Continuation, 6: File Maintenance Parameters,
- 7: Problem Program Request, 8: Problem Program I/O Statement,
- 9: Problem Program Parameter, 10: Load Request

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All steps of a job must be in order by step number. Each problem program request is followed by one or more I/O Statement cards. Any problem program Parameter cards follow the I/O Statement cards for that program.

II. Table and File Construction

From the Job Request cards, entries are made by the Job Request Analyzer in three tables and one file, as follows:

	NAME TABLE			FILE CONTROL TABLE		INTERNAL REQUEST TABLE	PARAM FILE
	JOB IDENT	PGM NAME	FILE NAME	FILE RQST	FILE DESC		
Job Header	X						
Library Update		X				X	
Unload			X		X	X	
File Maint & FM Cont			X		X	X	
Problem Program Rqst		X				X	
Prob Pgm I/O Statement			X	X	X		
PP or FM Parameter							X
Load						X	X

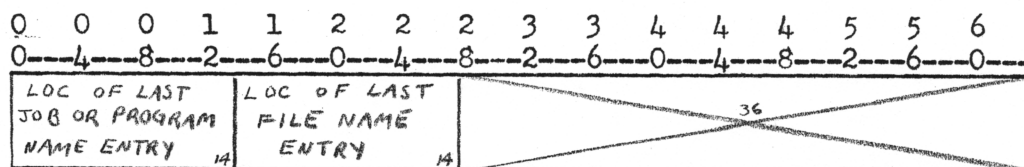
A File Request entry is also made for each problem program work file. Each job is assigned a serial number by the Job Request Analyzer; this number serves to internally identify the job. Subsequently in this paper it is simply called job number. Each file which is unique within a job is assigned a serial file number by the Job Request Analyzer. This number is replaced at catalog reference time, for files in permanent Tractor storage, by the permanent file number.

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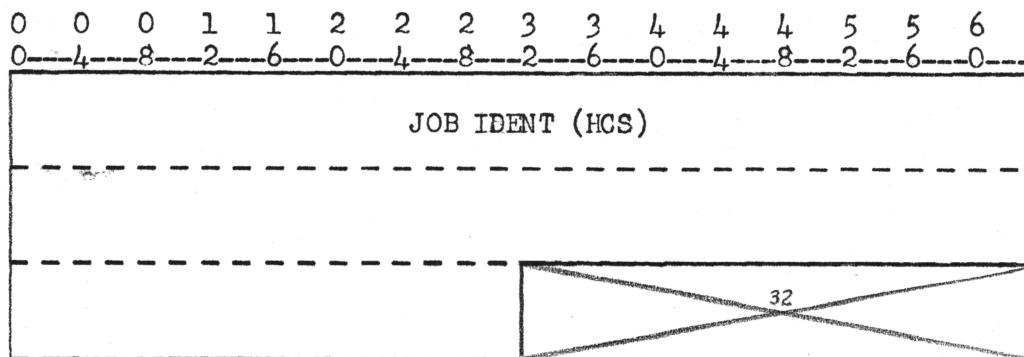
III. Name Table

The Name Table contains four types of entries: Name Table Header, Job Ident, Program Name, and File Name. Program names are unique within a job cycle; file names are unique within a job.

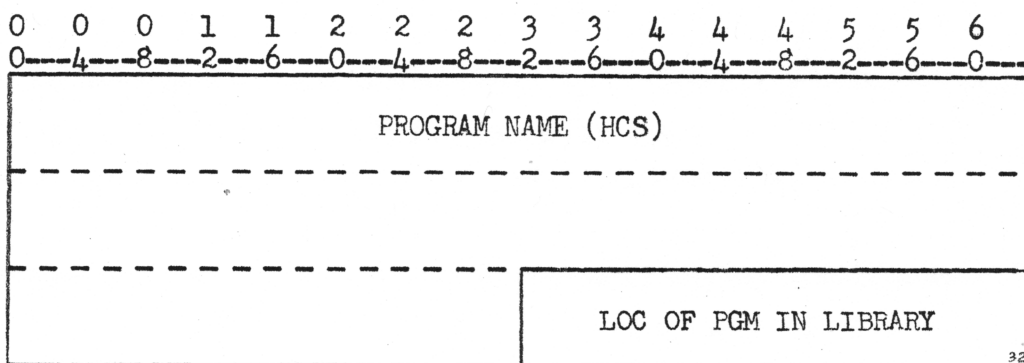
Name Table Header (1 word)



Job Name Entry (3 words)



Program Name Entry (3 words)



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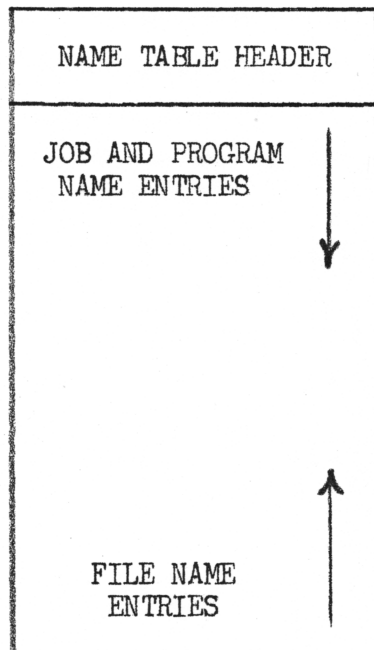
File Name Entry (5 words)

0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
SHORT TITLE (HCS)															
NAME (HCS)															

SEGMENT DESIGNATOR (HCS)															

Job and program name entries are added to the Name Table at the beginning of the table and progress forward. File name entries are added at the end of the table and progress backward. This scheme makes it easier to eliminate duplicate name entries.

NAME TABLE
(6K WORDS)



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IV. HCP File Control Table

The HCP File Control Table has six types of entries, arranged as follows:

HCP FILE CONTROL TABLE (10K WORDS)

TABLE INDEX ENTRY (1 WORD)
ALL FILE REQUEST ENTRIES (2½ WORDS EACH)
ALL FILE DESCRIPTION ENTRIES (3 WORDS EACH)
LOOK-AHEAD ENTRIES (½ WORD EACH) FILE LOCATION CONTINUATION ENTRIES (1 WORD EACH) DATA DESCRIPTION ENTRIES

The formats for the various entries are:

Table Index Entry

0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
LAST TEMP FILE NUMBER ASSIGNED	NUMBER OF FILE REQUEST ENTRIES			NUMBER OF FILE DESCRIPTION ENTRIES			NEXT AVAIL STORAGE LOCATION IN TABLE (½ WORD INCREMENT FROM TABLE START)				19				
10	10			10			15								

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File Request Entry

0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
JOB NUMBER 8		STEP NUMBER 8		LOCATION OF FILE DESCRIPTION ENTRY ($\frac{1}{2}$ WORD INCREMENT FROM TABLE START) 15					SYMBOL FILE TABLE ENTRY ADDRESS 18		DISP 3	LAST 3	FILE 3		
FILE SEQUENCE INDICATORS 15					HANDLER AND $\frac{1}{4}$ TAPE TRANSPORT ASSIGNMENT (3 BITS PER LEVEL) 45							BUF 3	PRI 3		
LOCATION OF FIRST LOOK-AHEAD ENTRY ($\frac{1}{2}$ WORD INCREMENT FROM TABLE START) 15					# OF L-A ENTS -1 3	LOCATION IN NAME TABLE OF PROGRAM NAME ENTRY 14									

Look-Ahead Entry

0	0	0	1	1	2	2	2
0	4	8	2	6	0	4	8
STORAGE SLOT 8		CARTRIDGE NUMBER 11		FILE POSITION 9		LEVEL 4	

File Description Entry

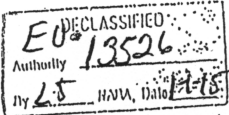
0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
BLOCK SIZE				RECORD SIZE				BLOCK COUNT		F V	RECORD COUNT				
LOC OF FILE LOCATION CONTINUATION ENTRY ($\frac{1}{2}$ WORD INCREMENT FROM TABLE START) 15					HAND 0 # OF LOC ENTS 15	HAND 1 # OF LOC ENTS 15	HAND 2 # OF LOC ENTS 15	HAND 3 # OF LOC ENTS 15	8		LOCATION OF DATA DESCRIPTION ENTRY ($\frac{1}{2}$ WORD INCREMENT FROM TABLE START) 15				
STORAGE SLOT 8		CARTRIDGE NUMBER 11		FILE POSITION 9		FILE SEGMENT NUMBER 18		RES 2	LOCATION IN NAME TABLE OF FILE NAME ENTRY 14						

File Location Continuation Entry

0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
STORAGE SLOT 8		CARTRIDGE NUMBER 11		FILE POSITION 9		FILE SEGMENT NUMBER 18		RES 2	14						

Data Description Entry

0	0	0	1	1	2	2	2	3	3
0	4	8	2	6	0	4	8	2	6
(FORMAT NOT COMPLETELY DEFINED)									



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A. File Request Entry, Word 1, Bits 58-60

The possible Dispositions which may be stated on the I/O Statement cards of the External Request are Input, Output, and Load. The internal Dispositions and their codings are: Input-1, Output-2, Work-3, and Permout-4.

If a Load disposition is specified on the Job Request card, the internal disposition is set to Input, and the Load bit (File Description Entry, Word 2, Bit 62) is set to one.

B. File Request Entry, Word 1, Bits 61-62

Indicator bit 61 (62) is set to one if this is the last (first) File Request Entry for the file within the job (i.e., if this is the entry for the last (first) time that the file is used in a problem program within the job).

C. File Description Entry, Word 2, Bits 59-62

The Input indicator bit is set to one if the External Request disposition is Input or Load. The Hold bit is set to one if the External Request disposition is Output. The Tractor bit is left at zero (indicating a Tractor file) by the Job Request Analyzer. The Load bit is set to one if the External Request disposition is Load.

These indicator bits are set (or left at 0) when the File Description entry is first constructed. Subsequent requests referring to the same File Description entry will either leave the indicator bits "as is", or set them to one. Thus the Input indicator, for example, of a particular file will be set to one if at least one of the External Requests for that file has an

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Input disposition.

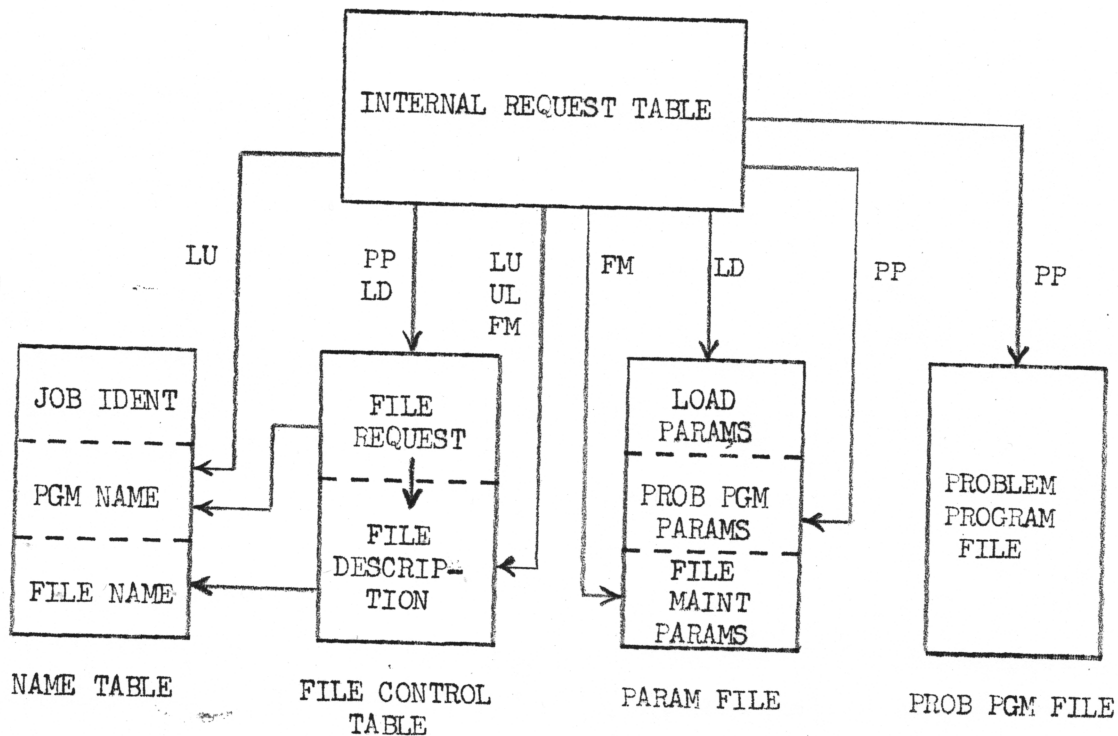
V. Internal Request Table

The Internal Request Table contains one-word entries identified as requests to Library Update, Load, Unload, or File Maintenance; or as a problem program request. Each entry contains reference numbers to other table and file entries. Bit 32 is set to 1 when action on the request is completed. Entries are made in the table in the order in which they appear in the External Request File. Each HCP system component will, at the proper time in the job cycle, scan the Internal Request Table and extract its request entries. A problem program entry contains the location of the program parameters at Job Request Analyzer time. After processing by the Problem Program File Generator, it contains the location of the program in the Temporary Program File. In addition to the request entries, the Internal Request Table contains a one-word Header Entry containing the number of internal request entries in the table.

The formats for the Internal Request Entries in the table are as follows:

0	0	0	1	1	2	2	2	3	3	4	4	4	5	5	6
0	4	8	2	6	0	4	8	2	6	0	4	8	2	6	0
JOB NUMBER	STEP NUMBER	LU	OPTION AND INDICATORS	CORRECT	LOCATION OF PROGRAM NAME IN NAME TABLE	LOC OF DESCRIPTION ENTRY IN FILE CONTROL TABLE FOR ASSEMBLY LIST FILE									
JOB NUMBER	X	LD	OPTION AND INDICATORS	CORRECT	LOC OF FIRST FILE REQUEST IN FILE CONTROL TABLE	LOCATION OF LOAD PARAMETERS									
JOB NUMBER	STEP NUMBER	PP	OPTION AND INDICATORS	CORRECT	LOC OF FIRST FILE REQUEST IN FILE CONTROL TABLE	LOCATION OF PGM PARAMETERS OR OF PROGRAM									
JOB NUMBER	STEP NUMBER	UL	OPTION AND INDICATORS	CORRECT	LOCATION OF FILE DESCRIPTION ENTRY IN FILE CONTROL TABLE	X									
JOB NUMBER	STEP NUMBER	FM	OPTION AND INDICATORS	CORRECT	LOCATION OF FILE DESCRIPTION ENTRY IN FILE CONTROL TABLE	LOC OF FILE DESC OR OF PARAMETERS									

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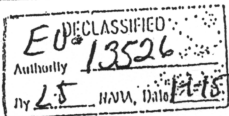


VI. Parameter File

There are three types of entries in the Parameter File: Load Parameters, Problem Program Parameters, and File Maintenance Parameters. There will probably be an identifying code with each entry, but this may not be needed since reference locations are provided in the Internal Request Table.

Problem program parameter cards are entered in the Parameter File without reformatting (except conversion to HCS), in the order encountered by the Job Request Analyzer.

The format for Load and File Maintenance parameters in the Parameter File has not yet been determined.



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VII. Catalog Reference

After reading the External Request cards and reformatting the information into table and file entries, the Job Request Analyzer enters in the File Control Table information on files in permanent Tractor storage which are to be used as input in the job cycle. For such files, information such as block and record size and block and record count and the location of the file or file segments (cartridge number and file position on cartridge) is extracted from the permanent File Locator Catalog and entered in the proper File Description entry. If, needed, File Location Continuation entries and Data Description entries are made.

VIII. Consolidation of Files

After catalog references are made, consolidation of files, or possibly requests to File Maintenance for the consolidation of files may be initiated.

IX. Summary

The Job Request Analyzer is a HCP system program which processes the External Job Requests, along with part of the information needed to execute the requests, into a highly efficient internal form. It also performs all possible early checking, and logs and eliminates jobs it finds incapable of proper execution.